



## Indian River Flood Shoal Dredging and Beneficial Use Project

August 2024

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## Permit Supplement

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## ABBREVIATIONS

BU	Beneficial Use
CWA	Clean Water Act
CY	Cubic Yards
CZM	Coastal Zone Management
DNREC	Delaware Department of Natural Resources and Environmental Control
EFH	Essential Fish Habitat
IPaC	Information for Planning and Consultation
NAVD	North American Vertical Datum
North Beach	North Indian River Inlet Beach (northside)
Project	Indian River Flood Shoal and Beneficial Use Project
SHPO	State Historic Preservation Office
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

# 1. Introduction

This document has been developed to support applications for federal- and state-related permits and approvals necessary for maintenance dredging of the Indian River Inlet flood shoal and beneficial use (BU) of the dredged material at the North Indian River Inlet Beach (North Beach), Delaware Seashore State Park, Sussex County, Delaware. The intention is to replicate the previous BU project performed at North Beach by the US Army Corps of Engineers (USACE) in 2013 as part of an emergency action following Hurricane Sandy. Approximately 550,000 cubic yards (cy) of sediment would be dredged from the flood shoal and used to rebuild over 5,200 linear feet of coastline. Conditions at North Beach have been severely deteriorating overtime and adding sand via truck haul can no longer overcome the current rate of erosion that is occurring. North Beach needs to be rebuilt with a large volume of sand that is delivered rapidly; therefore DNREC's Shoreline and Waterway Management Section is seeking emergency authorization to restore the dune system at North Beach as critical infrastructure like the Charles W. Cullen Memorial (Inlet) Bridge and Delaware State Route-1 (SR-1) are in imminent risk of failure.

This Permit Supplement document provides additional Project background and supporting material for the following permits and regulatory approval:

- U.S. Army Corps of Engineers (USACE):
  - Clean Water Act (CWA) Section 404 permit for dredging and fill activities, Individual Permit
- DNREC Wetlands and Waterways Section
  - DNREC Wetlands and Subaqueous Lands Permit
  - CWA Section 401 Water Quality Certification
- Delaware Coastal Programs
  - Coastal Zone Management Act (CZM) Federal Consistency determination

## 1.1 Project Location

Dredging would occur in the flood shoal borrow area located in Delaware waters near the federal navigation channel within Indian River Inlet, Sussex County, Delaware (Figure 1). The North Beach placement area is located within Delaware Seashore State Park on the north side of the Indian River Inlet. Restoration would occur from the jetty and extend northward for approximately 5,200 linear feet.



