



Memorandum

June 13, 2016

To	Sarah W. Cooksey, Delaware Coastal Management Program		
Copy to	Tricia Arndt, Delaware Coastal Management Program; Brandon Gott, GHD		
From	Sean Snow	Tel	240-206-6841
Subject	Rehoboth Beach WWTP Ocean Outfall Consistency Certification	Job no.	86/18693/

1 Statement of Consistency

GHD Inc. has determined that the proposed Rehoboth Beach Wastewater Treatment Plant (RBWWTP) Ocean Outfall Project complies with Delaware's approved coastal management program and will be conducted in a manner consistent with such program.

2 Necessary Data and Information

2.1 Description of the proposed activity

On behalf of the City of Rehoboth Beach, Delaware, GHD performed an evaluation and developed an Environmental Impact Statement (EIS) for the RBWWTP Ocean Outfall Project. See Figure 1 in Attachment A for a vicinity map.

The proposed work is shown on Figure 2 (Attachment A) and described in Sections 4.3 to 4.5 of the EIS (attached). Work consists of the following:

- A new effluent pumping station within the site limits of the existing RBWWTP. The new pumping station is to be installed within the existing post aeration tanks at the facility that are no longer being used.
- A force main running north from the RBWWTP along the edge of canal, in Right of Way of USACE Lewis-Rehoboth Canal, along Roosevelt Street to DE-1B, under Rt. 1 Bridge, to State Road to Canal Street, under Rehoboth Ave and Grove Park, and in Right of Way of Henlopen Ave. to the Deauville Beach parking area. Approximately two miles of the force main will be constructed utilizing open cut installation, and approximately 500 linear feet within Grove Park and under Rehoboth Avenue will require Jack and Bore.
- An Ocean Outfall pipe will extend 6,000 linear feet east of the Deauville Beach parking area and will terminate at a diffuser in the Atlantic Ocean. HDD will be used from the Deauville Beach parking area as far east as technically feasible (at least 3000 ft), with the remaining length to be constructed utilizing trench excavation and backfill.

Information on the proposed CIP Upgrade I and II, and associated environmental impacts can be found in the *Rehoboth Beach Wastewater Treatment Preliminary Engineering Report (PER) and Rehoboth Beach Wastewater Treatment Plant Upgrade Environmental Report (ER)*.

2.2 Assessment of the proposed activity

2.2.1 Wetlands Management

According to the U.S. Environmental Protection Agency (EPA), wetlands are defined as “lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface” (US EPA, 2012). Wetlands listed in the U.S. Fish and Wildlife Service National Wetland Inventory (NWI) in the vicinity of the RBWWTP Ocean Outfall project are shown in Figure 3 (U.S. Fish and Wildlife Service, 2011).

Refer to Section 8.2.2.3 of the RBWWTP EIS for short term / temporary impacts of the Ocean Outfall Project on wetlands. The proposed force main alignment will predominantly follow existing roads, and no construction will be required in wetlands. A Federal 404 Wetland Jurisdictional Determination Report was performed along the proposed force main alignment for the *RBWWTP Effluent Force Main Study*. No Federal 404 wetlands were found along the proposed alignment; thus, the construction of the ocean outfall is not expected to have a short term impact on wetland biota/habitats. A portion of the outfall pipe crosses the beach, which is classified as an Estuarine and Marine Wetland; however, this portion will be directionally drilled beneath this area.

Refer to Section 8.2.3.3 of the RBWWTP EIS for long term / chronic impacts of the Ocean Outfall Project on wetlands. Effluent will be disposed over one mile offshore, where any nutrients or contaminants will be rapidly dispersed to concentrations below background levels. Thus, the effluent will have no impact on wetland biota/habitats.

A Wetlands and Subaqueous Lands permit will be applied for and obtained from DNREC Wetlands and Subaqueous Lands Section.

2.2.2 Beach Management

Refer to Section 9.10.2.3 of the RBWWTP EIS for short term / temporary impacts of the Ocean Outfall Project on aesthetics/recreation, including beach management. Construction for the ocean outfall will impact the public’s recreational usage of the nearby beach for the duration of construction. The staging area of the directional drilled portion of the pipeline is located in a parking lot used by beach goers and will have to be closed during construction. The trenching ships and directional drilling barge will be far enough off shore to not have a direct impact on visits to the beach but will definitely decrease the aesthetic appeal. Construction of the outfall will be performed during non-seasonal months, when beach tourism is minimal, so there will be very little impact to users of the beach.

Refer to Section 9.10.3.3 of the RBWWTP EIS for long term / chronic impacts of the Ocean Outfall Project on aesthetics/recreation, including beach management. The force main and outfall piping will be buried

below grade and have no long term impact on the recreational use or aesthetics of the area. The distance of the outfall from the shore will ensure no impact on the recreational use or aesthetics of the beach. The RBWWTP treated effluent meets criteria for primary contact in marine waters, even without dilution. However, to account for possible failure of the disinfection process, the state may delineate a “no-swim” area in the vicinity of the outfall. Since this area will be located more than a mile off-shore, it is unlikely that swimmers will be in the area, so impacts to recreation will be minimal. Similarly, fishing close to the outfall may be prohibited as a precaution.

A Coastal Construction Permit will be applied for and obtained from DNREC Division of Watershed Stewardship.

2.2.3 Coastal Waters Management

Refer to Section 7.4.4.3 of the RBWWTP EIS for short term / temporary impacts of the Ocean Outfall Project on surface water quality. Construction of the force main will have minimal impact on surface water quality due to increased erosion and sedimentation at the staging area during construction. Silt fencing and other erosion control methods will effectively mitigate this impact. Trenching in the ocean will agitate the ocean floor, which may temporarily increase turbidity and release existing biological and chemical substances that have settled into the sediment. As detailed in the EIS, the impacts from turbidity will be localized and minimal.

Refer to Section 7.4.5.3 of the RBWWTP EIS for long term / chronic impacts of the Ocean Outfall Project on surface water quality. The outfall piping will be buried, and the seabed contours will be restored to their original configuration after backfilling. Thus, there will be no long term effects on the near shore wave patterns or sedimentation patterns. As detailed in the EIS, nutrients within the effluent will be dispersed to levels indistinguishable from existing ocean nutrient levels well within the zone of initial dilution.

2.2.4 Subaqueous Lands and Coastal Strip Management

The Delaware Coastal Zone Act (CZA) program regulates existing heavy industrial activities and new and existing manufacturing activities in Delaware’s coastal strip, a portion of the Coastal Zone within approximately four miles of the ocean. Although the RBWWTP Ocean Outfall Project is located in the coastal strip, Section 5.20 of the Coastal Zone regulations state that the construction and/or operation of public sewage treatment plants “shall be deemed not to constitute initiation, expansion or extension of heavy industry or manufacturing” (DNREC, 2001). Thus, an application for a Coastal Zone Permit is not necessary for the RBWWTP Ocean Outfall Project.

2.2.5 “Public Lands” Management

Refer to Section 2.2.2 of this report for impact on “Public Lands”.

2.2.6 Natural Areas Management

The RBWWTP Ocean Outfall Project will not negatively impact natural areas in the vicinity of the project. The project will provide Inland Bay Watershed Management and protect and improve the Inland Bay water quality due to the removal of the existing point source into Rehoboth Bay of RBWWTP effluent discharge.

2.2.7 Flood Hazard Areas Management

Flood hazard information in the vicinity of the RBWWTP Ocean Outfall Project was obtained from the Federal Emergency Management Agency (FEMA) and is shown in Figure 4.

Refer to Section 7.5.2.3 of the RBWWTP EIS for short term / temporary impacts of the Ocean Outfall Project on floodplains. Although the majority of the ocean outfall force main is located outside of the 100 year floodplain, the directional drilling staging area is within the floodplain (FEMA, 2005). Construction of the ocean outfall thus has the potential for short term floodplain impacts in this area.

Refer to Section 7.5.3.3 of the RBWWTP EIS for long term / chronic impacts of the Ocean Outfall Project on floodplains. There will be no significant long term impacts on floodplains as all new construction for the Ocean Outfall Project outside of the treatment plant will be buried and the land returned to existing grade.

2.2.8 Port of Wilmington

Not applicable.

2.2.9 Woodlands and Agricultural Lands Management

Prime farmland, as defined by the U.S. Department of Agriculture, is "land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses ... It has the soil quality, growing season, and moisture supply ... needed to economically produce sustained high yields of crops when proper management, including water management, and acceptable farming methods are applied" (NRCS, 2012). Additional lands of concern are farmlands of statewide importance for the production of "food, feed, fiber, forage, and oil seed crops," which generally include "areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods (NRCS, 2012). Prime and Statewide Important Farmland in the vicinity of the RBWWTP Ocean Outfall Project is shown in Figure 5.

Refer to Section 7.6.2.3 of the RBWWTP EIS for short term / temporary impacts of the Ocean Outfall Project on prime farmland. No construction will occur within prime agricultural land, so there will be no short term impacts.

Refer to Section 7.6.3.3 of the RBWWTP EIS for long term / chronic impacts of the Ocean Outfall Project on prime farmland. The treatment capacity of the RBWWTP will not be impacted; thus, the project will not encourage any growth or development that could infringe upon agricultural land.

2.2.10 Historic and Cultural Areas Management

Historic properties located in the vicinity of the RBWWTP were obtained from the National Register of Historic Places and are shown in Figure 6. Historical sites in the vicinity include Peter Marsh House, All Saints' Episcopal Church, Women's Christian Temperance Union Fountain, and Thompson's Loss and Gain Site. These sites are located a sufficient distance from all construction activity that no impact to any site is anticipated.

A Phase I Archaeological survey was performed in areas of open cut force main construction located outside of the street layout; this included the area around Deauville Beach and Grove Park. These surveys came back negative, and no further surveys were recommended in these areas. See attached archaeological survey report.

Refer to Section 9.9.2.3 of the RBWWTP EIS for short term / temporary impacts of the Ocean Outfall Project on submerged cultural resources. A magnetometer and side-scan sonar survey was performed by Tidewater Atlantic in the vicinity of the potential ocean outfall from July 11 to July 15, 2011. Within the surveyed area, 22 magnetic anomalies and eight sonar targets were identified. None of these are in the vicinity of the proposed outfall pipe trending due east from the outfall staging area; therefore, there will be no impact to submerged cultural resources. Long term / chronic impacts to historic and cultural areas will not occur.

2.2.11 Living Resources

Living resources evaluated include any endangered or threatened animals or habitats that might be located within the project area, any fish or wildlife that might be impacted and vegetation that serves as a habitat or helps to stabilize soil and prevent erosion.

Refer to Sections 8.1.2.3 and 8.1.3.3 of the RBWWTP EIS for short term / temporary and long term / chronic impacts of the Ocean Outfall Project on terrestrial biota/habitat. Construction of the force main from RBWWTP to the ocean outfall will follow existing utilities and roadways and DNREC records show no state-rare or federally listed plants, animals or natural communities along the proposed alignment or at the proposed beach crossing. All land disturbed during construction will be returned to existing grade, and after completion, all components will be below grade.

Refer to Sections 8.3.1.2.3 and 8.3.1.3.3 of the RBWWTP EIS for short term / temporary and long term / chronic impacts of the Ocean Outfall Project on benthic biota. There will be no impacts to intertidal and nearshore benthic organisms as the pipe will be directionally drilled well below the ocean bottom in that area. Benthos in the vicinity of the outfall diffuser or the trenched portion of the outfall pipe will be temporarily impacted by trench dredging and backfill operations as the outfall pipe and diffuser are installed. The impacts of such an operation will be minor and short-term. Complete recovery is anticipated within three months to a few years (Scott, 2001).

Refer to Sections 8.3.2.2.3 and 8.3.2.3.3 of the RBWWTP EIS for short term / temporary and long term / chronic impacts of the Ocean Outfall Project on phytoplankton. Construction of the trenched portion of the outfall pipe will increase local turbidity, which may impact the ability of phytoplankton to receive sunlight for

photosynthesis. However, the potential mortality of phytoplankton caused by construction activity will not be as great as the natural mortality rates under normal circumstances (Louis Berger Group, Inc., 1999). Nutrients within the effluent will be rapidly dispersed in the ocean, preventing the conditions that lead to phytoplankton blooms.

Refer to Sections 8.3.3.2.3 and 8.3.3.3.3 of the RBWWTP EIS for short term / temporary and long term / chronic impacts of the Ocean Outfall Project on submerged aquatic vegetation (SAV). The ocean outfall will be directionally drilled under the dunes and beach and thus will not affect the vegetation in these areas and there is no record of SAV near the areas that will be trenched for construction of the outfall pipe and outfall diffuser. Nutrients within the effluent will be rapidly diluted and dispersed in the ocean, preventing the conditions that lead to algae blooms and SAV death.

Refer to Sections 8.3.4.2.3 and 8.3.4.3.3 of the RBWWTP EIS for short term / temporary and long term / chronic impacts of the Ocean Outfall Project on fish. Significant impacts to essential fish habitats (EFHs) are not expected. All of the fish species associated with the area of concern are highly mobile and migratory, and all EFHs near the project extend far beyond the area. Thus construction activity will, at most, only disturb a small fraction of the total EFH area.

Refer to Sections 8.3.5.2.3 and 8.3.5.3.3 of the RBWWTP EIS for short term / temporary and long term / chronic impacts of the Ocean Outfall Project on marine mammals. Construction during winter months will minimize impact to bottlenose dolphins, since even the northern migratory stock of coastal bottlenose dolphins has migrated south of the proposed ocean outfall. Conversely, harbor, gray, harp, and hooded seals migrate into the project area between September and May, and harbor porpoises, humpback whales, and fin whales are also more prevalent in the project area during winter months. No construction will occur on the dunes or beach, so impacts to seals from construction equipment is not expected. Equipment for construction will be selected to minimize sound intensity and duration which can potentially affect the acoustic ability or injure the hearing organs of marine mammals (Stetzar, 2011). Any nutrients or contaminants contained within the effluent will be rapidly dispersed to concentrations below background levels. Since the mammal species associated with the area of concern are highly mobile and migratory, exposure to any contaminant will be transient and minimal.

Refer to Sections 8.4.2.2.3 and 8.4.2.3.3 of the RBWWTP EIS for short term / temporary and long term / chronic impacts of the Ocean Outfall Project on sea turtles. The only construction activity that could potentially impact turtle populations will be the dredging of the portion of the outfall pipe not directionally drilled. Clamshell or Cutter Suction Dredger (CSD) will be utilized as these methods carry a low risk of adversely affecting sea turtles (USACE, 2009). Between December and April, when construction of the ocean outfall is most likely to occur, sea turtles migrate to warmer waters south of the Delaware coast line (Shoop & Kenney, 1992) (Mansfield, Saba, Keinath, & Musick, 2009). Any nutrients or contaminants contained within the effluent will be rapidly dispersed to concentrations below background levels. The sea turtles associated with the area of concern are mobile and migratory and thus exposure to any contaminant is expected to be transient and minimal.

2.2.12 Mineral Resource Management

Not applicable.

2.2.13 State Owned Coastal Recreation and Conservation

Refer to Section 2.2.2 of this report for impact on state owned coastal recreation and conservation.

2.2.14 Public Trust Doctrine

Public use of nearby waters will not be affected.

2.2.15 Energy Facilities

Not applicable.

2.2.16 Public Investment

Construction of the RBWWTP Ocean Outfall project will be financed through the Delaware Water Pollution Control Revolving Loan Fund (WPCRLF).

2.2.17 Recreation and Tourism

Refer to Section 2.2.2 of this report for impact on recreation.

Refer to Section 9.5.3.3 of the RBWWTP EIS for short term / temporary impacts of the Ocean Outfall Project on submerged cultural resources. Construction of the ocean outfall is expected to have little to no impact on local business. The local economy relies heavily on tourism during the summer months, and thus construction will be limited to the winter months to avoid impacts to retail sales.

2.2.18 National Defense and Aerospace Facilities

Not applicable.

2.2.19 Transportation Facilities

The majority of the force main leading from the RBWWTP to the ocean outfall will be through lightly travelled residential roads, and the proposed outfall staging area is not near any commercial developments. A section of the force main will transverse Rehoboth Avenue / Highway 1, the area's commercial corridor. The adverse effects of construction on local businesses can be mitigated by constructing appropriate pedestrian and traffic controls and rerouting traffic to minimize temporary reduction in access.

2.2.20 Air Quality Management

Refer to Section 7.2.23 of the RBWWTP EIS for short term / temporary impacts of the Ocean Outfall Project on air quality and odor. Minor short term impacts to air quality along the force main and at the directional drilling staging area will occur as a result of emissions from construction vehicles and equipment, especially the drilling equipment and barge needed for directional drilling. There will be no significant long term air quality / odor impacts from the disposal of treated effluent through an ocean outfall. Nutrients within the

effluent will be rapidly dispersed in the ocean, preventing the high concentrations that lead to algae blooms and odor production.

2.2.21 *Water Supply Management*

The RBWWTP Ocean Outfall Project will not affect the allocation or use of waters of the state. The effluent discharge point will only be moved from the Lewes-Rehoboth Canal to the location of the outfall, 5,430 feet offshore. Discharge into the ocean will have a much smaller impact on water quality than discharge into the Bay since the volume of water in the ocean is much greater.

2.2.22 *Waste Disposal Management*

Solid waste disposal at the RBWWP will not be impacted by the Ocean Outfall Project.

2.2.23 *Development*

The capacity of the RBWWTP will not be affected by the RBWWTP Ocean Outfall Project, and therefore, no growth or development will be encouraged by the project.

2.2.24 *Pollution Prevention*

The amount or quality of solid waste produced by the RBWWTP will not be impacted by the RBWWTP Ocean Outfall Project.

2.3 *Assessment of the proposed activity*

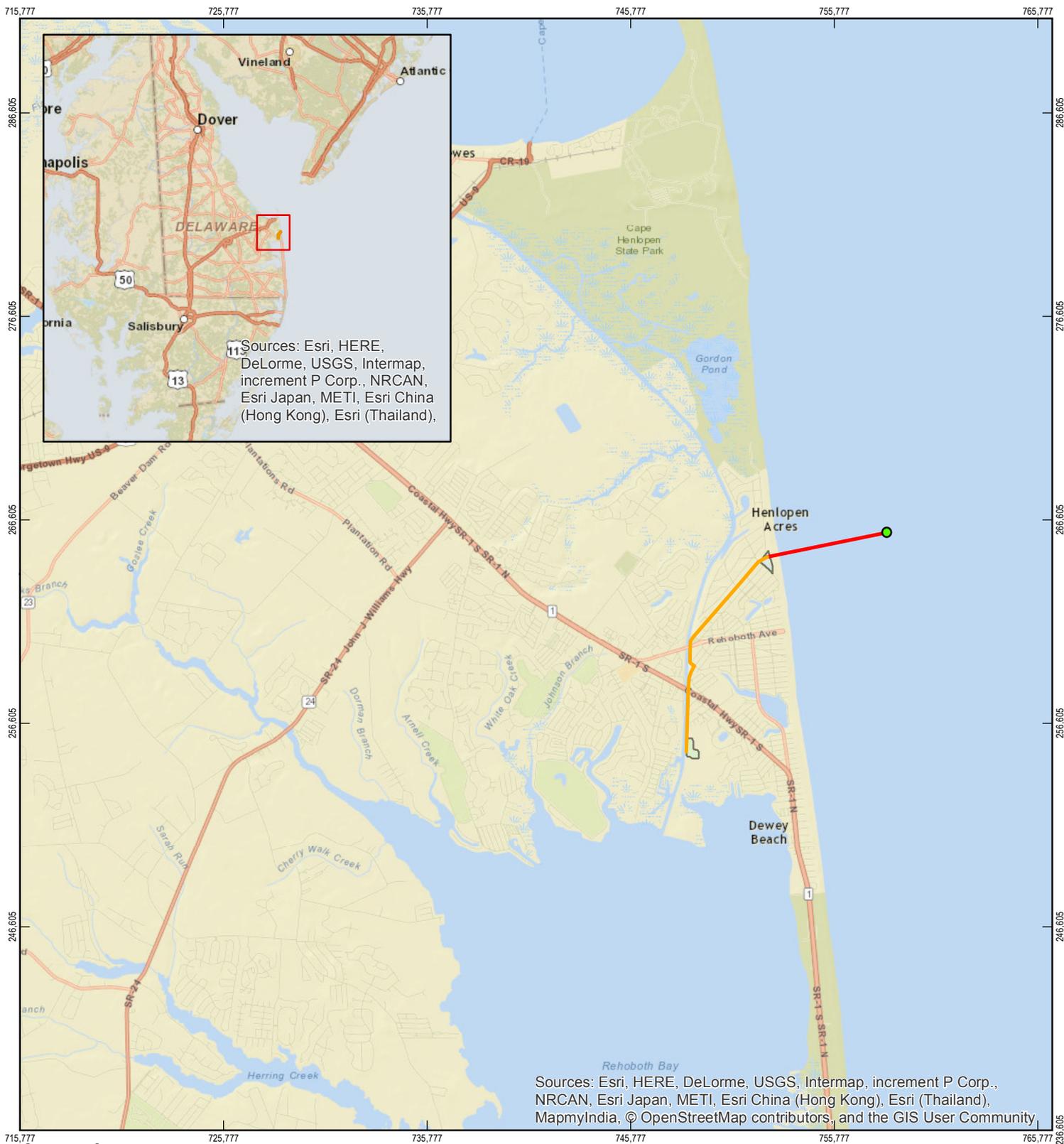
The proposed RBWWTP Ocean Outfall Project, its associated facilities, and their effects, are all consistent with the enforceable policies of the Delaware Coastal Management Program.

3 References

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- FEMA. (2005). *Current FEMA Issued Flood Maps*. Retrieved 2011, from <http://www.msc.fema.gov/>
- Louis Berger Group, Inc. (1999). *Environmental Report: Use of Federal Offshore Sand Resources for Beach and Coastal Restoration in New Jersey, Maryland, Delaware, and Virginia*. U.S. Department of the Interior Minerals Management Service.
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- US EPA. (2012, March 6). *Wetlands Definitions*. Retrieved April 9, 2012, from Water: Wetlands: <http://water.epa.gov/lawsregs/guidance/wetlands/definitions.cfm>
- USACE. (2009). *A biological assessment for potential impacts to federally listed threatened and endangered species of sea turtles, whales, and the shortnose sturgeon resulting from the Delaware River main stem and channel deepening project*. Philadelphia, PA.