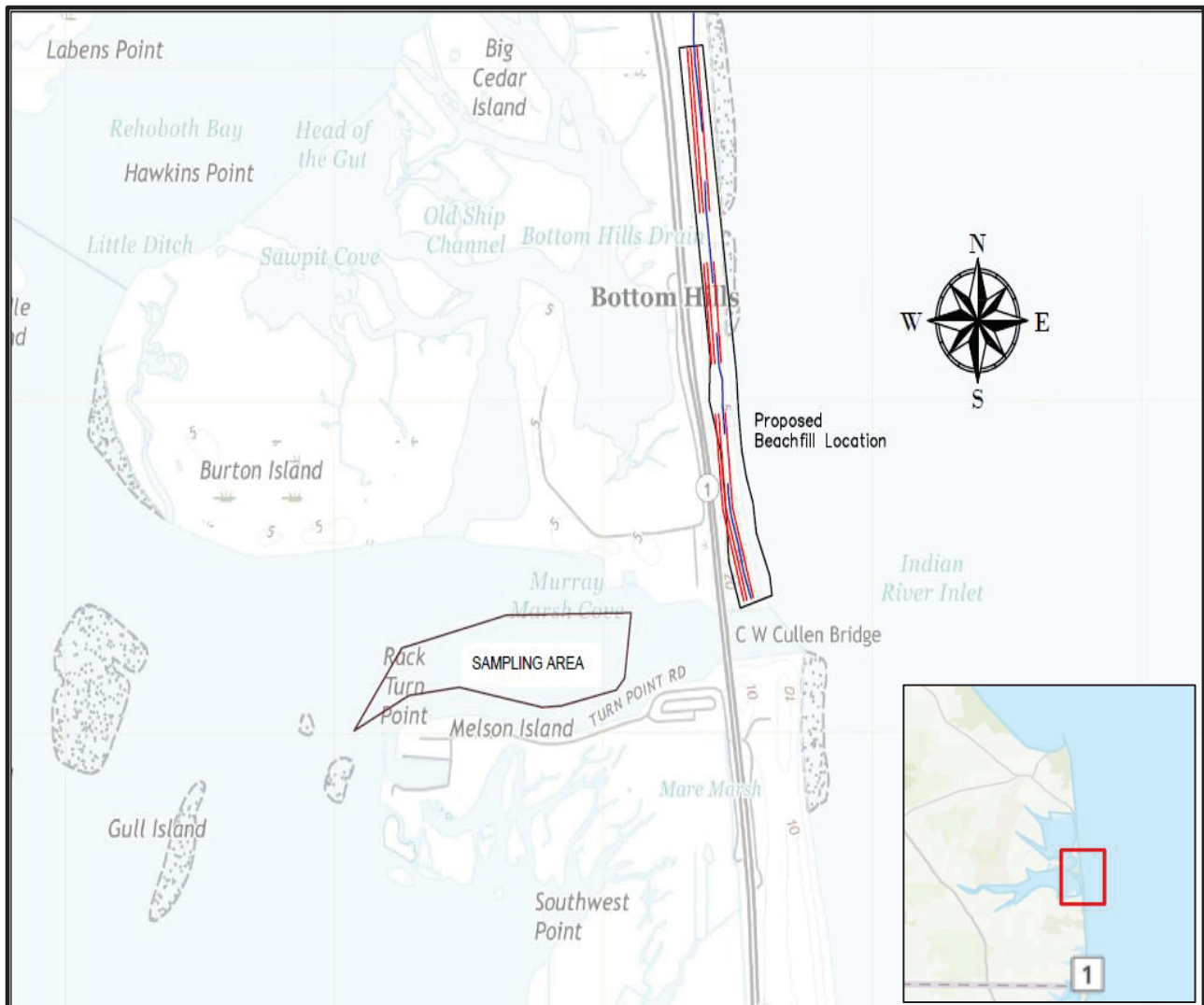


Figure 1. Project Location Map

## 1.2 Project Purpose

The northside Indian River Inlet coastline (North Beach) has a long history of erosion due to the interruption of the northward flow of sand caused by the construction of the inlet jetties. This erosion has made critical infrastructure, such as SR-1 and the Charles W. Cullen Memorial (Inlet) Bridge, more vulnerable to storm damages. To mitigate risk and provide a consistent source of sand to North Beach, a sand bypass facility was constructed in 1990 by USACE and is operated and maintained by the State of Delaware. The sand bypass system imitates the natural flow of sand from south to north by continuously pumping sand from the southside beach, across the inlet to North Beach. Sand pumping rates are variable and average 100,000 cy of sand per year.

Prior to the construction of the sand bypass system, sand was periodically obtained from the interior Indian River Inlet and placed on North Beach. From 1957 to 1990, over 2 million cy of sand was dredged from the Inlet interior to maintain the Federal navigation channel and to obtain beach fill for the eroding shoreline north of the Inlet (USACE 2014). Once the sand bypass system was operational in 1990, dredging within the Inlet was only necessary in 2010 to fill scour holes located near the USCG facility. Otherwise, no additional dredging of the interior Inlet was performed to obtain beach fill or maintain the channel until Hurricane Sandy hit in October 2012.