4 Attached Figures

- Figure 1 Vicinity Map
- Figure 2 Plan View
- Figure 3 Wetlands
- Figure 4 Floodplains
- Figure 5 Soils and Farmland
- Figure 6 Historic Properties



Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand),

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Legend

- Ocean Outfall
- Force Main
- Proposed Outfall Pipe
- Directional Drilling Staging Area
- Rehoboth Beach WWTP

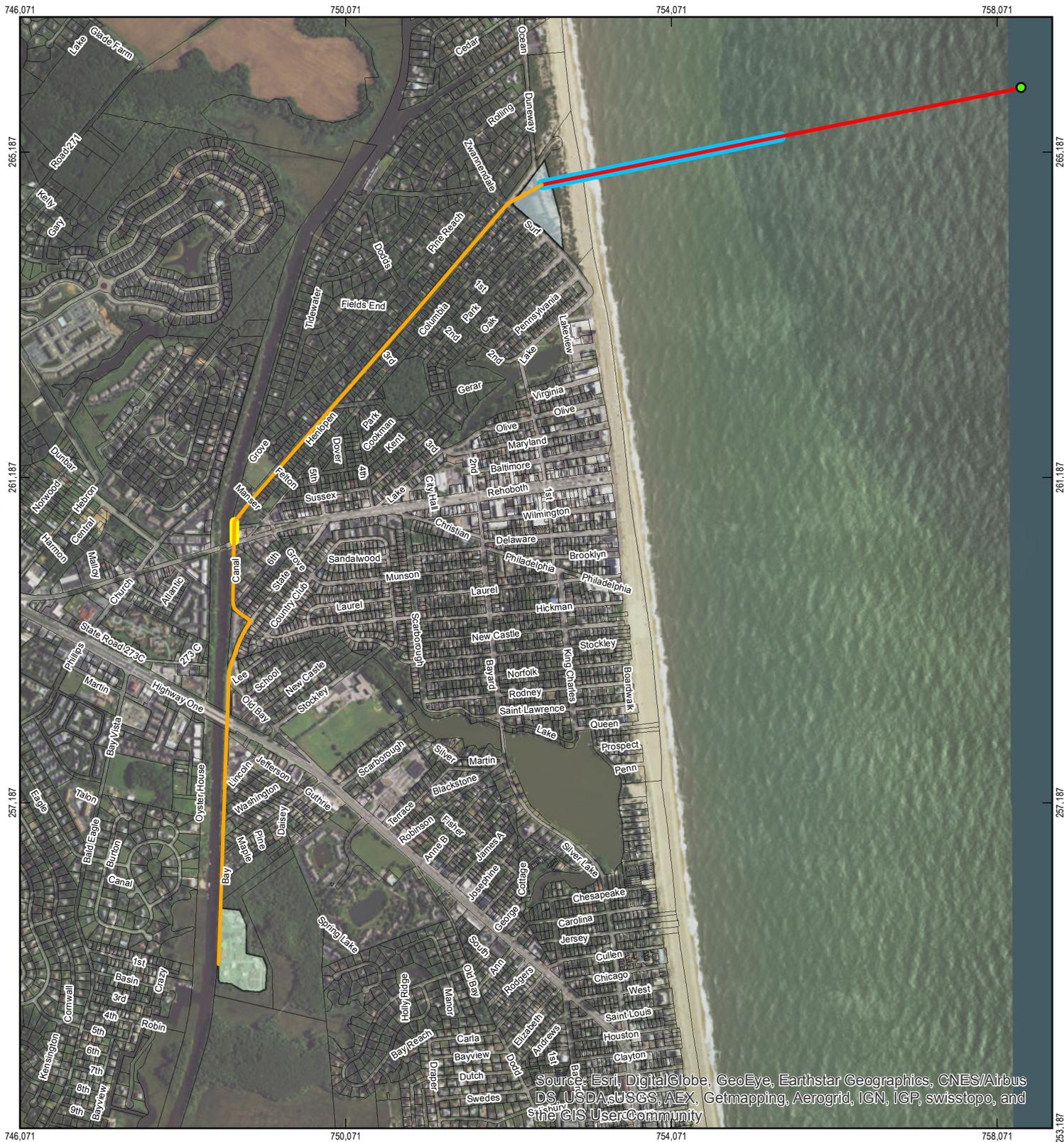
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City of Rehoboth Beach
 Ocean Outfall Project
 Vicinity Map

Job Number | 86-14327
 Revision | A
 Date | Feb 01, 2016

Figure 1



Legend

- Ocean Outfall
- Ocean Outfall Pipe
- Force Main
- Force Main Jack and Bore
- Outfall Pipe HDD Portion (Minimum)
- Directional Drilling Staging Area
- Rehoboth Beach WWTW

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City of Rehoboth Beach
 Ocean Outfall Project

Job Number 86-14327
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Plan View

Figure 2



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

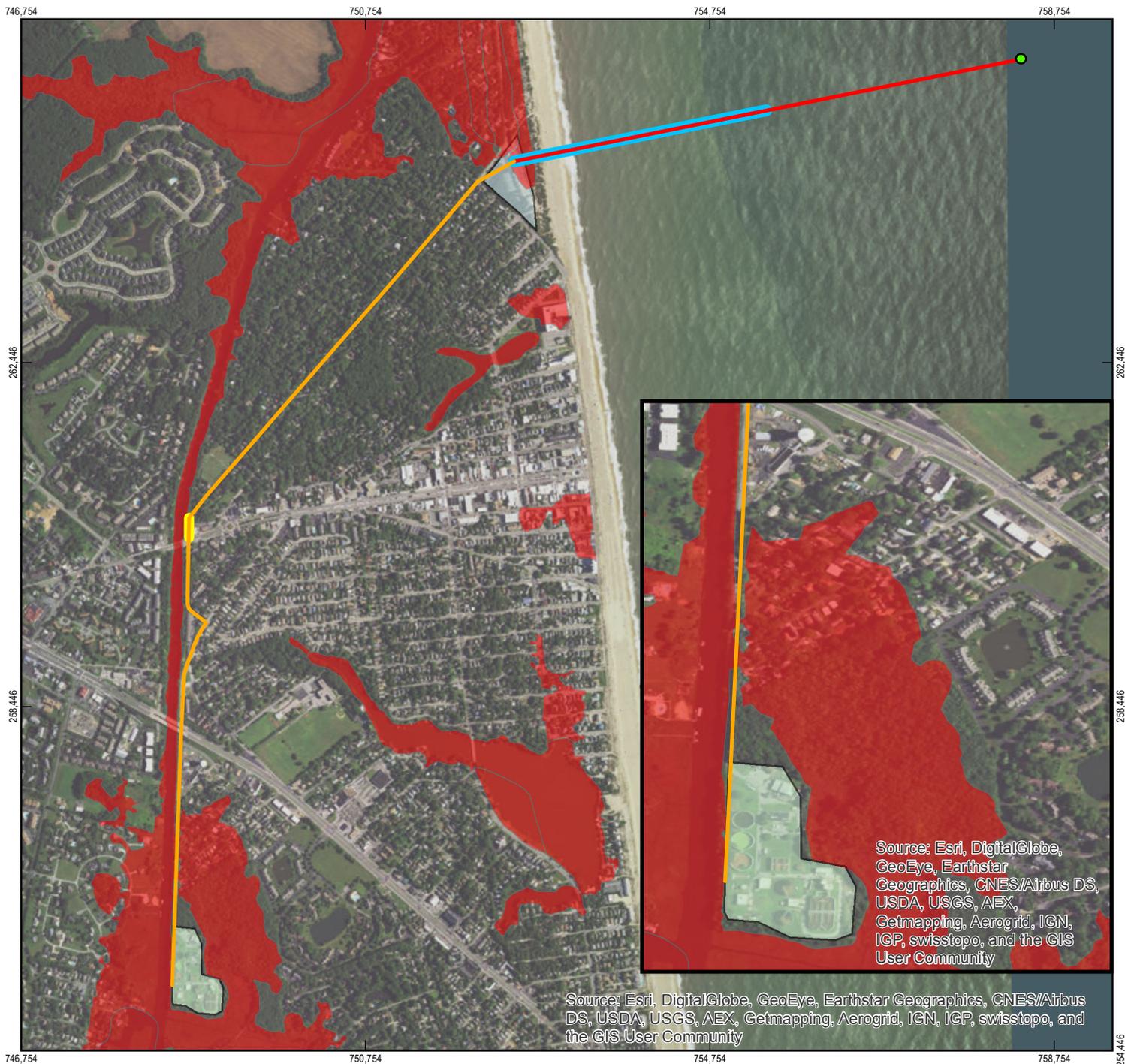
Legend

- Ocean Outfall
 - Force Main
 - Ocean Outfall Pipe
 - Force Main Jack and Bore
 - Outfall Pipe HDD Portion (Minimum)
 - Directional Drilling Staging Area
 - Rehoboth Beach WWTP
- Wetlands**
 - Estuarine and Marine Deepwater
 - Estuarine and Marine Wetland
 - Freshwater Emergent Wetland
 - Freshwater Forested/Shrub Wetland
 - Freshwater Pond
 - Lake

Data Source: U.S. Fish and Wildlife Service. (2011). Geospatial Wetlands Digital Data.

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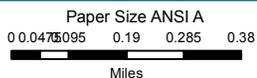
Figure 3



Legend

- Ocean Outfall
- Force Main
- Force Main Jack and Bore
- Ocean Outfall Pipe
- Outfall Pipe HDD Portion (Minimum)
- Directional Drilling Staging Area
- Rebooth Beach WWTP
- Flood Zone**
- 100-year Flood Zone

Data Source: Current FEMA Issued Flood Maps. Retrieved from <http://www.msc.fema.gov/>



Horizontal Datum: North American 1983
Grid: GCS North American 1983



City of Rehoboth Beach
Ocean Outfall Project

Job Number 86-14327
Revision A
Date Mar 07, 2016

Floodplains

Figure 4



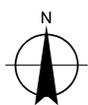
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> ● Ocean Outfall — Force Main — Ocean Outfall Pipe — Force Main Jack and Bore — Outfall Pipe HDD Portion (Minimum) Directional Drilling Staging Area Rehoboth Beach WWTP <p>Farmland Classification</p> <ul style="list-style-type: none"> All areas are prime farmland Farmland of statewide importance Prime farmland if drained Prime farmland if irrigated | <p>Soils</p> <ul style="list-style-type: none"> AbC: Acquango-Beaches complex AsA: Askecksy loamy sand AuB: Acquango-Urban land complex Br: Broadkill mucky peat, very frequently flooded* BuA: Brockatonorton-Urban land complex DnB: Downer loamy sand DnC: Downer loamy sand DoA: Downer sandy loam DoB: Downer sandy loam EvB: Evesboro loamy sand EvD: Evesboro loamy sand | <ul style="list-style-type: none"> FaA: Fallsington sandy loam FhB: Fort Mott-Henlophen complex FmA: Fort Mott loamy sand FmB: Fort Mott loamy sand GrA: Greenwich loam GrB: Greenwich loam GuB: Greenwich-Urban land complex HnA: Hammonton sandy loam HvA: Hurlock sandy loam IeA: Ingleside loamy sand IeB: Ingleside loamy sand KsA: Klej loamy sand LhA: Lenni silt loam Ma: Manahawkin muck, frequently flooded MmA: Mullica mucky sandy loam Pk: Puckum muck, frequently flooded Pu: Purnell peat, very frequently flooded, tidal PyA: Pineyneck loam Sp: Saltpond mucky sand, very frequently flooded,* UbB: Udorthents, borrow area UfB: Udorthents, refuse substratum UzC: Udorthents W: Water |
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Data Source: NRCS. (2006). Web Soil Survey.

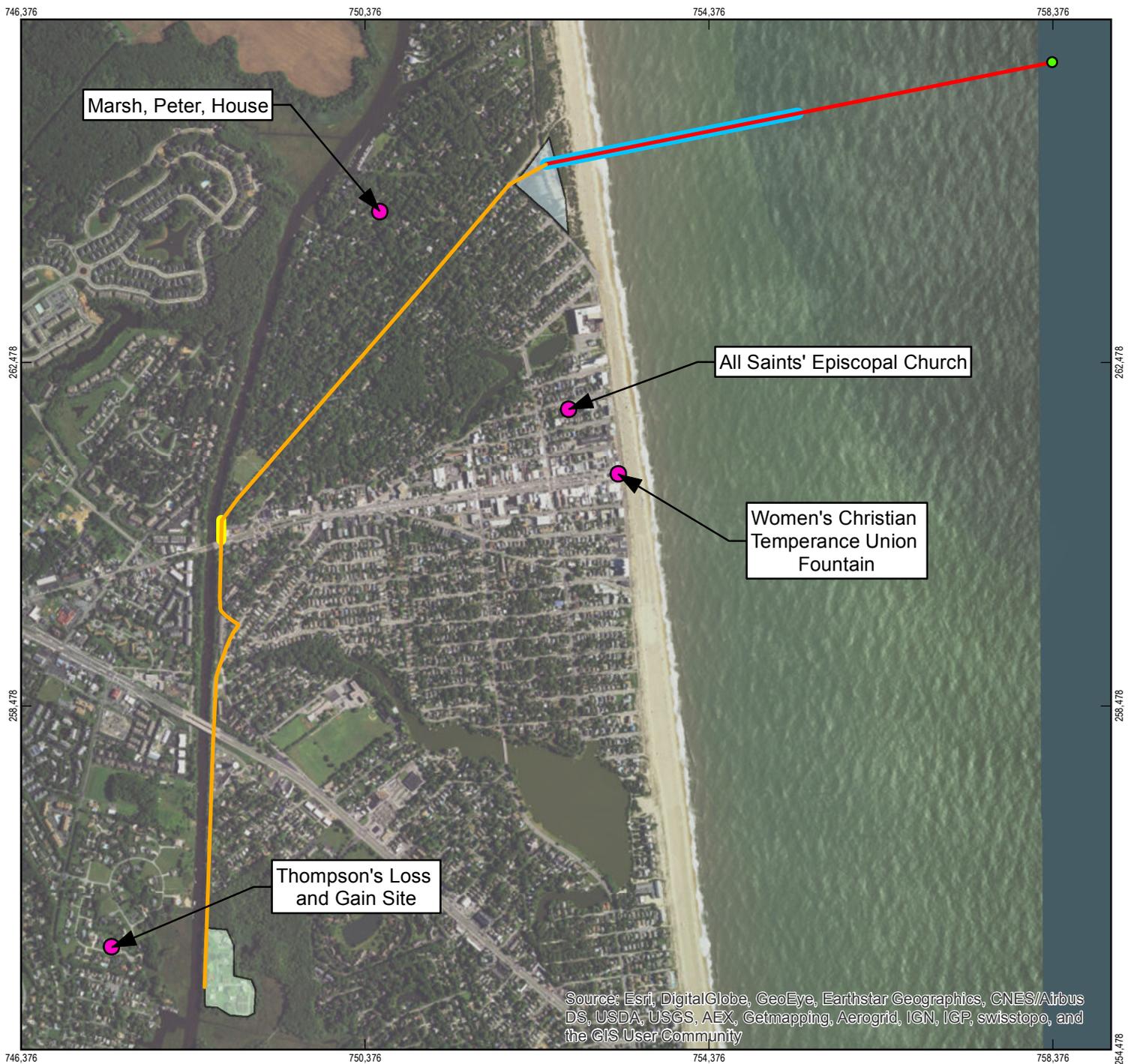
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City of Rehoboth Beach
 Ocean Outfall Project

Job Number 86-14327
 Revision A
 Date Feb 01, 2016

NRCS Soil Types, Statewide Important Soil, and Prime Farmland **Figure 5**



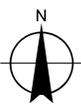
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- Ocean Outfall
- Force Main
- Force Main Jack and Bore
- Ocean Outfall Pipe
- Outfall Pipe HDD Portion (Minimum)
- Directional Drilling Staging Area
- Rehoboth Beach WWTP
- Property in the National Registry of Historical Places

Data Source: Advisory Council on Historic Preservation (ACHP). (2004). Protection of Historic Properties

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City of Rehoboth Beach
 Ocean Outfall Project
 Historic Properties

Job Number | 86-14327
 Revision | A
 Date | Feb 01, 2016

Figure 6

USACE Permit Application and Attachments

17. DIRECTIONS TO THE SITE

Directions to RBWWTP: From Rehoboth Ave., take Rd 272/State Rd south, and continue for 0.7 mile, continue on to Bay Rd. The Treatment Plant is at the end of Bay Road.

Directions to Outfall Staging Area: From Rehoboth Ave., take Columbia Ave north, take first left on to Grove Street and first right onto Henlopen Ave. Outfall Staging Area is 1 mile north, at the intersection of Henlopen Ave. and Rd 300/Duneway.

18. Nature of Activity (Description of project, include all features)

Proposed work is shown on Figure 2 (Attachment A) and described in Sections 4.3 to 4.5 of the EIS (Attachment C). Work consists of:

- A new effluent pumping station within the site limits of the existing RBWWTP
- A force main running north from the RBWWTP along the edge of canal, in Right of Way of USACE Lewis-Rehoboth Canal along Roosevelt Street, along DE-1B under Rt. 1 Bridge to State Road, along Canal Street, under Rehoboth Ave and Grove Park, and in Right of Way of Henlopen Avenue to the Deauville Beach parking area. Approximately two miles of the force main will be constructed utilizing open cut installation, and approximately 500 linear feet under Rehoboth Avenue to Grove Park will require Jack and Bore.
- An Ocean Outfall pipe extending 6,000 linear feet east of the Deauville Beach parking area and terminating at a diffuser in the Atlantic Ocean. HDD will be used from the Deauville Beach parking area as far east as technically feasible (at least 3,000 ft), with the remaining length to be constructed utilizing open-cut trench excavation and backfill.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Refer to Section 2.2 of the RBWWTP Ocean Outfall Project Final Environmental Impact Statement (EIS) (Attachment C). Based on the Total Maximum Daily Load (TMDL) developed for Rehoboth Bay, a consent order between the City of Rehoboth Beach and DNREC was established, requiring the elimination of discharge of treated effluent from the Rehoboth Beach WWTP into Rehoboth Bay. As detailed in Section 3 of the EIS, the most technically feasible, cost effective and environmentally friendly alternative for the City of Rehoboth is a dedicated ocean outfall.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Approximately 3000' linear feet of the ocean outfall will require trench excavation and backfill. This portion (~40 to 50 feet wide) will remove approximately 41,000 cubic yards of material, but around 3,000 cubic yards will be reused to fill in the exposed pipe. The ultimate disposal method for the remaining material is pending decision from DNREC, but will be one of the following three options:

- Cast aside
- Transported to an approved disposal site (aquatic or land based)
- Used for beach restoration

21. Type(s) of Material Being Discharged and the Amount of Each Type In Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
approximately 41,000 CY of sand and silt		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres Pending decision from DNREC.
or
Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

Best Management Practices will be utilized during construction to mitigate impacts to the areas. These include, pile driving sound attenuation, mechanical dredging in lieu of pipeline or hopper, seasonal constraints to minimize impacts to migratory species, shallow vessels to maximize navigational clearance for marine species, etc. Refer to attached ESA consultation guidance responses for mitigation efforts and potential impacts. Refer to the City of RBWWTP Ocean Outfall Project Final EIS (Attachment C), which details the affected physical, biological, and human environments and the environmental consequences.

24. Is Any Portion of the Work Already Complete? Yes No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See Attachment B

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
DNREC	Coast. Zone Mgt. Act	To be determined	To be determined		
DNREC	Wetland&Subaqueous	To be determined	To be determined		
DNREC	Coastal Construction	To be determined	To be determined		

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.


SIGNATURE OF APPLICANT


DATE


SIGNATURE OF AGENT

2016-02-11
DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than \$10,000 or imprisoned not more than five years or both.

Delegated Agencies Review Responses and Correspondence



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF FISH & WILDLIFE
89 Kings Highway
Dover, Delaware 19901

OFFICE OF THE
DIRECTOR

Phone: (302) 739-9910
Fax: (302) 739-6157

October 12, 2015

Sean Snow
GHD Inc.
16701 Melford Boulevard, Suite 330
Bowie, Maryland 20715

Re: GHD 2015 Rehoboth Outfall

Thank you for contacting the Delaware Division of Fish and Wildlife Species Conservation and Research Program (SCRP) about information on rare, threatened and endangered species, unique natural communities, and other significant natural resources as they relate to the above referenced project. For information regarding project activities, the GHD review request directed SCRPs to the Final Environmental Impact Statement (EIS): <http://www.dnrec.delaware.gov/wr/Services/Pages/Financial-Assistance-Branch-proposed-Rehoboth-ocean-outfall.aspx>. SCRPs understands that significant project components have been updated from the Final EIS or are yet to be determined. We appreciate the opportunity to provide input early on in the process, recognizing that we will have an opportunity to review the project again once the scope of work is clarified. In our October 7, 2015 phone call, we identified a number of project components we look forward to hearing more about:

- A plan for disposal of dredge material that includes details about dredge material deposition activities (e.g. how and where the material will be offloaded) and specific site locations that are being considered for dredge material deposition.
- Details regarding the pipe lay down including laydown site location, time of year, duration of lay down activities and site utilization, and methods employed to offload and distribute materials and equipment. These details will provide SCRPs the opportunity to better assess potential impacts to dunes and associated vegetation.

Additionally, if other project activities are updated and/or altered, please contact us again so that we may have an opportunity to complete a thorough review on those components.

Comments regarding Terrestrial Project Components

Piping Plover

The federally listed piping plover (*Charadrius melodus*) has been observed migrating through and roosting on the beach within the proposed work area. In order to minimize the chance that piping

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through Science and Service***

plovers will be impacted by this project SCRП recommends that work/staging on the beach be avoided from March 15th through June 15th and then from August 1st through September 15th. If work during these times cannot be avoided, for further guidance please contact Matthew Bailey at (302) 735-8677, or at, matthew.bailey@state.de.us.

Impacts to Dunes and Associated Vegetation

There appears to be discrepancies between pipe laydown locations presented at the Joint Permit Processing meeting on June 18, 2015 and the laydown locations published in the Final EIS. As mentioned above, it is unclear how the pipe that will be laid down on the beach will be delivered to the site. It is also unclear where said pipe will be laid down (e.g. open beach, dune slope, etc.). Once these details are worked out SCRП requests the opportunity to comment on the updated plans.

There are historical records of rare Lepidopteran species (i.e. butterflies and moths) having been observed in the vicinity of the dunes associated with this project, although no known recent surveys have been conducted to determine that said species are still extant at the site. SCRП recommends that disturbance to the dunes be kept to an absolute minimum. For example, there is a vehicular access to the beach on the north side of the Deauville parking lot. SCRП suggests that this access should be used to the greatest extent possible to move equipment on and off the beach and for a lay down location for pipes.

Seals

Several species of seals (harbor, gray, harp, hooded) are known annual migrants to Delaware's waters, typically during the cooler months (November through April). Although the majority of seals that occur in Delaware are juveniles, adult harp seals have been observed hauling out on Delaware's Atlantic Coast beaches in recent years. If construction activities on the beach are to be conducted during the winter months, the applicant should be cognizant that seals may be encountered. Marine mammals are federally protected by the Marine Mammal Protection Act. As such, if a seal is observed hauled out on the beaches any time during the project period, work should stop immediately and the Marine Education, Research & Rehabilitation Institute should be notified immediately for guidance (302-644-2678).

Osprey

There is an osprey (*Pandion haliaetus*) nest on a cell phone tower to the east of Route 1 as it crosses over the Lewes/Rehoboth Canal. Although this species migrates south in the winter, it does exhibit nest site fidelity, returning to the same nest site year after year. Osprey nests are federally protected when containing eggs and young. This species typically migrates to Delaware in mid-March and returns south in late fall. Working within 500 feet of a nest during nesting, and before young have fledged, could impact this species. SCRП recommends that work not occur within 500 feet of this nest from March 1st through August 31st. If you require further guidance, please contact Kate Fleming at (302) 735-8658, or at kate.fleming@state.de.us.

Fisheries/Water Quality

Because the directional drilling will be conducted at the edge of the canal, we recommend a frac-out contingency plan be in place prior to the start of project activities. The contingency plan should include the following:

- 1) A provision to contain materials released,
- 2) A clean-up protocol, and

- 3) Arrangements for an experienced representative (drilling crew or consultant) to watch the site at all times so that the operation can be shut down immediately in the event a frac-out occurs.

Comments Regarding Atlantic Ocean Components

Atlantic Sturgeon

This area of the Delaware's Atlantic coast is utilized by the federally endangered Atlantic sturgeon (*Acipenser oxyrinchus*). Telemetry data show a strong seasonal pattern of arrival and departure of Atlantic Sturgeon along Delaware's coast, with marine-phase Atlantic Sturgeon returning to Delaware's coastal waters in mid-late March through mid-May and departing between early September and mid-December (Dr. Dewayne Fox personal communication). During the warmer months, these animals will either return to Delaware River to spawn (mature adults), occupy river/upper estuary foraging areas (primarily sub-adults), or remain in the lower estuary mouth/Cape Henlopen region, including the coastal habitats of Delaware's Atlantic Coast. Large numbers of adult Atlantic sturgeon are known to consistently occupy habitats in and around the proposed outfall location for prolonged periods of time between May and October. During the period mid-December through mid-March telemetry arrays have detected few, if any, telemetered Atlantic Sturgeon in Delaware's coastal region and this would be the best time to conduct trenching activities to avoid impacts to this species.

Note that because these sturgeons are federally protected under the U.S. Endangered Species Act, if this project requires a federal permit, a Section 7 consultation by the federal agency responsible for permitting the action may be required.

Sea turtles and Marine Mammals

The status of sea turtle and marine mammal populations are currently not monitored within state waters. As such our Division does not have GIS data or maps depicting the distribution of these species in relation to the project area. However, there is enough evidence from satellite tracked individuals, aerial surveys, incidental capture, and sightings to confirm that the Atlantic coast of the U.S., including Delaware, is a migratory pathway for many sea turtle species, including loggerhead, Kemp's Ridley, green and leatherback sea turtles. These sea turtles migrate northward from southern wintering areas and enter estuaries along the coast to forage, including Delaware Bay and the Inland Bays. The timing and route of this migration has been documented via satellite tracked individuals and occurs from early spring to late fall. Additionally, aerial surveys and sightings confirm the occurrence of cetaceans along Delaware's Atlantic coast; bottlenose dolphins (*Tursiops truncatus*) occur daily during the warmer months often occurring just outside the surf zone, large whales such as humpback and fin whales have been sighted just offshore during spring and fall migratory periods and have come as far inshore as the mouth of Delaware Bay and Indian River Inlet. Finally, several species of seals (harbor, gray, harp, hooded) are known annual migrants to Delaware's waters, typically during the cooler months (November through April).

In-water installation of the pipeline is not likely to impact these species provided installation methods do not include the use of equipment that emits pressure waves and sound bursts that can affect the acoustic ability or injure the hearing organs of these species. If a hopper dredge is used for any phase of the project, there is a potential to impact sea turtles as the mortality of sea turtles in hopper dredging operations is well documented. However, not much information exists in regards to sea turtle interactions with cutter dredges. For that reason, it would be best to conduct in-water work during a time of year when these species are less likely to be present (winter months).

Sharks

The Delaware Bay and its nearby coastal waters are used extensively by sandbar (*Carcharhinus plumbeus*) and sand tiger (*Carcharias taurus*) sharks, which are listed as a NOAA Species of Concern. Delaware's coastal waters provide important summer habitat to juvenile sand tigers from June to October and migratory habitat as they move to and from overwinter grounds in the spring and fall/early winter. Extensive utilization of the Delaware coast by large juvenile and adult sand tigers regardless of size or sex has also been documented in the summer and fall. Delaware Bay also serves as one of the largest nursery habitats for young-of-year and juvenile sandbar sharks along the Atlantic coast. Like sand tigers, juvenile sandbar sharks have been documented in Delaware's coastal waters as they migrate to and from their wintering grounds in the south, typically in the spring and fall. These species do not overwinter in Delaware's coastal waters. As such, to avoid impacts to important shark species, winter (December-March) may be the best time to conduct this work.

Long term impacts to the benthos

As mentioned above, the habitat where the outfall is proposed is ideal for Atlantic sturgeon. As benthic feeders, the potential degradation of benthic habitats associated with the outfall discharge is of utmost concern. Benthic sampling surrounding the proposed outfall location has not yet taken place, but according to the Final EIS and more recent communications, plans are in place to do so before and after construction. SCRP recommends implementing a statistically valid benthic sampling design to assess the composition of benthic communities surrounding the outfall. It would be best if sampling is conducted both prior to construction as well as on an annual basis following construction to allow for long-term monitoring (e.g. 10 years), as degradation may not be detectable within the first few years after the structure has been put in place. Additionally, samples should be taken across seasons to account for seasonal variation.

State Natural Heritage Site

Because federally listed species are present, this project is within a State Natural Heritage Site. State Natural Heritage Sites and Delaware National Estuarine Research Reserves are identified as "Designated Critical Resource Waters" by the Army Corps of Engineers (ACOE), and as such are subject to the restrictions and limitations imposed through Nationwide Permit General Condition No. 22. A copy of this letter shall be included in any permit application or pre-construction notification submitted to the Army Corps of Engineers for activities on this property.

If you propose to use Nationwide Permit No. 3, 13, 18, 29, 39 or 42 the State of Delaware has denied 401 Water Quality Certification (WQC) and Coastal Zone Federal Consistency Concurrence (CZM) for these Nationwide Permits in Designated Critical Resource Waters. In order to use any of these six Nationwide Permits at this site you must apply for a project-specific Water Quality Certification (WQC) and Coastal Consistency Determination (CZM) from the appropriate offices at DNREC. To obtain the application materials and for all information regarding WQC, contact DNREC's Wetlands and Subaqueous Lands Section at (302) 739-9943. For information pertaining to CZM, contact DNREC's Coastal Programs at (302) 739-9283.

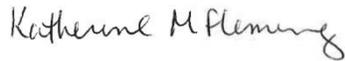
If you propose to use Nationwide Permit No. 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, or 44, this Designated Critical Resource Water designation may require you to obtain authorization through some other nationwide or general permit, or an individual permit from the Army Corps of Engineers. You should review the Nationwide Permit General Conditions and Regional Conditions for Delaware (see, in particular, Nationwide Permit General Condition No. 19) to determine what notification requirements or restrictions might be applicable for your activity. Please contact the Army Corps of Engineers at (215)

656-6728 if you have questions or require additional information regarding the Nationwide Permit Program.

We are continually updating our records on Delaware's rare, threatened and endangered species, unique natural communities and other significant natural resources. If the start of the project is delayed more than a year past the date of this letter, please contact us again for the latest information.

Please feel free to contact me with any questions or if you require additional information.

Sincerely,

A handwritten signature in cursive script that reads "Katherine M. Fleming".

Kate Fleming
Wildlife Biologist/Environmental Review Coordinator
(302) 735-8658; fax: (302) 653-3431; Kate.Fleming@state.de.us

(See invoice on next page)

INVOICE - PAYMENT DUE

It is our policy to charge a fee for this environmental review service. This letter constitutes an invoice for \$280.00 (\$35.00/hour for a minimum of one hour). Please make your check payable to “Delaware Division of Fish and Wildlife” and submit to:

DE Division of Fish and Wildlife
89 Kings Hwy.
Dover, DE 19901
ATTN: Pamela Severson

**In order for us to properly process your payment, you must reference
“GHD 2015 Rehoboth Outfall” on your check.**

cc: Pamela Severson, Fish and Wildlife Coordination/Accounting; Code to 72900



STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF FISH & WILDLIFE
89 Kings Highway
Dover, Delaware 19901

OFFICE OF THE
DIRECTOR

Phone: (302) 739-9910
Fax: (302) 739-6157

April 18, 2016

Brandon Gott
GHD
16701 Medford Blvd, Suite 330
Bowie, MD 20715

Re: Rehoboth Outfall

Dear Mr. Gott:

Thank you for contacting the Species Conservation and Research Program (SCRP) about information on rare, threatened and endangered species, unique natural communities, and other significant natural resources as they relate to the proposed Rehoboth Outfall project.

Brandon Gott from the GHD consulting firm contacted Matthew Bailey, wildlife biologist from SCRCP, regarding time of year restrictions contained in a comment letter issued by SCRCP in October 2015. The letter recommended that work be avoided on the beach from March 15 through June 15 in order to minimize disturbance to Piping Plover (*Charadrius melodus*). Brandon stated that some of the proposed work on the beach might not be completed until April 1.

After the discussing with Brandon the details of the work involved, Matthew offers the following recommendations:

- If work (including staging) on the beach portion of the project cannot be completed by March 15, a manager for the project should contact Matthew at the contact points listed below. This contact should be made as early as possible once it is determined that work may continue beyond March 15.
- If Matthew determines that the nature of the work left to be completed has the potential to disturb Piping Plovers, he may recommend that a biologist familiar with Piping Plover identification should be present while work is being conducted after March 15.
- If the biologist observes Piping Plovers in the work area, work should cease until the plovers leave or until Matthew can be contacted for further guidance.

Additionally, Brandon requested comments on a proposed vault facility that will house valves supporting the functions of the outfall pipe. SCRCP requests that project managers contact SCRCP botanist Bill McAvoy (302) 735-8668 regarding minimization of disturbance to plants and habitat and use of appropriate plant species during restoration of the vault site.

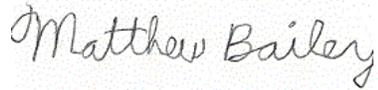
A review of our database indicates that there are currently no records of state-rare or federally listed plants, animals or natural communities at this project site. As a result, at present, this project does not lie within a State Natural Heritage Site, nor does it lie within a Delaware National Estuarine Research Reserve which are two criteria used to identify "Designated Critical Resource Waters" in the Army Corps of Engineers (ACOE) Nationwide Permit General Condition No. 22. A copy of this letter shall be included in any permit application or pre-construction notification submitted to the Army Corps of Engineers for activities on this property

We are continually updating our records on Delaware's rare, threatened and endangered species, unique natural communities and other significant natural resources. If the start of the project is delayed more than a year past the date of this letter, please contact us again for the latest information.

Feel free to get in touch with me if you have any questions or require additional information.

GHD 2015 Rehoboth Outfall Piping Plover Addendum

Sincerely,



Matthew Bailey
Biologist/Environmental Review Coordinator
(302) 735-8677
(302) 653-3431 fax
Matthew.bailey@state.de.us

INVOICE - PAYMENT DUE

It is our policy to charge a fee for this environmental review service. This letter constitutes an invoice for \$70.00 (\$35.00/hour for a minimum of one hour). Please make your check payable to “Delaware Division of Fish and Wildlife” and submit to:

DE Division of Fish and Wildlife
89 Kings Hwy.
Dover, DE 19901
ATTN: Pamela Severson

**In order for us to properly process your payment, you must reference
“GHD 2016 Rehoboth Beach Outfall Piping Plover Addendum” on your check.**

cc: Pamela Severson, Fish and Wildlife Coordination/Accounting; Code to 72900



21 September 2015

Kate Fleming
Wildlife Biologist/Environmental Review Coordinator
Delaware Division of Fish and Wildlife
4876 Hay Point Landing Road
Smyrna Delaware 19977

Our ref: 86/18693/
DocNumber
Your ref:

Dear Ms. Fleming,

Rehoboth Beach Ocean Outfall Project Project Review Questions

Please see below the answers to your questions you sent via email, dated September 11, 2015, regarding the Rehoboth Beach Ocean Outfall Project.

Questions re: Rehoboth Outfall Terrestrial Portion

- 1) At what rate will the terrestrial trenching move forward (e.g. 250 feet a day)? Also, will this trenching be done all at once at any given location, or, will machinery have to return to the same spot numerous times throughout the process?

Open/cut installation of the proposed force main is anticipated to be between 200 to 300 ft/day depending on location and spacing constraints. Due to the spacing constraints of this project at various locations along the alignment temporary road closures will be required. The maximum proposed temporary road closures will be limited to 400 feet per day. Impacts on local traffic and existing utility lines will be minimized. Once the force main and temporary patch is installed, it is anticipated that the road may be re-paved.

- 2) Will there be any above ground work or staging required anywhere between the eastern edge of the Deauville parking lot and 500 feet offshore? This would include any vehicles that would be moving over the dunes and onto the beach even if just to monitor progress of the drilling.

Yes, there will be equipment used in that area to transport and maintain the pipe laydown along the beach.

- 3) Slide 13 of the Powerpoint presentation at the June 18 JPP shows a pipe laydown area going along the eastern face of the dunes to the north and south of Deauville. More detail is needed on the purpose of this laydown, how long it will be in place and how the pipe would be placed on and removed from the beach. Figure 4-13 of EIS shows in great detail the Deauville staging area but doesn't include the beach laydown area.

The purpose of placing the pipe at this location is so that once the directional drill hole is drilled and stabilized, a barge located out in the ocean will pull the entire length of pipe from the beach to the barge

all at once. The pipe will be trucked onto the beach where it will be assembled for about 60 days before being put in place.

- 4) Is there a required sequencing of this project (e.g. land based portion first going south to north) or, can it be done in pieces and then linked together?

There is not a required sequencing for this project. Because it is a force main, the sections can be installed in various sequences. The only exception is that the ocean outfall trenching segment cannot be installed until the drilled portion has been put in place.

Questions re: Rehoboth Outfall Marine Portion

- 5) Can we confirm the dredge type that will be used to create the trench? The EIS indicates that a cutter suction dredge will not likely be utilized but it is still listed as an option.

We are currently still waiting on a response from DNREC regarding the dredging for this project. We anticipate a response within the next couple of weeks. The IES lists two options, a backhoe with clamshell bucket mounted on a floating barge and a stationary hydraulic dredger (cutter suction). It is still not anticipated that a cutter suction will be utilized.

Preliminary dredging technique includes a backhoe dredger with a clamshell bucket mounted on a floating barge or jack-up platform and the dredged material loaded onto hopper barges for transport and deposition at approved sites.

- 6) Is it still expected that the trenching activity will start 3000 feet from shore? Do we have any more specifics on that?

Yes, in order to be conservative with respect to expectations for horizontal directional drill (HDD), it is proposed that the pipe be installed by HDD to a point approximately 3,000 feet (915 meters) from the staging area. This would, at a minimum, avoid impacts associated with open-cut construction through the dune area, beach and surf zone.

- 7) How long is the drilling and trenching activity expected to take and what is the noise expected to be like for both activities?

Initially, the drill pit is established in the parking lot area and the drilling rig and associated equipment mobilized to the site. A jack-up (lift) barge, stabilized by anchor, is mobilized to the offshore location to serve as the platform for the offshore drilling rig. The directional drilling operation involves several steps. First, a pilot hole is drilled from the shore. The progress and alignment of the pilot hole is closely monitored using various electronic survey tools. Then, the pilot hole is successively reamed to a larger diameter until the installation diameter is reached. The reaming operation alternates between the shore and the barge by pulling the boring machine east and west. Installation of a 24-inch pipe would require a bored diameter of approximately 32 inches. Finally, the pipeline, staged on land, is pulled from the offshore platform through the borehole. As the pullback progresses, successive lengths of pipe are fused together on the landside. Ideally, at least 2,000 foot (610 meter) lengths of pipe can be fused prior to installation and stored. This is because the pullback operation is intended to be a continuous 24/7 operation. It is proposed to temporarily store pre-fused lengths of pipe along the beach, Henlopen Avenue or along Route 1A. Impacts to local residents and traffic would best be minimized if the pre-fused pipe is located along the beach. Time required for mobilization, completing the pilot hole and back reaming can take approximately three (3) months. The final installation of the pullback pipe only requires several days of continuous effort. Following the directional drill portion of the installation, the contractor will install the diffuser and remaining pipe via open-cut. It is anticipated that this will require 2-3 months to complete. During construction, there will be typical construction noises associated with trucks and excavation equipment. To mitigate these disturbances, construction activity is scheduled to take place during non-peak season times of the year and also only during normal business hours.

- 8) In Section 8.3.1.2.3 Ocean Outfall of the EIS, there is an indication that if the ocean outfall alternative is selected, benthic biota sampling will be done before and after construction to determine what effect, if any, construction had on the benthic community. Has this taken place yet? Are there still plans to do so?

Benthic Biota sampling has not been performed yet, but is still anticipated to take place before the start of construction, and again once construction is completed.

Please let me know if there is any additional information you need from us.

Regards,

Sean Snow

Engineer
240 206 6841



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21401
<http://www.fws.gov/chesapeakebay>

RECEIVED
GHD, Inc.
SEP 03 2015



September 1, 2015

GHD Inc.
16701 Melford Boulevard,
Suite 330
Bowie, MD 20715

RE: Rehoboth Beach Ocean Outfall Project City of Rehoboth Beach

Dear Sean Snow:

This responds to your letter, received August 18, 2015, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the above referenced project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Except for occasional transient individuals, no proposed or federally listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further Section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Kate Fleming of the Delaware Division of Fish and Wildlife, Wildlife Species Conservation and Research Program at (302) 735-8658. You may also obtain information on how to make such a request by visiting the Program website at www.dnrec.state.de.us/nhp.

The bald eagle is a federally protected species under the Bald and Golden Eagle Protection Act (BGEPA). Please review the Service's National Bald Eagle Management Guidelines to assess whether impacts from your project's activities are likely to impact bald eagles. The link to this guidance can be found at: <http://www.fws.gov/northeast/ecologicalservices/pdf/NationalBaldEagleManagementGuidelines.pdf>. If your project cannot avoid disturbance, you may apply for a permit that authorizes take of bald eagles where take to be authorized is associated with otherwise lawful activities.



Please contact the Chesapeake Bay Ecological Services Field Office at 410-573-4534 for further information and assistance with the BGEPA permitting process.

An additional concern of the Service is wetlands protection. The Service's wetlands policy has the interim goal of no overall net loss of Delaware Bay's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Philadelphia District should be contacted for permit requirements. They can be reached at (215) 656-6728.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Trevor Clark at (410) 573-4527.

Sincerely,

A handwritten signature in blue ink that reads "G. LaRouche". The signature is written in a cursive style with a large initial "G".

Genevieve LaRouche
Supervisor

September 10, 2015

TO: Sean Snow
GHD, Inc.
16701 Melford Boulevard, Suite 330
Bowie, MD 20715

SUBJECT: Rehoboth Beach Ocean Outfall Project PCN,
City of Rehoboth Beach, DE

__X__ Michelle Magliocca
(Reviewing Biologist)

We have reviewed the information provided to us regarding the above subject project. We offer the following preliminary comments pursuant to the Endangered Species Act, the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act:

Endangered Species Act

Threatened or endangered species under the jurisdiction of NOAA Fisheries may occur within the project area. As a result, further consultation with the Protected Resources Division may be required. Please contact Daniel Marrone (daniel.marrone@noaa.gov) for more information.

Fish and Wildlife Coordination Act

Delaware coastal waters provide habitat for a wide variety of NOAA trust resources. Efforts should be made to avoid and minimize adverse effects to the aquatic environment. Compensatory mitigation should be provided for all unavoidable impacts.

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat

Essential Fish Habitat (EFH) has been designated within the project area. Further EFH consultation by the federal action agency may be required as part of the federal permit process. For a listing of EFH and further information, please go to our website at: <http://www.greateratlantic.fisheries.noaa.gov/habitat/>. If you wish to discuss this further, please call 410-573-4559 or e-mail michelle.magliocca@noaa.gov.

State of Delaware
Historical and Cultural Affairs

21 The Green
Dover, DE 19901-3611

Phone: (302) 736.7400

Fax: (302) 739.5660

May 2, 2016

Review Code: 2015.08.20.03

Sean Snow
Engineer
GHD
16701 Medford Boulevard, Suite 330
Bowie, MD, 20715

Project: Rehoboth Beach Main Force Line Project, City of Rehoboth Beach, Sussex County, Delaware.