Hurricane Sandy eroded hundreds of thousands of cy of sand from North Beach, resulting in overwash from the storm surge that flooded SR-1 and the approach to the newly constructed Inlet Bridge. Overwash forced the closure of this critical highway and evacuation route for several days until State crews could remove sand from the roadway and make the necessary repairs. Following Hurricane Sandy, over 500,000 cy of sand was required to rebuild the beach template, which is a far greater volume than the sand bypass system could accommodate. Therefore in 2013 under a coastal emergency action, the USACE dredged the Indian River Inlet flood shoal borrow area and used all dredged material to rebuild the berm and dune system at North Beach.

For several years the annual pumping of the sand bypass system helped mitigate erosion at North Beach and was the primary maintenance activity; however in 2020 the system became inoperable. Since then, DNREC Shoreline and Waterway Management Section has judiciously added sand to North Beach via truck haul which has been ineffective for mitigating risk. In response to the inadequate maintenance, the dune system at North Beach is severely eroded and prone to scour from direct wave energy on a regular high tide.

The purpose of the Project is to restore the severely eroded berm and dune system at North Beach using dredged material from the Indian River Inlet flood shoal, similar to the 2013 USACE project, to enhance resiliency and protect critical infrastructure and habitat from the effects of coastal erosion. The Project includes the following key components:

- Dredge up to 550,000 cy of sediment from the Indian River Inlet flood shoal, consistent with the authorized elevation of -24 ft NAVD with 1 ft of allowable over-dredge and approximately 640 ft wide.
- Transport dredged material, via pipeline, to the beneficial use placement site at North Beach.
- Spread and grade dredged material to restore the berm (+9.0 ft NAVD, 100 to 150-ft width) and dune system to an overall elevation of +16.0 ft NAVD and 25-ft wide. Placement will begin at the north jetty and extend northward for approximately 5,200 ft (between 0+00 and 55+0).

### 1.3 Existing Emergency Conditions & Photographs

The current condition of North Beach is such that a minor storm surge or swell event is very likely to breach the dune. This has the potential to flood Delaware State Route-1 (SR-1), an evacuation route, and erode the existing Inlet Bridge. A dune breach occurred most recently on August 17, 2024, that forced the closure of SR-1 for several hours as ocean water, sand and debris flooded the roadway (Figures 2-3).

Severe erosion at North Beach has also exposed hazardous debris from historical roads that had previously washed out (Figure 4). There have been extensive clean-up efforts among DNREC and local volunteers, but as the beach erodes further, additional debris becomes exposed. The debris is now more difficult to remove since the beach elevation has lowered leaving no dry beach above the intertidal zone during high tide (Figure 5). In response, beachgoers are walking and sitting on the dune face and crest, which is an additional stressor. During low tide at North Beach, beachgoers sit in the intertidal zone among the large pieces of marine debris that are now exposed and washing ashore (Figure 6). In addition, swimmers and waders may be unaware of the hazards posed by debris and the currents driven by wave energy from the dune.

Currently, the only means to add sand to attempt to repair North Beach is truck haul sand from inland sources. The volume and rate of sand delivery is inadequate such that sand moved onto the beach gets washed out within one tidal cycle. The beach needs to be rebuilt and requires a large volume of sand that is delivered rapidly. To do so, DNREC is seeking emergency authorization to replicate the project led by the USACE following Hurricane Sandy in 2013.



*Figure 2. August 17, 2024. Aerial view of the dune breach at Delaware Seashore State Park (looking north). The SR-1 northbound lane is closed to vehicles and completely covered in ocean water, sand, and debris.*



*Figure 3. August 17, 2024. View of the dune breach at Delaware Seashore State Park (looking south). The SR-1 northbound lane is covered in water and sand, forcing a road closure.*





*Figure 4. April 2024. View (looking south) of hazardous debris exposed on North Beach due to erosion*



*Figure 5. July 26, 2024. View of North Beach from the Atlantic Ocean during high tide. No observable dry beach above the intertidal zone. Beachgoers sit on the dune face and crest.*



*Figure 6. August 2, 2024. Bird's-eye view of North Beach during low tide. Beachgoers sit in the intertidal zone among large pieces of potentially hazardous debris.*