Dear Mr. Snow:

The staff of the State Historic Preservation Office has reviewed the abbreviated letter report *Phase I Archaeological Survey of the Rehoboth Beach Main Force Line Project, Sussex County, Delaware*, which was submitted regarding the above cited project. As we understand it, there are no archaeological sites within the project corridor that can be impacted by this undertaking. The archaeological testing documented disturbances from the canal construction and maintenance activity in Grove Park. Also, testing in the Duneway Drive portion demonstrated disturbances resulting from beach reconstruction projects.

As the project will be subterranean in nature, it should not affect any of the potentially historic structures along Henlopen Avenue. Based on this review, we have made the determination that no known historic properties, eligible for or listed in the National Register of Historic Places, will be affected by this project. This concludes our consultation on this project.

If there are any questions, please call (302) 736-7407, or e-mail craig.lukezic@state.de.us.

Sincerely,


Craig Lukezic
Archaeologist

cc: Gwen Davis, Deputy State Historic Preservation Officer
John McCarthy, DNREC



From: McCarthy, John P. (DNREC) [<mailto:John.Mccarthy@state.de.us>]
Sent: Tuesday, January 05, 2016 11:38 AM
To: Sean Snow; Brandon Gott
Cc: Hall, Jim E. (DNREC)
Subject: FW: sewer line outflow project in Rehoboth Beach

Gentlemen –

Please find below the finding of the State Historic Preservation Office at the Division of Historical and Cultural Affairs with respect to review of the core boring data and the need for limited archaeological survey along a portion of the proposed sewer line.

The field view and the boring information made it possible to eliminate most of the proposed sewer line route from archaeological consideration. However, the area of the park near the canal “The Grove” and the park area at Surf Avenue should both be subject to Phase I archaeological survey (to document the presence/absence of archaeological resources in those portions of the project area. The most recent guidelines for such a survey can be found at the DHCA website (<http://history.delaware.gov/pdfs/Archaeological%20Survey%20in%20Delaware%202015.pdf>)

I am available to assist you in obtaining professional services to conduct this survey. I can suggest the names of several reputable consultants and can draft a technical scope of work and review technical proposal and report submissions for adequacy should that be helpful.

John

John P. McCarthy, RPA
Cultural Preservation Specialist
(Archaeologist/Architectural Historian)
Cultural Resources Unit
DNREC - State Parks and Recreation
152 S. State Street
Dover, DE 19901
Direct Dial (302) 739-9188
Mobile (302) 387-9785



From: Lukezic, Craig (DOS)
Sent: Tuesday, January 05, 2016 11:13 AM
To: McCarthy, John P. (DNREC)
Cc: Davis, Gwen (DOS)
Subject: sewer line outflow project in Rehoboth Beach

This morning, we reviewed the borings from the engineer consultant on the route of the proposed sewer line in Rehoboth Beach. The boring results in the Grove area and the park area along Surf Avenue did not indicate the soils were disturbed by modern activity. There may be some archaeological potential in the soils of this area. We recommend a Phase I archaeological survey in these areas. Such a survey should include documentary research and subsurface testing. There may be a historic district along Henlopen Avenue, but if it can be demonstrated the project will be exclusively subsurface in this area, it may not have an adverse effect on these properties.

While the City of Rehoboth Beach is leading this project, it is funded by the EPA, and thus, subject to Section 106.

Thanks,

Craig

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Sean Snow

From: Lukezic, Craig (DOS) <craig.lukezic@state.de.us>
Sent: Monday, February 01, 2016 12:01 PM
To: McCarthy, John P. (DNREC); Sean Snow
Cc: Brandon Gott
Subject: RE: Rehoboth Beach Ocean Outfall Archaeological Review

Yes, that sound good to me.

Craig

From: McCarthy, John P. (DNREC)
Sent: Monday, February 01, 2016 11:52 AM
To: Sean Snow; Lukezic, Craig (DOS)
Cc: Brandon Gott
Subject: RE: Rehoboth Beach Ocean Outfall Archaeological Review

Happy Monday, Sean –

Craig can correct me if necessary, but my understanding is that the findings of the underwater investigation were satisfactory and no further investigation for that portion of the project is needed.

I'm happy to meet with a representative of Dovetail either before the fieldwork or at its outset to review expectations, etc.

John

John P. McCarthy, RPA
Cultural Preservation Specialist
(Archaeologist/Architectural Historian)
Cultural Resources Unit
DNREC - State Parks and Recreation
152 S. State Street
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Mobile (302) 387-9785



Delaware State Parks
We're saving a place for you

From: Sean Snow [<mailto:Sean.Snow@ghd.com>]
Sent: Monday, February 01, 2016 11:44 AM
To: Lukezic, Craig (DOS); McCarthy, John P. (DNREC)
Cc: Brandon Gott
Subject: Rehoboth Beach Ocean Outfall Archaeological Review

Craig and John,

Brandon Gott and I spoke with Mike Yost and John Brundage of the USACE recently regarding the Rehoboth Beach Project. In our conversation, they suggested talking with you to confirm that additional archaeological investigation is not required along the ocean outfall portion of this project. A Submerged Cultural Resource Survey was performed by Tidewater Atlantic Research, Inc. in September 2011 which can be found in Appendix O of the EIS (see attached). Please advise if you feel that additional surveying should be conducted.

I also wanted to inform you that we have selected to work with Dovetail Cultural Resource Group for the Phase I Archaeological Survey along the force main portion of the project. We are currently working on an agreement with them, and will coordinate scheduling of the field work once we have an executed agreement. We will keep you updated throughout this process.

Thanks,

Sean Snow
Engineer

GHD

T: +1 240 206 6841 | V: 866841 | E: sean.snow@ghd.com
16701 Melford Boulevard Suite 330 Bowie Maryland 20715 USA | www.ghd.com

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Essential Fish Habitat Supporting Information

Sean Snow

From: Sean Snow
Sent: Friday, September 25, 2015 11:55 AM
To: 'Michelle Magliocca - NOAA Federal'
Subject: RE: Rehoboth Beach Review - National Marine Fisheries Service

CompleteRepository: 861432701
Description: Rehoboth Beach: Final Permit TO2
JobNo: 14327
OperatingCentre: 86
RepoEmail: 8614327@ghd.com
RepoType: Job
SubJob: 01

Michelle,

Great, thank you!

Sean

From: Michelle Magliocca - NOAA Federal [mailto:michelle.magliocca@noaa.gov]
Sent: Friday, September 25, 2015 11:49 AM
To: Sean Snow
Subject: Re: Rehoboth Beach Review - National Marine Fisheries Service

Hi Sean,

The Army Corps of Engineers will consult with us regarding Essential Fish Habitat (EFH) as part of their federal permitting process. They conduct an EFH assessment and consultation for all of their permits if the proposed action could impact EFH. The consultation is done between federal agencies, so there isn't necessarily anything else you need to do.

Hope that helps,
Michelle

On Fri, Sep 25, 2015 at 11:11 AM, Sean Snow <Sean.Snow@ghd.com> wrote:

Hi Michelle,

First of all, thank you for returning your comments regarding the Rehoboth Beach Outfall project back to us so quickly.

Secondly, I had a question about the Magnuson-Stevens Fishery Conservation and Management Act comment. You mentioned that further Essential Fish Habitat consultation by the federal action agency may be required since Essential Fish Habitat has been designated within the project area. I was wondering if you could explain how we would go about

determining if further consultation would be necessary, and if so, what would need to be done. Any information you can provide regarding this potential issue would be greatly appreciated.

Thanks,

Sean

From: Michelle Magliocca - NOAA Federal [mailto:michelle.magliocca@noaa.gov]

Sent: Thursday, September 10, 2015 1:57 PM

To: Sean Snow

Subject: Re: Rehoboth Beach Review - National Marine Fisheries Service

Hi Sean,

My comments on the Rehoboth Beach Outfall Project PCN are attached.

Thanks,

Michelle

On Tue, Sep 1, 2015 at 2:39 PM, Michelle Magliocca - NOAA Federal <michelle.magliocca@noaa.gov> wrote:

Hi Sean,

Yes, I received the request with attachments - thank you. In the future, any Delaware projects can be sent directly to me. I'll let you know if I have any questions about the project.

Thanks,

Michelle

On Tue, Sep 1, 2015 at 2:30 PM, Sean Snow <Sean.Snow@ghd.com> wrote:

Ms. Magliocca,

I spoke with Jill Ortiz today, and she told me she has forwarded you my request for a review the Rehoboth Beach Ocean Outfall Project. I just wanted to contact you to confirm that you have received this letter with attachments, and to see if you have any initial questions about the project. Feel free to contact me via email, or by phone at [240 206 6841](tel:2402066841).

Thanks,

Sean Snow
Engineer

GHD

T: [+1 240 206 6841](tel:+12402066841) | V: 866841 | E: sean.snow@ghd.com
16701 Melford Boulevard Suite 330 Bowie Maryland 20715 USA | www.ghd.com

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--

Michelle Magliocca

NOAA Fisheries

Habitat Conservation Division

177 Admiral Cochrane Drive
Annapolis, MD 21401
[410-573-4559](tel:410-573-4559)

www.nmfs.noaa.gov



--

Michelle Magliocca

NOAA Fisheries

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--

Michelle Magliocca

NOAA Fisheries

Habitat Conservation Division

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Annapolis, MD 21401
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NOAA FISHERIES
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
Essential Fish Habitat (EFH) Consultation Guidance
EFH ASSESSMENT WORKSHEET

Introduction:

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) mandates that federal agencies conduct an essential fish habitat (EFH) consultation with NOAA Fisheries regarding any of their actions authorized, funded, or undertaken that may adversely affect EFH. An adverse effect means any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

This worksheet has been designed to assist in determining whether a consultation is necessary and in preparing EFH assessments. This worksheet should be used as your EFH assessment or as a guideline for the development of your EFH assessment. At a minimum, all the information required to complete this worksheet should be included in your EFH assessment. If the answers in the worksheet do not fully evaluate the adverse effects to EFH, we may request additional information in order to complete the consultation.

An expanded EFH assessment may be required for more complex projects in order to fully characterize the effects of the project and the avoidance and minimization of impacts to EFH. While the EFH worksheet may be used for larger projects, the format may not be sufficient to incorporate the extent of detail required, and a separate EFH assessment may be developed. However, regardless of format, the analysis outlined in this worksheet should be included for an expanded EFH assessment, along with additional information that may be necessary. This additional information includes:

- the results of on-site inspections to evaluate the habitat and site-specific effects
- the views of recognized experts on the habitat or the species that may be affected
- a review of pertinent literature and related information
- an analysis of alternatives to the action that could avoid or minimize the adverse effects on EFH.

Your analysis of adverse effects to EFH under the MSA should focus on impacts to the habitat for all life stages of species with designated EFH, rather than individual responses of fish species. Fish habitat includes the substrate and benthic resources (e.g., submerged

aquatic vegetation, shellfish beds, salt marsh wetlands), as well as the water column and prey species.

Consultation with us may also be necessary if a proposed action results in adverse impacts to other NOAA-trust resources. Part 6 of the worksheet is designed to help assess the effects of the action on other NOAA-trust resources. This helps maintain efficiency in our interagency coordination process. In addition, further consultation may be required if a proposed action impacts marine mammals or threatened and endangered species for which we are responsible. Staff from our Greater Atlantic Regional Fisheries Office, Protected Resources Division should be contacted regarding potential impacts to marine mammals or threatened and endangered species.

Instructions for Use:

Federal agencies must submit an EFH assessment to NOAA Fisheries as part of the EFH consultation. Your EFH assessment must include:

- 1) A description of the proposed action.
- 2) An analysis of the potential adverse effects of the action on EFH, and the managed species.
- 3) The federal agency's conclusions regarding the effects of the action on EFH.
- 4) Proposed mitigation if applicable.

In order for this worksheet to be considered as your EFH assessment, you must answer the questions in this worksheet fully and with as much detail as available. Give brief explanations for each answer.

Federal action agencies or the non-federal designated lead agency should submit the completed worksheet to NOAA Fisheries Greater Atlantic Regional Fisheries Office, Habitat Conservation Division (HCD) with the public notice or project application. Include project plans showing existing and proposed conditions, all waters of the U.S. on the project site, with mean low water (MLW), mean high water (MHW), high tide line (HTL), and water depths clearly marked and sensitive habitats mapped, including special aquatic sites (submerged aquatic vegetation, saltmarsh, mudflats, riffles and pools, coral reefs, and sanctuaries and refuges), hard bottom habitat areas and shellfish beds, as well as any available site photographs.

For most consultations, NOAA Fisheries has 30 days to provide EFH conservation recommendations once we receive a complete EFH assessment. Submitting all necessary information at once minimizes delays in review and keeps review timelines consistent. Delays in providing a complete EFH assessment can result in our consultation review period extending beyond the public comment period for a particular project.

The information contained on the HCD website (<http://www.greateratlantic.fisheries.noaa.gov/habitat/>) will assist you in completing this worksheet. The HCD website contains information regarding: the EFH consultation process; Guide to EFH Designations which provides a geographic species list; Guide to EFH Species Descriptions which provides the legal description of EFH as well as important ecological information for each species and life stage; and other EFH reference documents including examples of EFH assessments and EFH consultations.

Our website also includes a link to the NOAA EFH Mapper (<http://www.habitat.noaa.gov/protection/efh/efhmapper/index.html>). We would note that the EFH Mapper is currently being updated and revised. Should you use the EFH Mapper to identify federally managed species with designated EFH in your project area, we recommend checking this list against the Guide to Essential Fish Habitat Designations in the Northeast (<http://www.greateratlantic.fisheries.noaa.gov/hcd/index2a.htm>) to ensure a complete and accurate list is provided.

Summary of Essential Fish Habitat (EFH) Designation

10' x 10' Square Coordinates:

Boundary	North	East	South	West
Coordinate	38° 50.0' N	75° 00.0' W	38° 40.0' N	75° 10.0' W

Square Description (i.e. habitat, landmarks, coastline markers): Waters within the square within the salt water salinity zone of Delaware Bay affecting the following: north and east of Cape Henlopen, DE., from just northwest of Roosevelt Inlet within Breakaway Harbor north of Lewes, DE., within the Harbor of Refuge, around the cape south past Rehoboth Beach, DE., to 1/2 way down Dewey Beach, east of northern Rehoboth Bay. Also affected are waters within the Delaware Inland Bay estuary within northern Rehoboth Bay, and over the Hen and Chicken Shoals.

Species	Eggs	Larvae	Juveniles	Adults
Atlantic cod (<i>Gadus morhua</i>)				X
haddock (<i>Melanogrammus aeglefinus</i>)				
pollock (<i>Pollachius virens</i>)				
whiting (<i>Merluccius bilinearis</i>)				
red hake (<i>Urophycis chuss</i>)	X	X	X	X
white hake (<i>Urophycis tenuis</i>)				
redfish (<i>Sebastes fasciatus</i>)	n/a			
witch flounder (<i>Glyptocephalus cynoglossus</i>)				
winter flounder (<i>Pseudopleuronectes americanus</i>)	X	X	X	X
yellowtail flounder (<i>Limanda ferruginea</i>)				
windowpane flounder (<i>Scophthalmus aquosus</i>)	X	X	X	X
ocean pout (<i>Macrozoarces americanus</i>)				
Atlantic sea scallop (<i>Placopecten magellanicus</i>)				
Atlantic sea herring (<i>Clupea harengus</i>)			X	X
monkfish (<i>Lophius americanus</i>)	X	X		
bluefish (<i>Pomatomus saltatrix</i>)			X	X
long finned squid (<i>Loligo pealeii</i>)	n/a	n/a		
short finned squid (<i>Illex illecebrosus</i>)	n/a	n/a		
Atlantic butterfish (<i>Peprilus triacanthus</i>)		X	X	X

Atlantic mackerel (<i>Scomber scombrus</i>)				
summer flounder (<i>Paralichthys dentatus</i>)			X	X
scup (<i>Stenotomus chrysops</i>)	n/a	n/a	X	X
black sea bass (<i>Centropristis striata</i>)	n/a	X	X	X
surf clam (<i>Spisula solidissima</i>)	n/a	n/a	X	
ocean quahog (<i>Artica islandica</i>)	n/a	n/a		
spiny dogfish (<i>Squalus acanthias</i>)	n/a	n/a		X
tilefish (<i>Lopholatilus chamaeleonticeps</i>)				
king mackerel (<i>Scomberomorus cavalla</i>)	X	X	X	X
Spanish mackerel (<i>Scomberomorus maculatus</i>)	X	X	X	X
cobia (<i>Rachycentron canadum</i>)	X	X	X	X
sand tiger shark (<i>Carcharias taurus</i>)		X		X
Atlantic angel shark (<i>Squatina dumerili</i>)		X	X	X
Atl. sharpnose shark (<i>Rhizopriondon terraenovae</i>)				X
dusky shark (<i>Carcharhinus obscurus</i>)		X		
sandbar shark (<i>Carcharhinus plumbeus</i>)		X	X	X
sandbar shark (<i>Carcharhinus plumbeus</i>)		HAPC	HAPC	HAPC
scalloped hammerhead shark (<i>Sphyrna lewini</i>)			X	

EFH ASSESSMENT WORKSHEET FOR FEDERAL AGENCIES (modified 3/2016)

PROJECT NAME: Rehoboth Beach Ocean Outfall Project

DATE: _____

PROJECT NO.: _____

LOCATION (Water body, county, physical address): Atlantic Ocean, Sussex County, 38 Henlopen Ave, Rehoboth Beach, DE 19971

PREPARER: _____

Step 1: Use the Habitat Conservation Division EFH webpage’s Guide to Essential Fish Habitat Designations in the Northeastern United States to generate the list of designated EFH for federally-managed species for the geographic area of interest (<http://www.greateratlantic.fisheries.noaa.gov/hcd/index2a.htm>). Use the species list as part of the initial screening process to determine if EFH for those species occurs in the vicinity of the proposed action. The list can be included as an attachment to the worksheet. Make a preliminary determination on the need to conduct an EFH consultation.

1. INITIAL CONSIDERATIONS		
EFH Designations	Yes	No
<p>Is the action located in or adjacent to EFH designated for eggs? List the species: <i>See the attached essential fish habitat designation report for Rehoboth beach, Tables 8.5-8.8 of the EIS, and correspondences with agencies in regards to species present in the area.</i></p>	x	
<p>Is the action located in or adjacent to EFH designated for larvae? List the species: <i>See the attached essential fish habitat designation report for Rehoboth beach, Tables 8.5-8.8 of the EIS, and correspondences with agencies in regards to species present in the area.</i></p>	x	
<p>Is the action located in or adjacent to EFH designated for juveniles? List the species: <i>See the attached essential fish habitat designation report for Rehoboth beach, Tables 8.5-8.8 of the EIS, and correspondences with agencies in regards to species present in the area.</i></p>	x	

<p>Is the action located in or adjacent to EFH designated for adults or spawning adults? List the species: <i>See the attached essential fish habitat designation report for Rehoboth beach, Tables 8.5-8.8 of the EIS, and correspondences with agencies in regards to species present in the area.</i></p>	x	
<p>If you answered no to all questions above, then EFH consultation is not required - go to Section 5. If you answered yes to any of the above questions proceed to Section 2 and complete remainder of the worksheet.</p>		

Step 2: In order to assess impacts, it is critical to know the habitat characteristics of the site before the activity is undertaken. Use existing information, to the extent possible, in answering these questions. Identify the sources of the information provided and provide as much description as available. These should not be yes or no answers. Please note that there may be circumstances in which new information must be collected to appropriately characterize the site and assess impacts. Project plans that show the location and extent of sensitive habitats, as well as water depths, the HTL, MHW and MLW should be provided.

2. SITE CHARACTERISTICS	
Site Characteristics	Description
Is the site intertidal, sub-tidal, or water column?	<i>Water Column</i>
What are the sediment characteristics?	<i>Sandy with silt. Refer to the attached soil borings, vibracore and marine survey reports.</i>
Is there submerged aquatic vegetation (SAV) at or adjacent to project site? If so describe the SAV species and spatial extent.	<i>No</i>
Are there wetlands present on or adjacent to the site? If so, describe the spatial extent and vegetation types.	<i>No, see attached wetland designation report</i>

<p>Is there shellfish present at or adjacent to the project site? If so, please describe the spatial extent and species present.</p>	<p><i>Yes, see Section 8 of the EIS</i></p>
<p>Are there mudflats present at or adjacent to the project site? If so please describe the spatial extent.</p>	<p><i>No</i></p>
<p>Is there rocky or cobble bottom habitat present at or adjacent to the project site? If so, please describe the spatial extent.</p>	<p><i>No</i></p>
<p>Is Habitat Area of Particular Concern (HAPC) designated at or near the site? If so for which species, what type habitat type, size, characteristics?</p>	<p><i>Based on GIS data provided by the online Essential Fish Habitat (EFH) GIS database, the outfall site appears to be located 3.5 miles due south of the Sandbar Sharks HAPC, which is roughly 4,000 miles. However, based on the online EFH Mapper interface, the site appears to be located within the Sandbar Sharks HAPC. Mapper and GIS data located here: http://www.habitat.noaa.gov/protection/efh/habitatmapper.html. According to NOAA (see attached dated 2/2/16), based on the text descriptions of the HAPC, "Rehoboth Beach is not within the Delaware Bay, there is no HAPC designated for sandbar sharks in the area (but it is considered EFH)." Also see attached figure showing location of project in relation to this HAPC (EFH Locations)</i></p>
<p>What is the typical salinity, depth and water temperature regime/range?</p>	<p><i>Water temperature ranges from around 40-75 degrees F. Ocean salinity near the ocean floor, where the outfall is proposed to be built, varies between 30 and 31 practical salinity units (psu). Refer to Section 5.6 of the December 2012 Final Environmental Impact Statement for additional information.</i></p>
<p>What is the normal frequency of site disturbance, both natural and man-made?</p>	<p><i>This site experiences normal natural sediment disturbance due to waves/current</i></p>
<p>What is the area of proposed impact (work footprint & far afield)?</p>	<p><i>Project footprint is roughly 150,000 sf. This could change slightly as the project moves forward, but it is the most accurate estimate at this time.</i></p>

Step 3: This section is used to describe the anticipated impacts from the proposed action on the physical/chemical/biological environment at the project site and areas adjacent to the site that may be affected.

3. DESCRIPTION OF IMPACTS			
Impacts	Y	N	Description
Nature and duration of activity(s). Clearly describe the activities proposed and the duration of any disturbances.			<i>The outfall pipe will be HDD for 3000 LF and then open cut trenched the remaining 3000 LF to a diffuser assembly. Construction is anticipated to take approximately 5 months.</i>
Will the benthic community be disturbed? If no, why not? If yes, describe in detail how the benthos will be impacted.			<i>Benthos in the vicinity of the outfall diffuser or the trenched portion of the outfall pipe would be impacted by excavation and backfill operations. The impacts of such an operation would be minor and short-term. Long term impacts to the benthic community from effluent discharge are expected to be minor and insignificant. Refer to Section 8 of the December 2012 Final Environmental Impact Statement for additional information.</i>
Will SAV be impacted? If no, why not? If yes, describe in detail how the SAV will be impacted. Consider both direct and indirect impacts. Provide details of any SAV survey conducted at the site.			<i>Submerged Aquatic Vegetation (SAV) is not anticipated to be impacted. Previous studies of the Atlantic Ocean in the vicinity of the proposed outfall do not mention any SAV off of the coast of Delaware (Maurer, et al. 1976) (USACE 2002). Thus, there is not expected to be any SAV in the ocean floor in the project area. Refer to Section 8 of the December 2012 Final Environmental Impact Statement for additional information.</i>
Will salt marsh habitat be impacted? If no, why not? If yes, describe in detail how wetlands will be impacted. What is the			<i>No, there are no salt marshes in the vicinity of the project.</i>

<p>aerial extent of the impacts? Are the effects temporary or permanent?</p>			
<p>Will mudflat habitat be impacted? If no, why not? If yes, describe in detail how mudflats will be impacted. What is the aerial extent of the impacts? Are the effects temporary or permanent?</p>			<p><i>No, there are no mudflats in the vicinity of the project.</i></p>
<p>Will shellfish habitat be impacted? If so, provide in detail how the shellfish habitat will be impacted. What is the aerial extent of the impact? Provide details of any shellfish survey conducted at the site.</p>			<p><i>Shellfish in the vicinity of the outfall diffuser assembly or the trenched portion of the outfall pipe may be impacted by excavation and backfill operations. The impacts of such an operation would be minor and short-term. Long term impacts to the Shellfish community from effluent discharge are expected to be minor. Refer to Section 8 of the December 2012 Final Environmental Impact Statement for additional information.</i></p>
<p>Will hard bottom (rocky, cobble, gravel) habitat be impacted at the site? If so, provide in detail how the hard bottom will be impacted. What is the aerial extent of the impact?</p>			<p><i>No</i></p>
<p>Will sediments be altered and/or sedimentation rates change? If no, why not? If yes, describe how.</p>			<p><i>During construction, excavation will agitate the ocean floor and sediment disturbance will be minor. Once construction is complete, sediment will return to its pre-construction state. Refer to Section 7 of the December 2012 Final Environmental Impact Statement for additional information.</i></p>
<p>Will turbidity increase? If no, why not? If yes, describe the causes, the extent of the effects, and the duration.</p>			<p><i>During construction, increase in turbidity will be minimal and is expected to be localized along the open-cut trench portion. Post construction, turbidity will return to normal conditions.</i></p>

<p>Will water depth change? What are the current and proposed depths?</p>			<p><i>Water depth will not be impacted because of this project. The depth at the diffuser is approximately 40-ft below sea level.</i></p>
<p>Will contaminants be released into sediments or water column? If yes, describe the nature of the contaminants and the extent of the effects.</p>			<p><i>Post construction, treated effluent from the Rehoboth Beach WWTP will be diffused into the water 6000 LF offshore. This effluent will have been treated through ENR treatment and modelling predicts rapid dilution to background levels. The plume of effluent to a point of 1:10,000 dilution is only expected to extend 1,000 ft south of the diffuser. Refer to Section 5 Effluent Characteristics and Concerns of the EIS for detailed effluent quality information.</i></p>
<p>Will tidal flow, currents, or wave patterns be altered? If no, why not? If yes, describe in detail how.</p>			<p><i>Tidal flow, currents or wave patterns will not be impacted.</i></p>
<p>Will ambient salinity or temperature regime change? If no, why not? If yes, describe in detail how and the effects of the change.</p>			<p><i>Neither salinity nor temperature will be impacted.</i></p>
<p>Will water quality be altered? If no, why not? If yes, describe in detail how. If the effects are temporary, describe the duration of the impact.</p>			<p><i>Treated effluent from the Rehoboth Beach WWTP will be diffused into the water. This effluent will have been treated through ENR treatment and modelling predicts rapid dilution to background levels. Refer to Section 5 of the EIS for effluent characteristics. As such, water quality impacts will be minimal. Refer to Section 7 of the December 2012 Final EIS for additional information.</i></p>
<p>Will ambient noise levels change? If no, why not? If yes, describe in detail how. If the effects are temporary, describe the duration and degree of impact.</p>			<p><i>During construction, there will be activities that will cause ambient noise levels to the surrounding area. Once construction is completed, there will be no permanent noise sources. The noise levels during construction may have temporary effects on surrounding species, but is not expected to cause any permanent harm.</i></p>

Does the action have the potential to impact prey species of federally managed fish with EFH designations?			<i>Prey species will be impacted during excavation activities, but are expected to return to normal after construction.</i>
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Step 4: This section is used to evaluate the consequences of the proposed action on the functions and values of EFH as well as the vulnerability of the EFH species and their life stages. Identify which species (from the list generated in Step 1) will be adversely impacted from the action. Assessment of EFH impacts should be based upon the site characteristics identified in Step 2 and the nature of the impacts described within Step 3. The Guide to EFH Descriptions webpage (<http://www.greateratlantic.fisheries.noaa.gov/hcd/list.htm>) should be used during this assessment to determine the ecological parameters/preferences associated with each species listed and the potential impact to those parameters.

4. EFH ASSESSMENT			
Functions and Values	Y	N	Describe habitat type, species and life stages to be adversely impacted
Will functions and values of EFH be impacted for:			
<u>Spawning</u> If yes, describe in detail how, and for which species. Describe how adverse effects will be avoided and minimized.		x	
<u>Nursery</u> If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.		x	
<u>Forage</u> If yes, describe in detail how and for which		x	

species. Describe how adverse effects will be avoided and minimized.			
Shelter If yes, describe in detail how and for which species. Describe how adverse effects will be avoided and minimized.	x		<i>-Refer to the DE Natural Heritage review letter dated October 12, 2015 for the species of concern around the proposed site. In addition, refer to Section 8 of the EIS for impacts. A majority of the excavation activities will occur during the non-seasonal months to minimize impacts.</i>
Will impacts be temporary or permanent? Describe the duration of the impacts.			<i>Temporary. Impacts are anticipated to occur during construction only. It is expected that construction will be approximately 5 months.</i>
Will compensatory mitigation be used? If no, why not? Describe plans for mitigation and how this will offset impacts to EFH. Include a conceptual compensatory mitigation plan, if applicable.		x	<i>Compensatory mitigation will be used for any unavoidable impacts. At this time, no unavoidable impacts are expected that require compensatory mitigation.</i>

Step 5: This section provides the federal agency's determination on the degree of impact to EFH from the proposed action. The EFH determination also dictates the type of EFH consultation that will be required with NOAA Fisheries.

Please note: if information provided in the worksheet is insufficient to allow NOAA Fisheries to complete the EFH consultation additional information will be requested.

5. DETERMINATION OF IMPACT

	/	Federal Agency's EFH Determination
Overall degree of adverse effects on EFH (not including		There is no adverse effect on EFH or no EFH is designated at the project site.

compensatory mitigation) will be: (check the appropriate statement)		EFH Consultation is not required
		The adverse effect on EFH is not substantial. This means that the adverse effects are either no more than minimal, temporary, or that they can be alleviated with minor project modifications or conservation recommendations. This is a request for an abbreviated EFH consultation.
		The adverse effect on EFH is substantial. This is a request for an expanded EFH consultation

Step 6: Consultation with NOAA Fisheries may also be required if the proposed action results in adverse impacts to other NOAA-trust resources, such as anadromous fish, shellfish, crustaceans, or their habitats as part of the Fish and Wildlife Coordination Act. Some examples of other NOAA-trust resources are listed below. Inquiries regarding potential impacts to marine mammals or threatened/endangered species should be directed to NOAA Fisheries' Protected Resources Division.

6. OTHER NOAA-TRUST RESOURCES IMPACT ASSESSMENT	
Species known to occur at site (list others that may apply)	Describe habitat impact type (i.e., physical, chemical, or biological disruption of spawning and/or egg development habitat, juvenile nursery and/or adult feeding or migration habitat). Please note, impacts to federally listed species of fish, sea turtles, and marine mammals must be coordinated with the GARFO Protected Resources Division.
alewife	
American eel	
American shad	
Atlantic menhaden	
blue crab	

blue mussel	
blueback herring	
Eastern oyster	
horseshoe crab	
quahog	
soft-shell clams	
striped bass	
other species:	

Useful Links

National Wetland Inventory Maps

<http://www.fws.gov/wetlands/>

EPA's National Estuaries Program

<http://www.epa.gov/nep/information-about-local-estuary-programs>

Northeast Regional Ocean Council (NROC) Data Portal

<http://www.northeastoceandata.org/>

Mid-Atlantic Regional Council on the Ocean (MARCO) Data Portal

<http://portal.midatlanticocean.org/>

Resources by State:

Maine

Eelgrass maps

<http://www.maine.gov/dmr/rm/eelgrass/>

Maine Office of GIS Data Catalog

<http://www.maine.gov/megis/catalog/>

Casco Bay Estuary Partnership

<http://www.cascobayestuary.org/>

Maine GIS Stream Habitat Viewer

<http://mapserver.maine.gov/streamviewer/index.html>

New Hampshire

New Hampshire's Statewide GIS Clearinghouse, NH GRANIT

<http://www.granit.unh.edu/>

New Hampshire Coastal Viewer

<http://www.granit.unh.edu/nhcoastalviewer/>

Massachusetts

Eelgrass maps

http://maps.massgis.state.ma.us/images/dep/eelgrass/eelgrass_map.htm

MADMF Recommended Time of Year Restrictions Document

<http://www.mass.gov/eea/docs/dfg/dmf/publications/tr-47.pdf>

Massachusetts Bays National Estuary Program

<http://www.mass.gov/eea/agencies/mass-bays-program/>

Buzzards Bay National Estuary Program

<http://buzzardsbay.org/>

Massachusetts Division of Marine Fisheries

<http://www.mass.gov/eea/agencies/dfg/dmf/>

Massachusetts Office of Coastal Zone Management

<http://www.mass.gov/eea/agencies/czm/>

Rhode Island

Eelgrass maps

http://www.savebay.org/file/2012_Mapping_Submerged_Aquatic_Vegetation_final_report_4_2013.pdf

Narraganset Bay Estuary Program

<http://www.dem.ri.gov/programs/benviron/water/wetlands/wetldocs.htm>

Rhode Island Division of Marine Fisheries

<http://www.dem.ri.gov/>

Rhode Island Coastal Resources Management Council

<http://www.crmc.ri.gov/>

Connecticut

Eelgrass Maps

https://www.fws.gov/northeast/ecologicalservices/pdf/wetlands/2012_CT_Eelgrass_Final_Report_11_26_2013.pdf

Long Island Sound Study

<http://longislandsoundstudy.net/>

CT GIS Resources

http://www.ct.gov/deep/cwp/view.asp?a=2698&q=323342&deepNav_GID=1707

CT DEEP Office of Long Island Sound Programs and Fisheries

<http://www.ct.gov/deep/>

CT Bureau of Aquaculture Shellfish Maps

<http://www.ct.gov/doag/cwp/view.asp?a=3768&q=451508&doagNav=>

CT River Watershed Council

<http://www.ctriver.org/>

New York

Eelgrass report

http://www.dec.ny.gov/docs/fish_marine_pdf/finalseagrassreport.pdf

Peconic Estuary Program

<http://www.peconicestuary.org/>

NY/NJ Harbor Estuary

<http://www.harborestuary.org/>

New Jersey

Submerged Aquatic Vegetation mapping

<http://crssa.rutgers.edu/projects/coastal/sav/>

Barnegat Bay Partnership

<http://bbp.ocean.edu/pages/1.asp>

Delaware

Partnership for the Delaware Estuary

<http://www.delawareestuary.org/>

Center for Delaware Inland Bays

<http://www.inlandbays.org/>

Maryland

Submerged Aquatic Vegetation mapping

http://data.imap.maryland.gov/datasets/da64df6bd4124ce9989e6c186a7906a7_0

MERLIN

<http://geodata.md.gov/imaptemplate/?appid=a8ec7e2ff4c34a31bc1e9411ed8e7a7e>

Maryland Coastal Bays Program

<http://www.mdcoastalbays.org/>

Virginia

Submerged Aquatic Vegetation mapping

<http://web.vims.edu/bio/sav/maps.html>



Legend

- Ocean Outfall
- Ocean Outfall Pipe
- HAPC - Habitat Areas of Particular Concern

<p>Paper Size ANSI A</p> <p>0 0.45 0.9 1.8 2.7 3.6</p> <p>Miles</p> <p>Map Projection: Transverse Mercator Horizontal Datum: North American 1983 Grid: NAD 1983 StatePlane Delaware FIPS 0700 Feet</p>		<p>CLIENTS PEOPLE PERFORMANCE</p>	<p>City of Rehoboth Beach Ocean Outfall Project EFH Location in Relation to Project Site</p>	<table border="0"> <tr> <td>Job Number</td> <td>86-14327</td> </tr> <tr> <td>Revision</td> <td>A</td> </tr> <tr> <td>Date</td> <td>Jan 28, 2016</td> </tr> </table>	Job Number	86-14327	Revision	A	Date	Jan 28, 2016
Job Number	86-14327									
Revision	A									
Date	Jan 28, 2016									

Sean Snow

From: Michelle Magliocca - NOAA Federal <michelle.magliocca@noaa.gov>
Sent: Tuesday, February 02, 2016 11:25 AM
To: Sean Snow
Subject: Re: EFH Mapper & GIS Discrepancies

The text descriptions include HAPC information (see below). Because Rehoboth Beach is not within the Delaware Bay, there is no HAPC designated for sandbar sharks in the area (but it is considered EFH).

Thanks,
Michelle

• **Habitat Areas of Particular Concern:** Important nursery and pupping grounds have been identified in shallow areas and the mouth of Great Bay, NJ, lower and middle Delaware Bay, lower Chesapeake Bay, MD and near the Outer Banks, NC, in areas of Pamlico Sound adjacent to Hatteras and Ocracoke Islands and offshore those islands.

On Tue, Feb 2, 2016 at 11:10 AM, Sean Snow <Sean.Snow@ghd.com> wrote:

Michelle,

Good to know that about the mapper. We did use the 10 minute squares to get the summary of Essential Fish Habitat Designation, but we were using the mapper to see if there were any Habitat Areas of Particular Concern (HAPC) in our project location; there is a question that asks this in the EFH Assessment Worksheet for Federal Agencies. It appears the 10 minute squares and text descriptions only provides the Essential Fish Habitats. Would these be considered HAPCs also, or is there some other way to determine if our site is located within a HAPC?

Thanks,

Sean

From: Michelle Magliocca - NOAA Federal [mailto:michelle.magliocca@noaa.gov]
Sent: Tuesday, February 02, 2016 11:00 AM
To: Sean Snow
Subject: Re: EFH Mapper & GIS Discrepancies

Hi Sean,

Thanks for your email. The EFH mapper has not been accurate for quite some time (but is unfortunately still accessible through our site). We're hoping to have it revised in the coming months. Please refer to the [10 minute squares](#) and [text descriptions](#) on our site for determining EFH.

Michelle

On Tue, Feb 2, 2016 at 10:45 AM, Sean Snow <Sean.Snow@ghd.com> wrote:

Hi Michelle,

I am working on gathering information to aid the USACE in requesting an Essential Fish Habitat (EFH) Consultation, and I came across a discrepancy with the Mapper and GIS data provided on the NOAA Habitat Conservation website (<http://www.habitat.noaa.gov/protection/efh/habitatmapper.html>). The Mapper shows the EFH for Sandbar Sharks including the project location (see attached image; ocean outfall is marked by a blue line), but when layering the provided GIS data over the ocean outfall shape file, it appears that the project lies outside of this region (see attachment). Could you verify which of these should be utilized, or is the project close enough to this EFH that it should just be considered inside?

If you have any questions, please feel free to contact me.

Thanks,

Sean Snow
Engineer

GHD

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--

Michelle Magliocca

NOAA Fisheries

Habitat Conservation Division

177 Admiral Cochrane Drive

Annapolis, MD 21401

[410-573-4559](tel:410-573-4559)

www.nmfs.noaa.gov



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--

Michelle Magliocca

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Habitat Conservation Division

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Endangered Species Act Supporting Information

Sean Snow

From: Zachary Jylkka - NOAA Affiliate <zachary.jylkka@noaa.gov>
Sent: Thursday, January 28, 2016 4:30 PM
To: Sean Snow
Subject: Re: National Marine Fisheries Service Review - Rehoboth Beach Ocean Outfall Project

Hi Sean,

Chris stopped by my office and said that, in addition to the info laid out in the water quality section of the tech guidance, we would want to know the general purpose of the pipe (ie, brief description of which communities it's serving/why it's needed) and the type of effluent it would be discharging. You were probably already planning to include that info.

We may have more specific questions once we get the official request for consultation from ACOE, but this should give you a good idea of what we'll be needing. Let me know if you have any follow-up questions.

Zach

On Wed, Jan 27, 2016 at 5:42 PM, Zachary Jylkka - NOAA Affiliate <zachary.jylkka@noaa.gov> wrote:
Hi Chris,

Sean Snow from GHD gave me a call today to discuss the Rehoboth Beach Ocean Outfall project. The project consists of an effluent force main that is being installed from the current wastewater treatment plant to a diffuser located 6,000 feet offshore from the Deauville parking lot.

From my understanding, they've completed an EIS, and ACOE is now asking them to prepare the necessary information ACOE will need to request consultation with us under Section 7 of the ESA. The Public Notice has not been released.

I briefly explained the Section 7 process and how ACOE (the action agency) will have to request consultation. I also pointed Sean to our [tech guidance document](#). Following the sections "What goes into a request for concurrence?" (page 6), "How do I know what the effects of the action are?" (page 7), and the tables (pages 7-11), Sean has a place to start with regard to the types of information we will be looking for from ACOE.

There is a portion of the table dedicated to water quality (page 10), but I wanted to loop you in to this conversation in case you knew of other information we'll need from ACOE to analyze effects of water quality (related to the treated effluent released from the pipe) on listed species.

Thanks,
Zach

On Thu, Oct 1, 2015 at 10:01 AM, Zachary Jylkka - NOAA Affiliate <zachary.jylkka@noaa.gov> wrote:
Sorry, might have been some formatting issues with that species list, hopefully this is better:

Common name	Scientific name	ESA Status
North Atlantic right whale	<i>Eubalaena glacialis</i>	Endangered
Humpback whale	<i>Megaptera novaeangliae</i>	Endangered
Fin whale	<i>Balaenoptera physalus</i>	Endangered

Loggerhead sea turtle - NWA DPS ¹	<i>Caretta caretta</i>	Threatened
Leatherback sea turtle	<i>Dermochelys coriacea</i>	Endangered
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	Endangered
Green sea turtle ²	<i>Chelonia mydas</i>	Endangered
Atlantic sturgeon	<i>Acipenser oxyrinchus oxyrinchus</i>	
Gulf of Maine DPS		Threatened
New York Bight DPS		Endangered
Chesapeake Bay DPS		Endangered
Carolina DPS		Endangered
South Atlantic DPS		Endangered

¹ NWA DPS = Northwest Atlantic distinct population segment, the only loggerhead DPS expected in the region

² Green sea turtles in U.S. waters are listed as threatened except for the Florida breeding population, which is listed

as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green

sea turtles are considered endangered wherever they occur in U.S. waters.

On Thu, Oct 1, 2015 at 9:53 AM, Zachary Jylkka - NOAA Affiliate <zachary.jylkka@noaa.gov> wrote:
Hi Sean,

I've included some species info and details on the section 7 process under the Endangered Species Act. Let me know if you have any questions. Happy to provide further explanation via email or on the phone.

The following ESA listed species under our jurisdiction may occur in vicinity of the proposed project in the coastal waters of Delaware off of Rehoboth Beach.

Common name	Scientific name	ESA Status
North Atlantic right whale	<i>Eubalaena glacialis</i>	Endangered
Humpback whale	<i>Megaptera novaeangliae</i>	Endangered
Fin whale	<i>Balaenoptera physalus</i>	Endangered
Loggerhead sea turtle - NWA DPS*	<i>Caretta caretta</i>	Threatened
	Leatherback sea turtle	<i>Dermochelys</i>
	<i>coriacea</i>	Endangered

Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	Endangered	
Green sea turtle	<i>Chelonia mydas</i>	Endangered	
Atlantic sturgeon	<i>Acipenser oxyrinchus oxyrinchus</i>		
Gulf of Maine DPS		Threatened	
New York Bight DPS		Endangered	
Chesapeake Bay DPS		Endangered	
Carolina DPS			Endangered
South Atlantic DPS			Endangered

*Northwest Atlantic Distinct Population Segment

Occurrence maps for the above species in the Greater Atlantic Region can be found on our website at: <http://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/maps/index.html>

These species maps are intended to aid Federal action agencies during their section 7 consultation responsibilities under the ESA and with their determination whether activities authorized, funded, or carried out by a Federal agency may affect species we listed under the ESA.

You can find more information on listed large whales at:

<http://www.nmfs.noaa.gov/pr/species/mammals/>.

You can find more information on Atlantic sturgeon at

<http://www.nmfs.noaa.gov/pr/species/fish/atlanticsturgeon.htm>.

You can find more information on listed sea turtle species at:

<http://www.nmfs.noaa.gov/pr/species/turtles/>.

From the short description of the project you described, it's not clear to me what in-water work will be required to complete the action. As listed species of whales, sea turtles, and sturgeon occur within the vicinity of your proposed project, any proposed in-water work has the potential to impact these species. As project plans develop, we recommend you consider the following mitigation/minimization measures for all of the proposed project's activities that might affect sea turtles and sturgeon.