## 1.4 Baseline Conditions & Historical Data

Baseline site conditions at Indian River Inlet and North Beach have been documented for comparison in future monitoring efforts. The following investigations were performed to establish a baseline dataset and are provided along with the permit application attachments:

- Field reconnaissance and collection of site photographs
- Topographic survey via real-time kinematic (RTK) GPS of the flood shoal borrow area

The expectation is that the Indian River Inlet flood shoal will recover sediment as it has following the previous USACE dredging project in 2013. After one year, survey data indicated that nearly 50% of the material dredged ended up back in the flood shoal, and nearly 100% after four years. We hypothesize that the flood shoal is a renewable source of sand, and that the flood shoal and North Beach are a “sink/source” closed system. As sand erodes offshore and washes out along the outside of the north jetty, it likely gets siphoned through the inlet and deposited in the flood shoal; therefore the inlet flood shoal could be a potential long-term sustainable source of sand for maintaining North Beach. We anticipate the need to dredge the flood shoal again within  $\pm 5$  years.

The *Indian River Flood Shoal Sampling and Analysis Plan* is included with the permit application package. The following investigation is planned for September 2024. Laboratory data and the evaluation of results will be provided as soon as available.

- Surface grab and sediment core samples for geotechnical and chemical evaluations

Based on previous data reported by the USACE in 2013, dredged material is expected to be mostly sand (>94%) and free of any contaminants of concern that would pose a human health or environmental risk if sediment were dredged, dewatered, and placed at North Beach. Additionally, given the theorized “sink/source” closed system as described above, we also expect sediment to be “clean” since the dredge source is deposited from a turbid surf zone and subsequently advected through the turbulent inlet.

## 2. Project and Construction Methods

The Project design is illustrated in the construction plans that are included as part of the permit application package. Construction is expected to commence October 2024, with completion expected by March 2024.

### 2.1 Dredging the Indian River Inlet Flood Shoal

The Project aims to hydraulically maintenance dredge up to 600,000 cy of mostly (>90%) sandy material from the flood shoal borrow area located near the Federal navigation channel within Indian River Inlet. The flood shoal is to be dredged to the previously authorized channel elevation of -24 ft NAVD with 1 ft of allowable over-dredge and 640-ft wide. Dredging the flood shoal provides advance maintenance of the channel by reducing infilling of adjacent sediments.

Sediment removal will be conducted using a cutterhead dredge and pipeline. Floats will be attached to the dredge pipeline so that it remains on the water's surface and is clearly marked for navigational boaters. Dredged material will be transported from the Inlet flood shoal to North Beach using the dredge pipeline. \*Please note, the location of the pipeline placement will be included in the updated plan set.

Dredging will be conducted during winter months (October to March) to minimize disruption to migrating fish and native aquatic species.

### 2.2 Beneficial Use at North Indian River Inlet Beach

Dredged material will be transported via pipeline to North Beach to reconstruct the berm and dune system beginning at the north jetty and extending northward for over 5,000 linear feet (between stations 0+00 and 55+00). The minimal beachfill quantity to be placed at any one location will be at least 40 cy per linear foot of shoreline, excluding taper areas. Front-end loaders and bulldozers will be used to spread and grade material consistent with the authorized plan followed by the USACE in 2013. Dunes will be constructed to have a 100 to 150 ft wide berm with an elevation of +9.0 ft NAVD. The berm will have a dune on top with an overall dune crest elevation of +16.0 ft NAVD and width of 25 ft. Nourishment activities will temporarily inhibit access to North Beach and may initially result in a steeper beach profile before adapting to a more natural slope.

#### 2.2.1 Containment

Dredged material will be placed on North Beach without lateral containment. The beach will be allowed to erode and accrete under natural conditions. It is expected that some material may be transported northward and the majority is transported back into the flood shoal.

### 2.3 Best Management Practices

The following best management practices and construction controls are included as part of the plans and specifications to ensure the Project is completed in accordance with the design and applicable regulations:

- Temporary perimeter controls will be used near dredging operations to protect water quality and will be monitored routinely throughout construction. Mitigation will occur if control limits are exceeded.
- Unconfined placement will rely on the existing site topography and environmental forcing to allow the beach to erode and accrete naturally.
- The pipeline transporting the dredged material slurry will be floated and clearly marked to avoid environmental impact and alert boaters.

- Dredging during the winter months will limit disruption to migrating fish and aquatic species that could otherwise be impacted by water column turbidity.
- Proper construction oversight will also ensure there are no negative impacts to adjacent water quality via daily site inspections of perimeter controls and dredge operations by the construction manager.
- The staging areas are anticipated to be located within the Delaware Seashore State Park. \*Please note, staging area locations will be included in the updated plan set.
- Project workers shall not harass or impact any waterfowl, fish, or aquatic species in the Project area.

## 2.4 Project Alternatives Considered

Alternatives considered for protecting the North Indian River Inlet Beach (North Beach) at Delaware Seashore State Park include: no action, using truck haul sand from inland sources to nourish North Beach, transporting sand from the southside Inlet beach to North Beach, and the beneficial use of dredged material from the Inlet flood shoal to reconstruct North Beach. The alternatives were considered with respect to project cost, habitat loss due to construction activities, turbidity increases, disturbances to fish and wildlife, human safety, and recreational uses of the area.

### 2.4.1 No Action

If no action is taken to rebuild the North Beach berm and dune system, continued erosion from coastal storm events will severely endanger SR-1 and the Inlet Bridge from becoming impassible and eventually result in total failure. Loss of the roadway and use of the bridge would severely hinder first responders and emergency personnel who rely on SR-1 and the Inlet Bridge to access areas in and around the Indian River area by land. SR-1 is also an important hurricane evacuation route in Delaware. In addition, economic interruptions could affect businesses and communities as the Inlet Bridge provides the only reasonable means of reaching the southside of Indian River Inlet via roadway in Delaware. Additionally, if no action is taken erosion will continue to expose hazardous road debris at North Beach that will increasingly threaten human and environmental safety.

### 2.4.2 Using Truck Haul Sand from Inland Sources to North Beach

Sand is available for purchase from inland quarries that is suitable for beach nourishment; however this is not an ideal option mainly due to the cost and volume of sand needed. Costs associated with transporting up to 600,000 cy of sand at approximately 12 cy per truck (50,000 trucks), as well as the wear and tear on the existing road system, increased emissions, and the increased traffic on an already congested roadway are all factors that negatively impact this option. In addition, this option does not improve navigability within Indian River Inlet. Therefore, using truck-hauled sand from inland sources is not recommended.

### 2.4.3 Transporting Sand from the Southside of the Inlet to North Beach

Accretion occurs on the southside Indian River Inlet beach due to the Inlet jetties disrupting the northward flow of sand caused by the longshore current; therefore the sand bypass system was installed to help transport sand back to North Beach. Given the sand bypass system has not been operational since 2020, adequate sand has accumulated onto the southside beach. One alternative is to move sand manually using front-end loaders and trucks from the southside beach to North Beach for nourishment; however this is not an ideal option. Cost and manpower associated with transporting up to 600,000 cy of sand at approximately 12 cy per truck (50,000 trucks), as well as the wear and tear on the vehicles and existing road system, increased emissions, and the increased traffic are all factors that negatively impact this option. In addition, removing up to 600,000 cy of sand



from southside would significantly alter the dune profile and leave the beach looking sparse. Therefore, using trucks to transport sand from the southside of the Inlet to North Beach is not recommended.