- For activities that increase levels of suspended sediment, consider the use of silt management and/or soil erosion best practices (i.e., silt curtains and/or cofferdams).

- For activities that may cause the suspension of contaminated sediment, consider the use of appropriate containment measures.
- For work that will increase vessel traffic within the project area, consider restricting the number of trips taken by each vessel and restricting the speed at which the vessel can travel.
- For any impacts to habitat or conditions that temporarily render affected water bodies unsuitable for the above-mentioned species, consider the use of timing restrictions for in-water work.
- For pile driving or other activities that may affect underwater noise levels, consider the use of cushion blocks and other noise attenuating tools to avoid reaching noise levels that will cause injury or behavioral disturbance to sturgeon or sea turtles (see the table below for more information regarding noise criteria for injury/behavioral disturbance in cetaceans, sturgeon, and sea turtles).

Species Classification	Size	Injury Threshold	Behavioral Modification Threshold	
Sturgeon	> 2g	206 dB _{peak} /187 cSEL	150 dB re 1 μPa RMS	
	< 2g	206 dB _{peak} /183 cSEL	150 dB re 1 μPa RMS	
Sea Turtles	all	180 dB re 1μPa RMS	166 dB re 1 μPa RMS	
Cetaceans	all	180 dB re 1μPa RMS	Impulsive	Non-pulse
			160 dB re 1uPa RMS	120 dB re 1uPa RMS

As project details become finalized, a consultation, pursuant to section 7 of the ESA, may be necessary. If the final project plans have the potential to affect listed species, and it is being approved, permitted, or funded by a Federal agency, the lead Federal agency, or their designated non-Federal representative, is responsible for determining whether the proposed action is likely to affect the listed species. The Federal agency would submit their determination along with justification for their determination and a request for concurrence, to the attention of the ESA Section 7 Coordinator, NMFS Northeast Regional Office, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930. After reviewing this information, we would then be able to conduct a consultation under section 7 of the ESA.

<http://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/consultation/index.html>

On Tue, Sep 29, 2015 at 9:17 AM, Daniel Marrone - NOAA Federal <daniel.marrone@noaa.gov> wrote:
Hi Sean,
Zach Jylkka will get back to you with the information you have requested.
Thanks,
Dan

----- Forwarded message -----

From: **Sean Snow** <Sean.Snow@ghd.com>
Date: Fri, Sep 25, 2015 at 10:56 AM
Subject: National Marine Fisheries Service Review - Rehoboth Beach Ocean Outfall Project
To: "daniel.marrone@noaa.gov" <daniel.marrone@noaa.gov>

Mr. Marrone,

I am an Engineer at GHD in Bowie, MD, and we are currently working on a project located in the City of Rehoboth Beach, DE. The project consists of an effluent force main that is being installed from the current wastewater treatment plant to a diffuser located 6,000 feet offshore from the Deauville parking lot. We are starting to acquire permits for the project, and per the U.S. Army Corps of Engineers' Nationwide 7 Permit, we were required to have several delegated agencies review our project. One of these agencies is the Habitat Conservation Division of the National Marine Fisheries Service. Within this division, Michelle Magliocca has already reviewed our project and provided her feedback. In her response letter, she stated that "Threatened or endangered species under the jurisdiction of NOAA Fisheries may occur within the project area. As a result, further consultation with the Protected Resources Division may be required." She recommended contacting you for further information concerning this potential issue, so I wanted to reach out to you to see if you could provide me with information regarding what consultation would be required by the Protected Resources Division. I have attached a figure that outlines the proposed location of the project for your reference, and the letter we had received from Michelle. If you have any questions, or if there is any further information you need from me, please feel free to email or call me at [240 206 6841](tel:2402066841).

Regards,

Sean Snow
Engineer

GHD

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Sean Snow

From: Zachary Jylkka - NOAA Affiliate <zachary.jylkka@noaa.gov>
Sent: Wednesday, February 24, 2016 8:51 AM
To: Sean Snow; Brandon Gott
Subject: Re: Rehoboth Beach Ocean Outfall Project Time of Year
Attachments: 062614njdedredgedfinalopinion.pdf; Letter Dated 3-4-15.pdf

Hi Sean,

See the attached Biological Opinion for some potentially useful species information for the Rehoboth Beach area. I've also included an informal consultation (letter of concurrence), which discusses effects of mechanical/clamshell dredging on Atlantic sturgeon and sea turtles - the action area/time of year is different, but it should still be helpful to show what you'll need in your effects analysis for dredging.

I don't think a formal consultation is going to be necessary. That said, if a formal consultation were to be required, yes, the Corps would need to submit a BA. BAs include a detailed description of the action, relevant listed-species information, and a detailed analysis of the potential effects of the action on listed-species. Here is some guidance from FWS: http://www.fws.gov/midwest/endangered/section7/ba_guide.html

RPMs and TCs might include species observers, vessel speed restrictions, some negotiated TOY restrictions, etc. These vary on a case by case basis.

Cheers,
Zach

On Tue, Feb 23, 2016 at 5:13 PM, Zachary Jylkka - NOAA Affiliate <zachary.jylkka@noaa.gov> wrote:
Hi Sean,

Just left you a voicemail. Let's try to touch base on this tomorrow. I'm available anytime outside of 11-12. In sum, if the project occurs in the summer, you (or really the Corps), will need to consider the effects of the project on sea turtles and several species of whales, which otherwise may not have been present in the winter. We can discuss preferred timing of the project if you have some flexibility. You may also want to consult NOAA's Habitat Conservation Division (HCD) to see if their guidance shifts with the timing of your project. Melissa Alvarez, who you probably worked with before, is shifting to a new position, so I would contact Karen Greene (karen.greene@noaa.gov).

Best,
Zach

On Tue, Feb 23, 2016 at 11:22 AM, Sean Snow <Sean.Snow@ghd.com> wrote:

Zach,

Were you able to look into this at all?

Sean

From: Sean Snow
Sent: Monday, February 22, 2016 4:02 PM
To: Zachary Jylkka - NOAA Affiliate
Cc: Brandon Gott
Subject: Rehoboth Beach Ocean Outfall Project Time of Year

Hey Zach,

Just following up our phone conversation with an email like we discussed. We were mainly curious what additional requirements would be necessary for this project if we were unable to perform the work during the winter months. We understand it is suggested that work be performed during the winter to avoid some of the species (especially Atlantic Sturgeon) that would be present at the project location during the summer. If this is not possible, what would be the next steps towards being able to do this work during the summer? Also, would certain summer months be better than others? If you would like to discuss further, feel free to call or email.

Thanks,

Sean Snow
Engineer

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**Guidance for Carrying Out Endangered Species Act (ESA) Section 7 Consultations with
NMFS Greater Atlantic Regional Fisheries Office**

This guidance grew from a request from USACE Philadelphia District Regulatory Division staff for guidance from NMFS on the section 7 consultation process. We recognize the importance of the USACE processing permits as efficiently and quickly as possible. Our goal is to complete consultations as efficiently as possible and to allow agencies to carry out your agency mission while also protecting listed species. This document slightly adapts the guidance provided for the Philadelphia District (that also provided specific listed species that occur within district boundaries) and focuses on general consultation guidance and best management practices to minimize impacts to listed species. This document is divided into three sections. Part 1 provides basic information on NMFS listed species. Part 2 provides guidance to help determine when a consultation is necessary and, when it is, what information is necessary to provide to NMFS. We also provide information on the consultation process and things to consider when assessing the effects of an activity on listed species. Where possible we identify thresholds of concern. Part 3 includes a list of best management practices that can be implemented to avoid or minimize impacts to listed species. This guidance focuses on informal consultations. While information is provided on the formal consultation process, those sections are brief. If you think that an activity may require formal consultation, we recommend you get in touch with NMFS as soon as possible to discuss information needs and consultation procedures.

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Part 1 - Overview of NMFS ESA Listed Species and Critical Habitat

The ESA provides protection to species listed as threatened and endangered. In most cases, once we list a species as threatened or endangered we also need to designate critical habitat. Some species are listed as one unit throughout their range (e.g., shortnose sturgeon) and some species are listed as “distinct population segments” (DPSs) and each of those DPSs is treated as a separate species. A brief overview of listed species under NMFS jurisdiction is provided below. For more detailed information go to <http://www.greateratlantic.fisheries.noaa.gov/Protected/>.

List of ESA Listed Species under NMFS jurisdiction:

Sea Turtles:

- Northwest Atlantic Ocean DPS of loggerhead sea turtle - Threatened
- Kemp’s ridley sea turtle - Endangered
- Green sea turtle - Endangered¹
- Leatherback sea turtle - Endangered
- Hawksbill sea turtle - Endangered

Whales:

- North Atlantic right whale - endangered
- Humpback whale - endangered
- Fin whale - endangered
- Sei whale - endangered
- Sperm whale - endangered
- Blue whale - endangered

Right Whale Critical Habitat: - Great South Channel, east of Cape Cod, and Cape Cod and Massachusetts Bays. On February 20, 2015, NMFS published a proposed rule to revise the critical habitat for endangered North Atlantic right whales in the Atlantic Ocean (80 FR 9313). The proposed revision would expand the critical habitat from 4,640 square nautical miles to roughly 29,945 square nautical miles and include feeding areas in the Gulf of Maine/Georges Bank region and calving grounds from southern North Carolina to northern Florida.

Atlantic Salmon (Gulf of Maine DPS): - endangered

Atlantic Salmon Critical Habitat: Critical habitat for Atlantic salmon was designated in 2009 entirely within Maine. Forty-five specific areas containing over 19,000 kilometers of rivers and streams and 799 square kilometers of lakes and ponds were identified as having the physical and biological features essential to the conservation of the species, which may require special management or protections.

Shortnose sturgeon: - endangered

¹ On March 23, 2015, we published a proposed rule to list three DPSs of green sea turtles as endangered and eight DPSs as threatened, including the North Atlantic DPS (80 FR 15272). This rule, when finalized, would replace the existing listing for green sea turtles. Currently, green sea turtles are listed as threatened, except for the Florida and Pacific coast of Mexico breeding populations, which are listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green sea turtles are currently considered endangered wherever they occur in U.S. waters.

Atlantic sturgeon:

- Gulf of Maine DPS - threatened
- New York Bight DPS - endangered
- Chesapeake Bay DPS - endangered
- Carolina DPS - endangered
- South Atlantic DPS - endangered

Part 2 - Consultation Guidance**What is a Section 7 Consultation?**

Section 7(a)(2) of the ESA requires each Federal agency to consult with NMFS and USFWS to insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat . . .

Consultation is used to capture all of the discussions you have with NMFS about the effects of a project on listed species and will often end with NMFS issuing a determination on the effects of the proposed action on listed species. This will take the form of a concurrence with your determination that the action may affect but is not likely to adversely affect listed species (informal consultation) or a biological opinion as to whether the proposed action is likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat (formal consultation). In addition to informal and formal consultation, there is a “pre-consultation” phase we refer to as technical assistance.

Technical Assistance

Technical assistance is an optional, but recommended, process designed to identify potential conflicts between proposed actions and listed species. A request for technical assistance can be submitted by the USACE, an applicant, or a representative of either. It should include a description of the proposed project, project location, and a description of the habitat that will be impacted. We will respond by email or letter providing information on any listed species that may be affected by the proposed action and recommended measures that could avoid or minimize those impacts. This can help you and/or the applicant determine if section 7 consultation will be necessary and is particularly helpful for large scale projects.

Informal Consultation:

Informal consultation is one where you determine that an action may affect, but is not likely to adversely affect listed species or critical habitat. A “May Affect, but Not Likely to Adversely Affect” (NLAA) determination is based on a determination that effects are insignificant, discountable, or wholly beneficial. You initiate informal consultation by sending us a letter stating your determination that the proposed action is “not likely to adversely affect” any listed species. We review your determination and the underlying basis, and if we concur, we make the NLAA determination while taking into consideration any avoidance or minimization measures that will be a part of the proposed action. We cannot make a “conditional” determination (e.g.,

the proposed action is “not likely to adversely affect” if you do X, Y, and Z).

- Insignificant effects - relate to the magnitude of the impact: the effects cannot be meaningfully detected, measured, or evaluated, and should never reach the scale where “take” occurs.
- Discountable effects - relate to the likelihood of the impact: the effects are extremely unlikely to occur.
- Beneficial effects - positive effects without any adverse effects.

Formal Consultation:

Formal consultation concludes with issuance of a Biological Opinion. We enter formal consultation when we’ve determined that adverse effects are likely. Formal consultation is required when “take” is anticipated.

- Take is defined in section 9 of the ESA as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”
- Adverse effects on designated critical habitat are not defined in the ESA, the ESA Section 7 implementing regulations, or the ESA Section 7 Handbook. Guidance on future designations of critical habitat will be provided.

When does section 7 consultation happen?

BEFORE you issue any permits or provide any funding or authorization for an activity, but AFTER you have a description and analysis of effects of the proposed action. Technical assistance can happen at any point in the planning process - the earlier, the better.

How do I know if I need a section 7 consultation?

Consultation is required when you are proposing to authorize, fund, or carry out an activity that may affect a listed species or critical habitat. You need a consultation if there are listed species in the action area (the area affected by the project), they will be exposed to stressors resulting from the project, and they will respond to those stressors.

1. Determine if listed species occur in the action area
 - a. Define the action area: *all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.* To establish the Action Area, consider the project footprint (e.g., where the dredging will take place, where structures will be removed or installed etc.) as well as...
 - For Dredging projects: disposal area, transit route to disposal area, extent of sediment/turbidity plume during dredging AND disposal
 - For Pile Driving: How far does noise travel from the piles being installed, extent of sediment disturbance
 - For projects involving vessels: where the vessels will operate

- b. Consult maps available on the NMFS website² and guidance provided by NMFS to determine if listed species are likely to occur in the action area during the time when the direct and indirect effects of the action will be experienced
 - c. If listed species do not occur in the action area when the effects of the activity will be experienced, you can conclude “no effect” (see below for explanation of “no effect” determinations)
 - d. If listed species do occur in the action area when the effects of the activity will be experienced, go on to step 2.
2. Determine if the proposed activity “may affect” listed species
- a. Identify the stressors that will be produced by the activity (e.g., pollutants, noise, increased turbidity, vessel traffic, interactions with dredge equipment)
 - b. Will the action produce potential stressors that could impact individuals or their environment?
 - c. If yes, will listed species be exposed to those stressors? Consider whether there are avoidance or minimization measures in place that would eliminate the potential for exposure (e.g., silt curtains, cofferdams)
 - d. If yes to c, will listed species respond to that exposure? (e.g., will they avoid the area, will their ability to feed be affected?)
 - e. If yes to d, the proposed action “may affect” listed species; go on to question 3. If no to b, c, or d, you can conclude “no effect” and consultation is not required. All determinations should include an effects analysis to support your determination.
3. For each stressor, determine if the effects to listed species will be insignificant, discountable, or wholly beneficial
- a. Effects are discountable if: (i) The activity produces stressors that could affect individuals, but the probability of exposing listed individuals to those stressors is so small that it would be extremely unlikely that exposure (and effects) will occur **OR** (ii) the activity produces stressors that could affect individuals and individuals are likely to be exposed to those stressors, but the probability of those individuals responding to the exposure is so remote that it is extremely unlikely to expect that response to occur
 - b. Effects are insignificant if: the activity produces stressors that individuals are likely to be exposed and respond to, but the responses are so small they cannot be meaningfully detected, measured, or evaluated (must not result in any measurable reduction in fitness or rise to the level of “take”)
 - c. Effects are wholly beneficial if: listed species are expected to respond positively to the effects of the action with no negative responses.
4. If the effects will be wholly beneficial, insignificant, or discountable, you should request informal consultation. If they will not be wholly beneficial, insignificant, or discountable, you may need formal consultation.

² <http://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/maps/index.html>

What does “no effect” mean?

No effect means there will be no direct or indirect effects to listed species from the proposed action. Some examples of when a “no effect” conclusion would be reached are:

1. No species occur at all in the action area, meaning not just the immediate project area but the species are also absent from all areas where the project will have direct or indirect environmental effects.
2. The species occur in the action area seasonally, and the project will be timed to avoid the species presence and there will be no effects to those species once they return to the area.
3. The species occur in the action area and may be present at the time of the project, but there are no plausible routes of effects to the species.

What happens if I make a “no effect” determination?

There is no consultation with NMFS required. Just document the determination for your files. You do not need to notify NMFS or seek our concurrence with that determination.

What goes into a request for concurrence?

Once you have determined that you need a consultation, the next step is to request consultation with us. We prefer to receive consultation requests in the form of a signed letter addressed to our Assistant Regional Administrator for Protected Resources (informal consultations) or Regional Administrator (formal consultations), but e-mail is also acceptable provided it contains all of the necessary information we require. We cannot move forward with your consultation request until we receive all necessary information, which consists of:

- A complete description of the proposed action. This must include (as relevant to the project): the volume of material to be removed with a dredge, depth of cut, disposal location, type of dredge, area to be dredged (acres), information on piles and sheetpiles to be installed (diameter, number and type, method of installation), estimated distances to acoustic thresholds, information on any vessels associated with the project and expected speeds, description of any shoreline stabilization and riprap materials, dimensions of any docks, piers, floats, or other in-water structures to be installed.
- Project schedule. A construction schedule with the duration of the project’s major phases of in-water work (e.g., number of days, weeks, or months; daytime only or 24-hour operation; seasonal restrictions). Duration and frequency of any maintenance activities.
- A thorough description of the action area. Explain where the project will take place as well as any available information on the characteristics of the area including: depth, substrate type, presence of submerged aquatic vegetation, shellfish and other benthic resources, any biological surveys that have occurred in the area.
- Any minimization measures or best management practices to be implemented.

This should include: time of year restrictions, sound minimization measures, use of turbidity curtains, etc. Our effects determination takes these measures into consideration. We cannot issue a conditional determination (e.g., “the project is NLAA if you do X, Y, or Z”).

- Your determination of which listed species occur in the action area.
- Identification of the stressors associated with the proposed action (e.g., noise, turbidity, loss of benthic resources) and an explanation of how those stressors may affect listed species (see below).
- Your determination of effects of the action on listed species and a request for our concurrence with that determination. The request should state that you have determined the proposed action is not likely to adversely affect any listed species.

How do I know what the effects of the action are?

- Use the table below to identify the stressors associated with the activities under consultation.
- For each stressor,
 - establish if individuals will be exposed to the effect/stressor, and if so, which individuals (i.e., life stage, species);
 - explain the consequence of that exposure;
 - conclude that the activity will have effects that are discountable (“extremely unlikely to occur”), insignificant (“unable to meaningfully measure, detect or evaluate”), or wholly beneficial (positive effects with no associated negative effects)
- Your analysis must consider the effects of the action when added to baseline conditions; that is, what is the effect of the stressors when added to the baseline conditions (e.g., if the area has high turbidity, you consider the additional turbidity on top of a turbid environment, or if you are considering vessel traffic you consider the addition of project related vessels to vessels that are already operating in the action area).
- Information on the noise associated with various pile types is available in several sources online. The Washington State Department of Transportation maintains a website with many sources of acoustic information: <http://www.wsdot.wa.gov/>. Other sources of information include the California Department of Transportation www.dot.ca.gov and Discovery of Sound in the Sea (DOSITS) www.dosits.org.

Guidance to determine which “stressors” are associated with different activities

Type of Activity	Effects to be Addressed (Stressor)	Issues to be Considered/Addressed
Dredging	Capture in Dredge Bucket (mechanical)	<ul style="list-style-type: none"> ○ Presence of individuals in the action area and their behavior and habitat use ○ Duration and extent of dredging activity ○ Geographic extent of area where dredging will occur and availability of suitable habitat in a “zone of passage”

	Impingement or Entrainment (hopper)	<ul style="list-style-type: none"> ○ Presence of individuals in the action area and their behavior and habitat use ○ Duration and extent of dredging activity ○ Size and mobility of individuals in area ○ Geographic extent of area where dredging will occur and availability of suitable habitat in a “zone of passage”
	Impingement or Entrainment (Cutterhead)	<ul style="list-style-type: none"> ○ Presence of individuals in the action area and their behavior and habitat use ○ Duration and extent of dredging activity ○ Size and mobility of individuals in area ○ Geographic extent of area where dredging will occur and availability of suitable habitat in a “zone of passage”
	Disturbance of Sediment	Turbidity/increased suspended sediment, contaminants, loss of prey -- see below
	Substrate Type	<ul style="list-style-type: none"> ○ Will there be a change in substrate type? ○ If so, does it change the way individuals will use the area? ○ What is the impact of that change?
	Change in Depth	Will the change in depth alter the function of the habitat or change how the species uses the area? Will it affect other conditions (salinity, dissolved oxygen, temperature) that may affect listed species?
Near Shore/In-Water Disposal	Water Quality	<ul style="list-style-type: none"> ○ Turbidity/increased suspended sediment (see below) ○ Contaminants (see below) ○ Effects to prey (see below)
	Burial/Smothering of prey resources	See below
	Vessel Traffic	See below
	Substrate Type	See below
	Change in Depth	Will the change in depth alter the function of the habitat or change how the species uses the area?
Sound	Noise -- Behavioral Disturbance	<ul style="list-style-type: none"> ○ Extent and duration of activity ○ Size of area where behavioral disruption is anticipated ○ Adequate zone of passage (see below)
	Noise -- Injury	<ul style="list-style-type: none"> ○ Extent and duration of activity ○ Size of area where an animal would need to be to be injured and how long the animal would need to be there
Zone of Passage (i.e., ability of listed species to “bypass” the impacted area)	Noise	<ul style="list-style-type: none"> ○ Is a zone of passage maintained 24 hours a day? ○ Size of area available for passage vs. river or waterway width ○ Is habitat within the zone of passage appropriate for the species?
	Sediment disturbance	
	Physical structures	

		<ul style="list-style-type: none"> ○ What habitat will they be excluded from and what impact will that have on individuals? ○ What will the behavioral response of animals be to blockage of passage? ○ What impact do those responses have on individuals? ○ If animals leave the action area, where will they go and what are the consequences of going there? ○ Duration of blockage (i.e., hours per day for how many days)
Installation of structures or materials on the bottom	Shading	<ul style="list-style-type: none"> ○ Will shading impact the way that individuals use the action area? ○ Will shading cause an impact to prey? If so, see below ○ Will the shading effect dissolved oxygen levels?
	Loss/change in benthic habitat	Any change in depth or substrate type? If so, see above
	Effects to prey	See below
	Disturbance of bottom – contaminants	Will there be any mobilization of contaminants? See water quality, below
	Disturbance of bottom – turbidity and suspended sediment	See below
Change in Substrate Type	Alteration in substrate type	<ul style="list-style-type: none"> ○ Will there be a change in substrate type? ○ If so, does it change the way individuals will use the area? ○ What is the impact of that change?
Effects to Prey	Direct loss of prey	<ul style="list-style-type: none"> ○ Any change in the abundance of prey ○ Any change in the quality of prey ○ How large of an area will be affected ○ How quickly will it be recolonized ○ How often will the area be disturbed and the alteration happen ○ What will the behavioral response of animals be to these changes in abundance or quality? ○ What impact do those responses have on individuals? ○ If animals leave the action area where will they go and what are the consequences of going there? ○ Will this loss or alteration affect the way that animals use the action area?
	Burial/smothering of prey	
	Alteration of substrate type	
Sediment Disturbing Activities	Turbidity/suspended sediment	<ul style="list-style-type: none"> ○ What is the composition of the sediment plume (i.e., sediment type, TSS levels in mg/l)? ○ How far/ wide does the sediment plume

		extend? ○ How long does it last? ○ Are individuals likely to be exposed to the increased TSS? If so, what is the impact? ○ Does it affect zone of passage? If so, see above
	Effects to prey	See above
Vessels	Potential for strike/interactions	○ Number of vessels – what is the effect of adding X vessels to the baseline condition? ○ Route – how does it overlap with individual use of action area ○ Speed – is the speed a factor for considering potential for interactions? If so, is proposed speed ok? ○ Are effective methods to minimize strike being used? ○ Frequency and duration of vessel use
Removal of structures	Noise	See above
	Sediment disturbance	See above
Aquaculture	Habitat Impacts and entanglement	○ Is there a risk of entanglement? ○ What are the impacts to habitat? ○ Will shellfish beds or SAV be impacted? ○ Any loss or alteration of forage?
Water Quality	Introduction of Pollutants/Contaminants	○ What pollutants will be introduced? ○ Are pollutants in compliance with national recommended water quality standards (aquatic life criteria)? ○ Will there be any exposure to discharge prior to full dilution? ○ What is the impact of that exposure?
	Water Quality Parameters (e.g., Temperature, Salinity, pH, Dissolved Oxygen)	○ Are there any changes? ○ What is geographic extent of area affected and how will animals respond?