#### 2.4.4 Beneficial Use of Dredged Material from the Inlet Flood Shoal to North Beach

The preferred alternative is to dredge the Indian River Inlet flood shoal to an elevation of -24 ft NAVD and then use all dredged material for reconstructing the berm and dune system at North Beach for a length of over 5,000 linear feet of shoreline beginning from the north jetty and extending northward. Smaller truck-haul beach nourishment projects can no longer keep up with the rapid rate of erosion occurring at North Beach. This area needs to be rebuilt with a large volume of material that is delivered rapidly, and there is a significant quantity of sand available within the Indian River Inlet. Dredging the Inlet flood shoal also provides advance maintenance of the channel by reducing infilling of adjacent sediments. In addition to the current need for up to 600,000 cy of material, the flood shoal could be a renewable source that becomes part of a long-term management strategy for North Beach. Expecting that the flood shoal will recover sediment as it had during the previous USACE project in 2013 (nearly 100% of the material recovered after 4 years), we expect dredging will be needed again in approximately five years.

Up to 600,000 cy of mostly sandy (90%) material would be removed from the flood shoal by hydraulic pipeline dredging and then spread and graded using front-end loaders and bulldozers to construct the berm and dune system based on the construction template. The result will be a 100 to 150-ft wide berm with an elevation of +9.0 ft NAVD. The berm will have a dune on top with an overall dune crest elevation of +16.0 NAVD and width of 25 ft. The installation of dune fencing, crossovers, and dune grass planting would subsequently be conducted by the State of Delaware.

The beneficial use of dredged material would allow for the immediate improvement of navigation within Indian River Inlet and protection of critical infrastructure, like SR-1 and the Inlet Bridge, from erosion. Environmentally, dredging the flood shoal has short-term, temporary impacts to the Indian River Inlet ecosystem, but should not have any long-term detrimental impacts on the area. The use of staging areas is beneficial to the project by decreasing costs and emissions from the transport of personnel and equipment to the site. Environmental impacts from the use of staging areas will be minimal. The preferred design alternative is the most cost effective and least environmentally damaging alternative that would meet the project goals.

## 3. Environmental Analysis

The following subsections address the potential environmental impacts due to dredging the Inlet flood shoal and using all dredged material for dune reconstruction at North Beach.

### 3.1 Sediment and Water Quality

Anchor QEA, Inc. was hired to collect sediment samples from the Inlet flood shoal for geotechnical and chemical testing. Sample locations for five surface grab and three sediment cores will be replicated based on the previous project performed by the USACE in 2013. Sample locations and laboratory test methods are detailed in the *Indian River Flood Shoal Sampling and Analysis Plan* provided with the permit application documents.

\*Please note, the geotechnical and chemical evaluations of sediment samples will be provided as soon as available. Sample collection is currently scheduled for September 2024. Once received, sediment data will be compared to DNREC risk-based screening criteria to determine if contaminants are at low enough concentrations to pose no risks to human health or the environment. If contaminant levels exceed screening level values, additional risk assessment methods will be performed to determine whether dredging and beneficial use will have adverse impacts on humans and aquatic life at the Project site.

Additionally, as discussed in Section 2.3, physical turbidity controls will be placed in areas where dredging is to occur and will be monitored frequently, per State of Delaware requirements. Close construction administration will also be implemented to ensure no negative impacts to adjacent water quality (i.e. daily site inspections by the construction manager).

### 3.2 Habitat and Species

Initial construction activities could result in water column turbidity and loss of some benthic organisms, especially non-motile species in the immediate site vicinity. This would be a short-term impact as benthic recovery normally begins soon after the disturbance has ended. Any adverse impacts are expected to be temporary and localized during construction. In addition, beach nourishment can disturb organisms that inhabit the beach and cover potential food sources for seabirds. However, sea birds are highly mobile and should experience limited impacts during beach nourishment. Overall, the proposed project will enhance species habitat and resiliency.

#### 3.2.1 Aquatic and Terrestrial Biological Resources

The Delaware Seashore State Park dune system at North Beach supports many terrestrial species including the ghost crab (*Ocypode quadrata*), horseshoe crab (*Limulus polyphemus*), and wolf spider (*Lycosidae sp.*) and is host to many coastal plant communities. The predominant vegetation that grows in dune areas consists of American beachgrass (*Ammophila breviligulata*), seaside goldenrod (*Solidago sempervirens*), sea rocket (*Cakile dentata*), and beach clotbur (*Xanthium echinatum*). Since erosion removed mostly all of the preexisting dune system at North Beach, the communities of fauna inhabiting the dune and intertidal zone are scarce with little vegetation and biological activity.

North Beach also supports a variety of avian species including many species of gull such as the herring gull (*Larus smithsonianus*), laughing gull (*Leucophaeus atricilla*), and terns (*Sternidae sp.*). Gulls may be present within the upper and lower beach and may be observed feeding on carrion, plant matter or invertebrates within the wrack line. The lower beach including the intertidal zone is frequently inhabited by shorebirds including sanderling (*Calidris alba*), semipalmated sandpiper (*C. pusilla*), and western sandpiper (*C. mauri*), which utilize these areas to feed on invertebrate infauna. Other avians common to the dune and shoreline vary based on the time of year, but encompass a wide range of species including sandpipers like the killdeer (*Charadrius vociferus*), wrens such as the Carolina wren (*Thryothorus ludovicianus*) and a multitude of migratory songbirds including but not limited to: warblers, sparrows, robins, and finches.

Direct impacts to finfish would be minimal due to their ability to avoid the dredging equipment and project area during the construction period. Fish populations would most likely utilize a different area of Delaware Bay and return once the disturbance is complete.

### 3.2.2 Special Status Species

Data from the U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC) planning tool and species list for the State of Delaware was used to determine the potential for special status species to occur within the Project areas. Table 1 presents the federally listed special status species with the potential to occur in or adjacent to the Project area.

Table 1. Federal Special Status Species within the Project Area

Common Name	Scientific Name	Special Status	Special Status
Northern long-eared bats	<i>Myotis septentrionalis</i>	Mammal	Endangered species
Monarch butterfly	<i>Danaus Plexippus</i>	Insect	Candidate species
Tricolored bat	<i>Perimyotis subflavus</i>	Mammal	Proposed endangered
Roseate Tern	<i>Sterna dougallii dougallii</i>	Bird	Endangered species
Seabeach Amaranth	<i>Amaranthus pumilus</i>	Flowering Plant	Threatened species

None of the special status species are expected to be affected during dredging and placement activities. It is expected that both species of bats, monarch butterflies and roseate terns will prefer to leave or avoid the dredging area, if present. Lastly, it is very unlikely that any flowering plants will be affected by the Project since coastal erosion has caused severe dune scarping and loss of vegetation on North Beach.

### 3.2.3 Essential Fish Habitat

The Project area contains Essential Fish Habitat (EFH) for both highly migratory and New England/Mid-Atlantic species that may be adversely affected during dredging. However, the expected construction window during winter months accommodates many dredging restrictions, including for summer flounder and sand tiger sharks, and limits impacts to when aquatic species are not as active as in other seasons. For example, during summer months the Inlet is typically utilized as a forage area for juveniles and adults, and a nursery area for larvae and young of the year life stages. Juveniles and adults are expected to vacate the area once construction starts, and nearby waters outside of the Project site will remain and serve as EFH. The disturbance of bottom sediments associated with dredging could interfere with feeding, predation, and avoidance patterns; however, adverse impacts are expected to be temporary and highly localized. EFH Assessment Worksheets are included as an attachment to the permit package. No critical habitats have been identified within the Project area.

## 3.3 Cultural Resources

The Inlet flood shoal area has been previously dredged, in whole or in part, on seven occasions since 1970 for the purposes of obtaining sandy beachfill for the chronically eroding shoreline of North Beach or for filling in deep scour holes. Table 2 presents the dates and approximate dredged volumes of these seven operations.

Based on previous surveys, the probability of buried shipwrecks in the Inlet is relatively low. The Delaware Division of Historical and Culture Affairs, State Historic Preservation Office (SPHO) was consulted and concluded there are no known archeological sites or historic properties within the area of potential effect. Please see the SHPO letter included with the Permit Application Package.