Stressors/Thresholds of concern

Stressor	Effects May be experienced if...	Adverse effects may be avoided if...
Sound	<ul style="list-style-type: none"> • Sound intensity (dB) is > ambient noise • Frequency (hertz[Hz]) within hearing range of all listed species in action area 	<ul style="list-style-type: none"> • Adequate zone of passage³ will be maintained throughout the action area • Noise remains below the relevant species thresholds: Whales:

³ In the letter, you must explain why the available zone of passage is adequate – that is, why it is reasonable to expect that that the listed species will pass through the area. Consider the width of the zone of passage, the width of the water body, the overall size of the affected area, what the animals are doing in the area, the suitability of the habitat present in the zone of passage, and the accessibility of the zone of passage.

		<p>Injury: 180 dB re 1uPa RMS Behavior: 160 dB re 1uPa RMS (impulsive noise) or 120 dB re 1uPa RMS (continuous noise)</p> <p>Sea Turtles: Injury: 180 dB re 1uPa RMS Behavior: 166 dB re 1uPa RMS</p> <p>Shortnose and Atlantic sturgeon: Injury: peak noise < 206 dB re 1uPa and cSEL < 187 db re 1 uPA Behavior: 150 dB re 1uPa RMS</p> <ul style="list-style-type: none"> •
Habitat Structure and Disturbance	<ul style="list-style-type: none"> • Change in water depth • Change in substrate characteristics 	<ul style="list-style-type: none"> • Any change in water depth will not change the use of the area by species • Any change in substrate type will not change the use of the area by species
Water Quality	<ul style="list-style-type: none"> • Potential for contaminant exposure • Change in water quality (temporary or permanent) including water current (speed/direction) and temperature 	<ul style="list-style-type: none"> • Any increase in turbidity/suspended sediment is minor and temporary such that there is no impairment of movement of individual animals and there is only a minor and temporary reduction in available prey or an insignificant permanent reduction in the abundance, availability, accessibility, and quality of available prey (see below)
Prey Quantity/Quality	<ul style="list-style-type: none"> • Area used for foraging • Change in the abundance, availability, accessibility or quality of prey including SAV and shellfish beds 	<ul style="list-style-type: none"> • Action causes a minor and temporary reduction in available prey • Action causes an insignificant permanent reduction in the abundance, availability, accessibility or quality of prey • The permanent loss of available prey results in only insignificant changes to foraging behavior
Vessels	<ul style="list-style-type: none"> • Change in vessel traffic (volume and/or travel route) 	<ul style="list-style-type: none"> • species extremely unlikely to occur in area where vessels are present • Any change in vessel traffic (volume and/or route) is insignificant • Whales – see additional guidance below
Dredging	<ul style="list-style-type: none"> • Dredging will overlap with area where species is likely to occur 	<ul style="list-style-type: none"> • A mechanical dredge or the Currituck will be used (or similar special purpose low suction hopper dredge)
In-Water Structures		<ul style="list-style-type: none"> • Shading will have no effect or such a small effect on prey that there is no detectable loss of prey or change in foraging behavior of the listed species • Structures do not create any impairment of normal behaviors or block passage

What happens once I submit my request for informal consultation?

Informal Consultation

Your consultation request will be assigned to one of the section 7 biologists in the NMFS Protected Resources Division. Most of our staff are in Gloucester, MA; we also currently have one biologist in Annapolis, MD, and one in Orono, ME. The assigned biologist will review your request for consultation and contact you by phone or email if they need more information. Our hope is that by following this guidance, we will minimize the number of times there are outstanding information needs. Responding to our requests for information quickly allows us to continue to process your request for consultation. Once we have considered all the necessary information, the section 7 biologist will draft a “letter of concurrence.” This letter will provide information on the proposed action, the species that occur in the action area, and justification for our concurrence with your determination. In the letter, we will analyze the effects of the action to demonstrate that all effects are wholly beneficial, insignificant, or discountable. The letter will be reviewed internally and be signed by the ARA for PRD or the RA. There is no statutory timeline for responding to requests for concurrence; we try to respond as quickly as we can. Average response time is 4-6 weeks.

What is reinitiation? How do I know if I need to reinitiate and how do I do it?

Many times, the projects needing consultation have a long life. In those cases, it is not unusual for something to change about the project or for a new species to be listed. Other times, take occurs when we did not expect it. Every consultation document contains a paragraph listing the triggers for reinitiation. These are: (1) the amount or extent of taking specified in the incidental take statement is exceeded; (2) new information reveals effects of the action that may not have been previously considered; (3) the identified action is subsequently modified in a manner that causes an effect to listed species; or (4) a new species is listed or critical habitat designated that may be affected by the identified action.

Trigger 1 typically only applies for formal consultations that include an Incidental Take Statement within a Biological Opinion. But, if take resulted from an action where we did not anticipate it, reinitiation would be required immediately. If a project we have consulted on changes, we recommend you contact the biologist who wrote the consultation letter. You should discuss the changes and the potential need for reinitiation. Reinitiation isn't required just because there is a change in the project, the change needs to result in effects to listed species that weren't considered in the consultation. If reinitiation is necessary, you should send us a letter (following the guidelines for a letter requesting consultation) requesting reinitiation. The request should contain your assessment of effects of the modified action and request our concurrence with that determination. We would send a letter back which would close out the consultation.

What happens if consultation cannot be concluded informally?

You must request formal consultation. You will prepare a Biological Assessment and submit it to us along with your request. Your consultation request will be assigned to a section 7 biologist. The assigned biologist will review your request for consultation and contact you by phone or email if they need more information. Once we have all the

necessary information, we will send you a letter stating that we have all the information necessary to initiate formal consultation. You should receive this letter within 30 days. The biologist will then draft a Biological Opinion including an Incidental Take Statement (as appropriate). The ESA requires us to provide a final Biological Opinion to you within 135 days of initiation (the date we receive all the necessary information). This timeline can be extended if we both agree more time is needed.

What is an Incidental Take Statement (ITS)?

Section 9 of the ESA prohibits the take of a listed species. An ITS provides an exemption from the section 9 prohibitions on take. If we determine in a Biological Opinion that take is likely but that the action is not likely to jeopardize the continued existence of the listed species, we can “exempt” the expected amount of take in an ITS. The ITS will normally include Reasonable and Prudent Measures (RPMs) and Terms and Conditions designed to minimize and monitor the take. These are nondiscretionary and compliance is mandatory in order for the exemption to apply.

Are there any Biological Opinions I should know about?

All of the active GARFO Biological Opinions are available on our webpage:
<http://www.greateratlantic.fisheries.noaa.gov/protected/section7/bo/actbo.html>

These consultations include detailed information on species presence in the district and are good sources of information.

Part 3 - Best Management Practices to Minimize Impacts to Listed Species

General Considerations

- Plan projects to avoid areas or times of year when listed species are likely to be present
- Sediment disturbing activities should be avoided in sturgeon spawning and nursery areas from to protect sensitive life stages (spawning adults and early life stages)
- Activities that result in the loss of cobble habitat in freshwater reaches should be avoided to minimize the potential for loss or disruption of sturgeon spawning and nursery habitat
- Sediment disturbing activities should be carried out in a way that minimizes the effects to benthic resources that serve as forage for listed species
- Disturbance of contaminated sediments should only occur behind weighted, full depth silt curtains. Precautions should be taken to avoid trapping fish within silt curtains.

Dredging

- When possible, a mechanical dredge should be used (rather than a pipeline or hopper dredge)

In-water Structures

- Docks, piers, and floats should be constructed in a way that minimizes the potential to disturb benthic resources.

Pile Driving

- Use a vibratory hammer to the maximum extent practicable
- Use cushion blocks or other noise attenuation devices when using an impact hammer
- Limit pile driving activities to no more than 12 hours per day
- Use a “soft start” for a pile driving activities where driving does not occur at full power at first
- Pile driving should be carried out in a way that avoids exceeding noise thresholds identified for the listed species that occur in the action area

Vessel Operations

- Shallow draft vessels that maximize the navigational clearance between the vessel and the river bottom should be used where possible
- Vessels should operate at speeds of less than 10 knots. Whenever operating in areas where whales or sea turtles are present, a look out should be posted and measures taken to slow down and avoid any whales or sea turtles spotted.



Type of Activity	Effects to be Addressed (Stressor)	Issues to be Considered/Addressed	GHD Response	References (EIS, Correspondences, Letter, etc.)
Dredging	Capture in Dredge Bucket (Mechanical)	Presence of individuals in the action area and their behavior and habitat use	Refer to Section 08 of the December 2012 Final Environmental Impact Statement (EIS) and the Delaware Division of Fish and Wildlife Species Conservation and Research Program review letter dated October 12, 2015 about information of individual species in the action area and their behavior and habitat use	Refer to Section 08 of the December 2012 Final Environmental Impact Statement (EIS) and the Delaware Division of Fish and Wildlife Species Conservation and Research Program review letter dated October 12, 2015
		Duration and extent of dredging activity	Construction is anticipated to be 3 months off of the Delaware Atlantic coast. The open-cut trench starts 3,000 LF off the coastline and extends to 6,000 FT and will be approximately 50 feet wide (~150,000 sf). The seafloor depth is approximately 38 to 40 FT below sea level (bsl). The trench excavation will extend to a depth of roughly 7 to 10 FT below the sea floor. It is estimated that 41,000 cy of material will be excavated, and 3,000 cy of material will be replaced. These quantities are estimates at this time. Excavation will be performed by a mechanical dredge bucket. Pending approval from the Delaware Department of Natural Resources and Environmental Control (DNREC) Wetlands and Subaqueous Division, excavated material will be either side cast or removed and disposed to an approved area.	
		Geographic extent of area where dredging will occur and availability of suitable habitat in a "zone of passage"	Passage will be temporarily limited along the trenching areas during construction. This area will never be completely closed since trenching will be isolated to the area below the barge at any one time due to a dredge bucket being used. The only areas that may impact passage are those that are actively being dredged. In addition, an abundance of suitable habitat is available near the active site. Species will be able to locate to these areas during dredging.	
		Impingement or Entrainment (hopper)	N/A - a hopper will not be used	
	Duration and extent of dredging activity	N/A - a hopper will not be used		
	Size and mobility of individuals in area	N/A - a hopper will not be used		
	Geographic extent of area where dredging will occur and availability of suitable habitat in a "zone of passage"	N/A - a hopper will not be used		



Dredging (Cont.)	Impingement or Entrainment <u>(Cutterhead)</u>	Presence of individuals in the action area and their behavior and habitat use	N/A - a cutterhead will not be used	
		Duration and extent of dredging activity	N/A - a cutterhead will not be used	
		Size and mobility of individuals in area	N/A - a cutterhead will not be used	
		Geographic extent of area where dredging will occur and availability of suitable habitat in a "zone of passage"	N/A - a cutterhead will not be used	
	Disturbance of Sediment	Turbidity/increased suspended sediment, contaminants, loss of prey -- see below	During trenching, a temporary increase in turbidity anticipated, but it will be localized along the open-cut trench portion. Following construction it is anticipated that when excavated material is returned to the pipe trench (after pipe installation with armor rock on top) the sand will redistribute itself and the bottom profile will return to its natural level due to the high hydraulic action or energy associated with the ocean floor.	Refer to Section 7 of the EIS for affected Environment and Environmental consequences (Physical Environment) of the Ocean Outfall.
	Substrate Type	Will there be a change in substrate type?	A pipe will be constructed within a trench with armor stone and excavated soils placed on top.	Refer to Section 4.5 of the EIS for a typical cross section of the open-cut trench portion of the outfall pipe.
		If so, does it change the way individuals will use the area?	No change is anticipated.	
		What is the impact of that change?	No impacts are anticipated.	Refer to Section 7 of the EIS for affected Environment and Environmental consequences (Physical Environment) of the Ocean Outfall.
	Change in Depth	Will the change in depth alter the function of the habitat or change how the species uses the area? Will it affect other conditions (salinity, dissolved oxygen, temperature) that may affect listed species?	There will be no permanent change in depth. No long-term habitat impacts are expected.	



Near Shore/In-Water Disposal	Water Quality	Turbidity/increased suspended sediment (see below)	Temporary short-term impacts (turbidity/increased suspended sediment) are anticipated during construction of the open-cut trench portion of the outfall. Impacts will be localized along the open-cut trench portion area.	Refer to Section 7 of the EIS for affected Environment and Environmental consequences (Physical Environment) of the Ocean Outfall.	
		Contaminants (see below)	Post construction, treated effluent from the Rehoboth Beach WWTP will be diffused into the water 6000 LF offshore. This effluent will have been treated through ENR treatment and modelling predicts rapid dilution to background levels. The plume of effluent to a point of 1:10,000 dilution is only expected to extend 1,000 ft south of the diffuser.	Refer to Section 5 Effluent Characteristics and Concerns of the EIS for detailed effluent quality information.	
		Effects to prey (see below)	There are no anticipated cumulative impacts involving intertidal and nearshore benthic organisms as the proposed pipe will be directionally drilled well below the ocean bottom in that area. Benthos in the vicinity of the outfall diffuser or the trenched portion of the outfall pipe would be impacted by dredging and backfill operations as the diffuser is installed (see Section 4.5.4 of the EIS for a description of the portions of the outfall pipe that will be trenched). The impacts of such an operation would be minor and short-term. All excavations will be backfilled with the excavated material, which minimizes changes to sediment composition and thus reduces the impact on the benthic community. Benthic communities in the disturbed area are initially decimated but resettling and recolonization occur rapidly.	Refer to Section 8 of the EIS for affected Environment and Environmental Consequences (Biological).	
		Burial/Smothering of prey resources	See below	see above "Effect to prey".	Refer to Section 8 of the EIS for affected Environment and Environmental Consequences (Biological).
		Vessel Traffic	See below	A barge will be used and stationed approximately 3,000+ FT offshore during trenching and diffuser installation. The barge will be a floating vessel that will provide a navigational clearance between the barge and the ocean bottom.	
		Substrate Type	See below	see above "Substrate Type"	
		Change in Depth	Will the change in depth alter the function of the habitat or change how the species uses the area?	No change in depth impacts are anticipated due to construction activities.	



Sound	Noise -- Behavioral Disturbance	Extent and duration of activity	Construction is anticipated to be 2-3 months and pile driving is likely to take 3-4 days to complete. Based on Table 1.2-1 and 1.2-2 of the Compendium of Pile Driving Sound Data prepared for the California Department of Transportation, if the piles are installed using impact hammers, the noise range would be roughly 200-207 dB peak. However, based on existing soil borings, it is anticipated that the soil will accommodate vibratory; slightly lower level albeit continuous noise. The above referenced table only contains vibratory sound data for piles that are both larger and smaller than the piles expected for this project. It contains impact hammer sound data for the correct pile size, but impact hammer is not expected to be used. Although it does not have the correct pile sizes that correspond with the anticipated driving method, based on other data in the table, we anticipate Sound Pressure Levels and Sound Exposure Levels to be between 150 dB and 170 dB, with a peak between 165 dB and 180 dB based on vibratory data for piles larger and smaller than what is expected for this project. For pile driving activities, Best Management Practices will be utilized to minimize impacts to listed species. These would include but not be limited to noise attenuation devices to dampen the noise, restricting pile driving activities to no more than 12 hours per day, and using a "soft start" where driving does not occur at full power at first.	
		Size of area where behavioral disruption is anticipated	Behavioral disruption is anticipated in close proximity to the project since average peak noise is close to the minimum behavioral threshold. The trench area is approximately 3,000 LF and 30 FT wide.	
		Adequate zone of passage (see below)	There will be ample space for species to navigate and avoid the active area when pile driving is being conducted.	
	Noise -- Injury	Extent and duration of activity	See above	
		Size of area where an animal would need to be to be injured and how long the animal would need to be there	No injuries are expected due to noise levels	



Zone of Passage (i.e., ability of listed species to "bypass" the impacted area	Noise	Is a zone of passage maintained 24 hours a day?	Yes.		
	Sediment disturbance	Size of area available for passage vs. river or waterway width	The depth of the seafloor in the project site is approximately 38 FT to 40 FT below sea level. The barge will be floating on top of the surface and should provide adequate navigational clearance beneath the barge and the seafloor.		
	Physical Structures	Is habitat within the zone of passage appropriate for the species?	Yes		
		What habitat will they be excluded from and what impact will that have on individuals?	The proposed trenching areas during construction will be the only area of habitat temporarily impacted. No impacts to individuals are anticipated as they will have additional habitat to move to during construction.		
		What will the behavioral response of animals be to blockage of passage?	Temporary blockage of zone of passage will be minimal and it is expected that temporary behavioral responses will be to avoid the area.		
		What impact do those responses have on individuals?	No impacts are anticipated other than temporary avoidance of the area		
		If animals leave the action area, where will they go and what are the consequences of going there?	There is similar habitat surrounding the construction area that would be able to provide for the displaced species.		
Duration of blockage (i.e., hours per day for how many days)	Temporary blockage will be limited to periods when piping and/or dredge buckets are raised and lowered. Construction is anticipated to be limited to 12 hours a day.				
Installation of structures or materials on the bottom	Shading	Will shading impact the way that individuals use the action area?	No, the only item that will be exposed is the diffuser which should produce insignificant shading		
		Will shading cause an impact to prey? If so, see below	No		
		Will the shading effect dissolved oxygen levels?	No		
	Loss/change in benthic habitat	Any change in depth or substrate type? If so, see above	No		
	Effects to prey	See below	Temporary		
	Disturbance of bottom - contaminants	Will there be any mobilization of contaminants? See water quality, below	No contaminants are anticipated during the disturbance of the seafloor.		
	Disturbance of bottom - turbidity and suspended sediment	See below	Turbidity and suspended sediments mobilization is anticipated during trenching activities along the open-cut trench portion of the outfall. No contaminants are anticipated during the disturbance of the seafloor.		