Table 2. Historical dredging volumes of the Indian River Inlet flood shoal

Year	Volume (cy)
1973	774,000
1975	143,000
1978	700,000
1984	468,000
1990	175,000
2010	220,000
2013	520,000

To ensure any unanticipated find would be protected, in the unlikely event that any artifact or any unusual amount of bone, shell, or non-native stone is encountered during construction, work shall be immediately stopped and relocated to another area. The contractor shall stop construction within 30 ft of the exposure of these finds until a qualified archaeologist can be retained to evaluate the find. Examples of such cultural materials may include ground stone tools such as mortars, bowls, pestles, and manos; chipped stone tools such as projectile points or choppers; flakes of stone not consistent with the immediate geology, such as obsidian or shale; a historical trash pit containing bottles or ceramics; or structural remains. If the resources are found to be significant, they will be avoided or mitigated consistent with SHPO guidelines.

### 3.4 Aesthetics

The Project will result in aesthetic impacts, though they will be localized and temporary. A view of the dredge and machinery will be visible during operations, which are limited to the five-month construction window (fall and winter) and will not coincide with typical peak months of tourism and recreation.

### 3.5 Coastal Consistency

Delaware Coastal Programs manages the Delaware's Coastal Zone Management Federal Consistency reviews to ensure that state and federal actions in the coastal zone are consistent and coordinated. Delaware's Coastal Zone Act Program regulates new and existing manufacturing and heavy industrial activities in Delaware's Coastal Zone, which generally runs the length of the state along the Delaware River, the Delaware Bay, the Inland Bays, and the Atlantic Ocean. The Project is regulated under the Coastal Zone Management Act of 1972, as amended, and the National Oceanic and Atmospheric Administration's Federal Consistency Regulations (15 Code of Federal Regulations 930). Therefore, a Delaware Coastal management Program Federal Consistency Determination form has been completed to support the Project. The Project would restore the berm and dune system at North Beach using dredged material to provide enhanced resiliency and protection from coastal storms that threaten critical infrastructure and habitat. The Project includes best management practices and controls to ensure environmental protections.

### 3.6 Notice to Navigational Interests

Since the Project would occur within Indian River Inlet and adjacent to the Federal navigation channel, a Notice to Navigational Interests would be filed prior to initiating the work upon approval. Navigational buoys will indicate the location of the dredge pipeline for safety.

## 4. Summary

The current condition of North Beach suggests imminent risk to SR-1 and the Charles W. Cullen Memorial (Inlet) Bridge as a minor storm surge or swell event will likely breach the dune. The Indian River Flood Shoal Dredging and Beneficial Use Project will enhance coastal resiliency and protection from coastal storms that threaten critical infrastructure by dredging up to 550,000 cy of sediment and using all dredged material to rebuild the dune system at North Beach. DNREC is seeing emergency approval to replicate the project led by the USACE following Hurricane Sandy in 2013. No environmental detriments are expected to exist for the Project site. Construction impacts are determined to be temporary and will be controlled via project specifications and contract requirements.

## 5. References

Anchor-QEA, 2024. Indian River Flood Shoal Sampling and Analysis Plan

National Oceanic and Atmospheric Administration, Essential Fish Habitat Mapper online tool for New England/Mid-Atlantic species, available at: <https://www.habitat.noaa.gov/apps/efhmapper>.

State of Delaware, Division of Historic and Cultural Affairs, State Historic Preservation Office consultation for archeological and historical site review.

U.S. Army Corps of Engineers (USACE), 2014. Environmental Assessment – Flood Control and Coastal Emergency Repair Indian River Inlet North Shore, Sussex County, Delaware. Flood Control and Coastal Emergency Act (PL 84-99). Philadelphia District – U.S. Army Corps of Engineers.

U.S. Fish and Wildlife Service, Information for Planning and Consultation (IPaC) online tool, available at: <https://ipac.ecosphere.fws.gov>. Accessed June 5-6, 2024.