Change in Substrate Type	Alteration in substrate type	Will there be a change in substrate type?	No. It is anticipated to utilize dredged material as backfill along the outfall pipe.	
		If so, does it change the way individuals will use the area?	No.	
		What is the impact of that change?	N/A	
Effects to Prey	Direct loss of prey	Any change in the abundance of prey	There will be temporary change in abundance of prey within the action area, but will be returned to normal following construction.	Refer to Section 8 of the EIS for affected Environment and Environmental Consequences (Biological).
	Burial/smothering of prey	Any change in the quality of prey	Yes, during construction, but will only be temporary. Should be recolonized within 3 months to a few years.	Refer to Section 8 of the EIS for affected Environment and Environmental Consequences (Biological).
	Alteration of substrate type	How large of an area will be affected	Approxiamtely 38,000 CY of matetrial along the trench area will be displaced.	
		How quickly will it be recolonized	Several months to a few years. Benthic collection studies will be performed before and after construction to see the effects	Refer to Section 8 of the EIS for affected Environment and Environmental Consequences (Biological).
		How often will the area be disturbed and the alteration happen	The area will be distrubed during the construction of the outfall only. No further disturbance is anticipated.	
		What will the behavioral response of animals be to these changes in abundance or quality?	No impacts are anticipated other than temporary avoidance of the area during construction	
		What impact do those responses have on individuals?	No impacts are anticipated other than temporary avoidance of the area during construction	
		If animals leave the action area where will they go and what are the consequences of going there?	Action area is surrounded by similar habitat. Animals will likely disperse to adjacent habitat.	
Will this loss or alteration affect the way that animals use the action area?	No impacts are anticipated other than temporary avoidance of the area during construction			



Sediment Disturbing Activities	Turbidity/suspended sediment	What is the composition of the sediment plume (i.e., sediment type, TSS levels in mg/l)?	The sediment that will be dredged consists mainly of coarse sand with small quantities of silt based on existing soil borings. A more detailed sediment and chemical sampling analysis is currently being completed. The TSS levels will be typical of a plume caused by dredging with the highest levels closest to the active site near the ocean floor. Since the dredged material is not known to be contaminated, once the sediment settles soon after dredging, no long term issues should arise due to the temporarily increased TSS. An increase in TSS close to the active site could cause temporary issues for close species close. According to a study done by the USACE in 1988 (See reference to the right), the highest TSS levels for mechanical dredging were observed at 100% depth and the highest levels recorded were 140 mg/l, but TSS was only 20 mg/l at a distance of 300 feet at 100% depth. TSS levels were less drastic higher in the water column. Since conditions, such as current, would be different at Rehoboth, these findings cannot be directly applied, but do give a good representation of what could be expected during dredging. Best Management Practices will be utilized during trenching activities to reduce the sediment plume effects. They include reducing the speed at which the crane operates, limiting the practice of smoothing the excavated area by dragging the bucket along the bottom, and utilizing a bucket designed to reduce the amount of sediment lost while it is being lifted through the water column. Any technique to limit the amount of resuspension of sediment will be utilized whenever possible.	McFarland, V. A., Feldhaus, J., Ace, L. N., Brannon, J. M., Engler, R. M., Patin, T. R. (1992). <i>Environmental Effects of Dredging Technical Notes</i> . USACE Waterways Experiment Station. EEDP-04015.
		How far/ wide does the sediment plume extend?	The extents of the sediment plume are unknown at this time. This is highly dependent on the ocean characteristics in that area at the time of dredging. Based on the study developed by the USACE referenced above, at 100% depths, the majority of sediment should remain within 200-400 feet from the extraction point.	
		How long does it last?	The plume duration depends heavily on the ocean and the settling characteristics of the sand/silt and the surrounding environmental conditions.	
		Are individuals likely to be exposed to the increased TSS? If so, what is the impact?	Individuals close to the construction will likely be exposed temporarily, but impact should be relatively contained.	
		Does it affect zone of passage? If so, see above	Yes, resuspended sediment will limit the zone of passage near the active area. Suspended sediment should be contained to an area close to the active area, so passage will still be available to all species.	
	Effects to prey	See above	The effects to prey will be temporary, lasting only as long as the sediment takes to settle.	



Vessels	Potential for strike/interactions	Number of vessels – what is the effect of adding X vessels to the baseline condition?	One barge, and potentially several smaller vessels near by. Impacts of adding additional vessels will be minor. Zone of passage will not be impacted as any vessels added will be shallow draft vessels.	
		Route – how does it overlap with individual use of action area	The vessel route would be from the docking area to the action area	
		Speed – is the speed a factor for considering potential for interactions? If so, is proposed speed ok?	Vessels will operate at speeds less than 10 knots during construction	
		Are effective methods to minimize strike being used?	Yes, a shallow draft vessel will be used for the dredging barge.	
		Frequency and duration of vessel use	Vessel will likely be used daily unless not needed, or incapable of reaching action area.	
Removal of structures	Noise	See above	N/A	
	Sediment disturbance	See above	N/A	
Aquaculture	Habitat Impacts and entanglement	Is there a risk of entanglement?	N/A	
		What are the impacts to habitat?	N/A	
		Will shellfish beds or SAV be impacted?	N/A	
		Any loss or alteration of forage?	N/A	
Water Quality	Introduction of Pollutants/Contaminants	What pollutants will be introduced?	Post construction, treated effluent from the Rehoboth Beach WWTP will be diffused into the water 6000' offshore. This effluent will have been treated through ENR treatment and modelling predicts rapid dilution to background levels. The plume of effluent to a point of 1:10,000 dilution is only expected to extend 1,000 ft south of the diffuser.	Refer to Section 5 Effluent Characteristics and Concerns of the EIS for detailed effluent quality information. Refer to Section 9.7.2.3 for potential impacts of nutrients due to the Ocean Outfall.
		Are pollutants in compliance with national recommended water quality standards (aquatic life criteria)?	Computer modeling of the outfall indicates that, even under worst-case scenarios regarding the performance of the wastewater treatment plant, public health requirements are met at or in close proximity to the diffuser.	Refer to Section 5 Effluent Characteristics and Concerns of the EIS for detailed effluent quality information.
		Will there be any exposure to discharge prior to full dilution?	Minimal exposure close to the diffuser is possible. Effluent is anticipated to reach full dilution (1:10,000) very quickly (within 1,000 ft).	Refer to Section 5 Effluent Characteristics and Concerns of the EIS for detailed effluent quality information. Refer to Section 6 Ocean Modelling for dilution modelling scenarios evaluated.



Water Quality (Cont.)	Introduction of Pollutants/Contaminants (Cont.)	What is the impact of that exposure?	Minimal impacts to individuals in close proximity to the diffusers	Refer to Section 5 Effluent Characteristics and Concerns of the EIS for detailed effluent quality information. Refer to Section 9.7.2.3 for potential impacts of nutrients due to the Ocean Outfall.
	Water Quality Parameters (e.g., Temperature, Salinity, pH, Dissolved Oxygen)	Are there any changes? What is geographic extent of area affected and how will animals respond?	No significant changes expected As mentioned above, effluent plume is expected to reach nearly full dilution within 1,000 feet of the diffuser. It is anticipated that marine species return will back to the area following construction	



Stressors/Thresholds of Concern			
Stressor	Effects May be experienced if...	Adverse effects may be avoided if...	
Sound	Sound intensity (dB) is > ambient noise	Adequate zone of passage ³ will be maintained throughout the action area	YES
	Frequency (hertz[Hz]) within hearing range of all listed species in action area	Noise remains below the relevant species thresholds: Whales: Injury: 180 dB re 1uPa RMS Behavior: 160 dB re 1uPa RMS (impulsive noise) or 120 dB re 1uPa RMS (continuous noise) Sea Turtles: Injury: 180 dB re 1uPa RMS Behavior: 166 dB re 1uPa RMS Shortnose and Atlantic sturgeon: Injury: peak noise < 206 dB re 1uPa and cSEL < 187 db re 1 uPA Behavior: 150 dB re 1uPa RMS	See above. We anticipate Sound Pressure Levels and Sound Exposure Levels to be between 150 dB and 170 dB, with a peak between 165 dB and 180 dB
Habitat Structure and Disturbance	Change in water depth	Any change in water depth will not change the use of the area by species	No change in water depth
	Change in substrate characteristics	Any change in substrate type will not change the use of the area by species	It is anticipated that any changes in substrate will not change the use of the area by species.
Water Quality	Potential for contaminant exposure Change in water quality (temporary or permanent) including water current (speed/direction) and temperature	Any increase in turbidity/suspended sediment is minor and temporary such that there is no impairment of movement of individual animals and there is only a minor and temporary reduction in available prey or an insignificant permanent reduction in the abundance, availability, accessibility, and quality of available prey (see below)	Increase in turbidity/suspended sediment is minor and temporary. Minor unavailability of prey



Prey Quantity/Quality	Area used for foraging	Action causes a minor and temporary reduction in available prey	Yes
	Change in the abundance, availability, accessibility or quality of prey including SAV and shellfish beds	Action causes an insignificant permanent reduction in the abundance, availability, accessibility or quality of prey	No permanent reduction
		The permanent loss of available prey results in only insignificant changes to foraging behavior	No permanent reduction
Vessels	Change in vessel traffic (volume and/or travel route)	species extremely unlikely to occur in area where vessels are present	It is anticipated that some species may be present where vessels are located however mitigation efforts will be undertaken such as construction being limited to specific months when species interaction is minimal.
		Any change in vessel traffic (volume and/or route) is insignificant	Yes
		Whales – see additional guidance below	N/A
Dredging	Dredging will overlap with area where species is likely to occur	A mechanical dredge or the Currituck will be used (or similar special purpose low suction hopper dredge)	Mechanical dredge will be used
In-Water Structures	-----	Shading will have no effect or such a small effect on prey that there is no detectable loss of prey or change in foraging behavior of the listed species	Yes
		Structures do not create any impairment of normal behaviors or block passage	Yes

Table 1.2-1 Summary of Near-Source (10-Meter) Unattenuated Sound Pressures for In-Water Pile Driving using an Impact Hammer

Pile Type and Approximate Size	Relative Water Depth	Average Sound Pressure Measured in dB		
		Peak	RMS	SEL
0.30 meter (12-inch) Steel H-type - Thin	<5 meters	190	175	160
0.30 meter (12-inch) Steel H-type - Thick	~5 meters	195	183	170
0.6 meter (24-inch) AZ Steel Sheet	~15 meters	205	190	180
0.61 meter (24 inch) Concrete Pile	~5 meters	185	170	160
0.61 meter (24 inch) Concrete Pile	~15 meters	188	176	166
0.30 meter (12-inch) Steel Pipe Pile	<5 meters	192	177	--
0.36 meter (14 inch) Steel Pipe Pile	~15 meters	200	184	174
0.61 meter (24 inch) Steel Pipe Pile	~15 meters	207	194	178
0.61 meter (24 inch) Steel Pipe Pile	~5 meters	203	190	177
1 meter (36-inch) Steel Pipe Pile	<5 meters	208	190	180
1 meter (36-inch) Steel Pipe Pile	~10 meters	210	193	183
1.5 meter (60 inch) Steel CISS	<5 meters	210	195	185
2.4 meter (96 inch) Steel CISS	~10 meters	220	205	195

Table 1.2-2 Summary of Near-Source (10-Meter) Unattenuated Sound Pressures for In-Water Pile Installation using a Vibratory Driver/Extractor

Pile Type and Approximate Size	Relative Water Depth	Average Sound Pressure Measured in dB		
		Peak	RMS*	SEL**
0.30 meter (12-inch) Steel H-type	<5 meters	165	150	150
0.30 meter (12-inch) Steel Pipe Pile	<5 meters	171	155	155

I.1-1

1 meter (36-inch) Steel Pipe Pile - Typical	~5 meters	180	170	170
0.6 meter (24-inch) AZ Steel Sheet - Typical	~15 meters	175	160	160
0.6 meter (24-inch) AZ Steel Sheet - Loudest	~15 meters	182	165	165
1 meter (36-inch) Steel Pipe Pile - Loudest	~5 meters	185	175	175
1.8 meter (72-inch) Steel Pipe Pile - typical	~5 meters	183	170	170
1.8 meter (72-inch) Steel Pipe Pile - Loudest	~5 meters	195	180	180

* Impulse level (35 millisecond average)

**SEL for 1 second of continuous driving

Table taken from: http://www.dot.ca.gov/hq/env/bio/files/pile_driving_snd_comp9_27_07.pdf

BMP Type	Proposed Action
Timeline	Based on information gathered from the EIS and various agencies, it appears that the months of December through March have the least chance of impacts to marine species. Work for the ocean outfall trench would be performed during this period to avoid disturbance and minimize impacts. The construction of the diffuser, located 6,000 FT offshore, would have less construction risk if constructed during the summer months. Coordination of this effort is still being evaluated.
Benthic Resources	Benthic resources are known to be within the project area. To avoid disruption of these resources, the outfall will be installed using HDD for at least the first 3000 FT, and open cut trenched the remaining 3000 FT. This will limit the amount of dredging required. Since this is a pipe installment, the footprint will be linear and small (50' wide trench). This will limit the area of impact for benthic resources.
Dredging	In order to cause the least amount of distruction during dredging, a mechanical dredge will be utilized throughout the entire project. No pipeline or hopper dredges will be used. As mentioned above, this dredging will occur during winter months with less marine activity.
Structures	Ultimately, the outfall pipe will be completely covered with only the diffuser pipes protruding from the ocean floor. Once construction is complete, and sediment is returned, there will be minimal new structures present at this location.
Pile Driving	Pile driving will occur for the support piles for the diffuser. These piles will be steel pipes of 14" to 18" in diameter. Any mitigation techniques that would lessen the noise level will be used when possible. This includes limiting the time the activities occur, using vibratory hammers instead of impact hammers, using cushion blocks if an impact hammer is required, and utilizing a "soft start". Requirements will be coordinated with the Contractor to assure these techniques will be used.
Vessel Operations	A vessel will be required for the dredging and pipe installment processes. To avoid conflict with species such as turtles, whales, and other large species, a shallow draft vessel will be used in order to maximize the distance between the vessel and the ocean floor. This will allow for maximum zone of passage. Also, vessels will operate at speeds of less than 10 knots, and will be prepared to reduce speed or halt if there is a whale or sea turtle present.

NOAA'S National Marine Fisheries Service
Protected Resources Division
55 Great Republic Drive
Gloucester, MA 01930

Attn: Mrs. Kimberly Damon-Randall

Re: Endangered Species Act Consultation for the Rehoboth Beach Ocean Outfall Project, Rehoboth Beach, Delaware

Dear Mrs. Damon-Randall,

We are permitting the proposed project as described below. This letter is to request Endangered Species Act (ESA) concurrence from your office for the Rehoboth Beach Ocean Outfall Project. We have made the determination that the proposed activity may affect, but is not likely to adversely affect, any species listed as threatened or endangered by the National Marine Fisheries Service (NMFS) under the ESA of 1973, as amended. Our supporting analysis is provided below.

Proposed Project

The Rehoboth Beach Wastewater Treatment Plant (RBWWTP) currently discharges its treated effluent to the Lewes and Rehoboth Canal, a tributary to Rehoboth Bay. In 1996, Rehoboth Bay was listed as a "water quality limited" water body by the Delaware Department of Natural Resources and Environmental Control (DNREC). Thus a consent order was issued to the City of Rehoboth Beach to find another disposal method to eliminate discharge to Rehoboth Bay. Several alternatives were evaluated in the Environmental Impact Statement (EIS) dated December 2012, and following the DNREC Record of Decision (ROD) in January 2015, an ocean outfall was deemed the best option for the City. The ROD and EIS can be found at the following website: <http://www.dnrec.delaware.gov/wr/Services/Pages/Financial-Assistance-Branch-proposed-Rehoboth-ocean-outfall.aspx>.

The Rehoboth Beach Ocean Outfall project consists of a 24-inch outfall pipe extending 6,000 linear feet (LF) east from the termination of the land-based force main within the Deauville Beach parking area. The purpose of installing this force main and ocean outfall is to discharge treated wastewater effluent from the Rehoboth Beach Waste Water Treatment Plant (RBWWTP) to the diffuser. The outfall pipe will be split into two installation methods, horizontal directional drill (HDD) and open-cut trench. In order to be conservative with respect to the expectations of HDD, it is anticipated that the outfall pipe be installed a minimum of 3,000 LF offshore. At that point, the outfall pipe will be installed via open-cut trench excavation, approximately 3,000 LF, and terminate with a diffuser assembly at a water depth of approximately 40 feet. The proposed diffuser location is based on ocean circulation and plume dispersion modelling (Refer to Section 6 of the EIS), which shows the adequate dilution will occur at 5,430 LF from shore. Excavation will be accomplished by dredging, either by mechanical means (clamshell bucket) or hydraulic (cutter head). The diffuser assembly will utilize multiple risers with discharge ports and duckbill valves to diffuse the treated effluent into the surrounding waters. Approximate coordinates for the project footprint are provided below, and create a footprint area of less than 7 acres. Please note that this does not include full extents of action area such as sediment plume, noise extents, and vessel traffic. For full action area extents, see attached figure.

Latitude	Longitude
38° 43' 41.695" N	75° 4' 07.554" W
38° 43' 41.190" N	75° 4' 07.423" W
38° 43' 47.734" N	75° 3' 28.861" W
38° 43' 47.219" N	75° 3' 28.740" W

Construction of the ocean outfall is anticipated to begin in October 2017 and continue until April 2018. Construction of the outfall would avoid the timeframe from May 1 through October 1. Performing work

from October through April will reduce the risk of impacts to local marine species since the area is less populated during this period.

Dredging

As mentioned above, excavation via mechanical or hydraulic dredging will be required for the length of the outfall between the HDD portion and the diffuser assembly. This excavation portion to be dredged is anticipated to be 3,000 LF or less depending on how far the pipe can be safely horizontally directionally drilled. Based on preliminary estimates, the trench will be approximately 15 feet deep with a top width of approximately 50 feet and a side slope of 3:1. The total amount of excavated material is approximately 43,000 cubic yards, with 26,000 cubic yards proposed for re-use as backfill once the pipe is in place. Excavated material re-use alternatives were evaluated and cast aside was determined to be the most feasible and cost-effective option. The other options that were considered include transportation of material to an approved disposal site (aquatic or land based) and beach restoration. Open-cut trench excavation activities are anticipated to take approximately three months, and will be performed during the winter months to limit the likelihood of marine life being present in the action area. The exact duration will be highly dependent on the weather during construction.

Two options are being considered for excavation of the open-cut trench. One is a mechanical dredge, such as a clamshell bucket. Injury to large marine species such as whales, turtles, and sturgeon is unlikely due to its slow speed and the species' ability to move out of the way. Although it is unlikely that species in the area will come into direct with the clamshell dredge, this particular dredging technique has the potential to create Total Suspended Solids (TSS) plumes as discussed further in this letter. Large plumes of high TSS has shown to have impacts on marine life. Another challenge to using a clamshell bucket is that the daily productivity rate is relatively low, approximately 60 to 80 LF per day depending on weather. Since the project is being conducted during the winter months when the weather is harsh and unpredictable, the number of days that work can be done will be limited. This puts the project on a tight schedule to complete this work before Rehoboth Beach's busy season from May through October.

Another option that is being considered for dredging the trench is a hydraulic cutterhead dredge. The cutterhead dredge is comprised of a barge hull with a controllable rotating cutter device surrounding the intake of the suction pipe (Taylor, 1990). By combining the mechanical cutting action with the hydraulic suction, the hydraulic cutterhead has the capability of dredging a wide range of material, including clay, silt, sand, and gravel. A benefit to using the cutterhead dredge is that the production rate will be much higher compared to the mechanical clamshell bucket. Hydraulic cutterhead dredges have shown to have higher impacts to species compared to a clamshell bucket, however it is unlikely that direct entrainment will occur due to the projects small footprint, the mobility of marine species, and the abundance of space surrounding the project for them to escape to. Previous studies have shown that sub-adult and adult sturgeon, which may be present, would have to be within 1 meter of the cutterhead suction pipe to be entrained (Clarke 2011). Both sturgeon and sea turtles are mobile enough to escape this suction and get to a safer area. Hydraulic cutterhead dredges work at a much faster rate than mechanical clamshell dredges. For this project where the window of opportunity to perform work is limited, a hydraulic cutterhead dredge would help avoid the seasonal constraints and periods with significantly more marine species in the area.

Pile Driving and Potential Noise Impacts

Pile driving will be required for the support piles at the outfall diffuser assembly. There will be 12 piles in total, 12- to 14-inch in diameter. Assuming no major subsurface obstructions are encountered, each pile would be driven to refusal with a vibratory pile driver for two to three minutes, followed by an additional 30 seconds to two minutes of impact driving at a hammer impact rate of 45 blows per minute, or 23 to 90 impacts per pile. Coordination will be done with the Contractor to reduce underwater noise impacts to species by the use of various noise reducing techniques including reducing the time the activities occur, using vibratory hammers where applicable instead of impact hammers (10 to 20 dB reduction), using cushion blocks if an impact hammer is required (4-26 dB reduction depending on material), installing bubble curtains (5 dB reduction), and utilizing a "soft start" to minimize initial effects and give any present species time to vacate the area before higher energies are used (ICF Jones & Stokes, p.4-16). Pile

installation will proceed fairly quickly given the expected subsurface conditions. Pile driving is anticipated to be completed within 4 to 5 days, weather conditions permitting.

To provide more detail in regards to the anticipated sound attenuation rates associated with pile driving, the following tables were developed using the NOAA provided Simple Attenuation Formula (SAF) developer retrieved from <http://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/consultation/index.html>. These tables show the results of four other projects that utilized similar pile driving techniques to this project and are used to estimate the conditions for this project.

Table 1: Proxy Projects for Estimating Underwater Noise

Project Location	Water Depth (m)	Pile Size (inches)	Pile Type	Hammer Type	Attenuation rate (dB/10m)
Not Available	15	14"	Steel Pipe	Cushioned Impact	5
Richmond, CA - San Francisco Bay	20	14"	Steel Pipe	Cushioned Impact	5
San Rafael, CA - San Francisco Bay	>15	14"	Steel Pipe	Cushioned Impact	2
San Rafael, CA - San Francisco Bay	>15	14"	Steel Pipe	Vibratory	2

Table 2: Proxy-Based Estimates for Underwater Noise

Type of Pile	Hammer Type	Estimated Peak Noise Level (dB _{Peak})	Estimated Pressure Level (dB _{RMS})	Estimated Single Strike Sound Exposure Level (dB _{sSEL})
14" Steel Pipe	Cushioned Impact	189	173	163
14" Steel Pipe	Cushioned Impact	188	173	158
14" Steel Pipe	Cushioned Impact	185	169	159
14" Steel Pipe	Vibratory	186	170	160

Table 3: Estimated Distances to Sturgeon/Salmon Injury and Behavioral Thresholds

Type of Pile	Hammer Type	Distance (m) to 206dB _{Peak} (injury)	Distance (m) to sSEL of 150 dB (surrogate for 187 dBcSEL injury)	Distance (m) to Behavioral Disturbance Threshold (150 dB _{RMS})
14" Steel Pipe	Cushioned Impact	NA	36.0	56.0
14" Steel Pipe	Cushioned Impact	NA	26.0	56.0
14" Steel Pipe	Cushioned Impact	NA	65.0	115.0
14" Steel Pipe	Vibratory	NA	70.0	120.0

Marine species, such as sturgeon and salmon would need to be within 230 and 390 feet from the pile driving location for injury and behavioral disturbance, respectively. As the pile driving will only be required along the short stretch of the diffuser, this impact area is relatively small. It is likely that fish species would be able to escape to areas close by with more tolerable noise levels before suffering any injury. The use of a “soft-start” will also reduce impacts and give them more time to exit the area.

Table 4: Estimated Distances to Sea Turtle Injury and Behavioral Thresholds

Type Pile	Hammer Type	Distance (m) to 180 dB RMS (injury)	Distance (m) to 166 dBRMS (behavior)
14" Steel Pipe	Cushioned Impact	NA	24.0
14" Steel Pipe	Cushioned Impact	NA	24.0
14" Steel Pipe	Cushioned Impact	NA	35.0
14" Steel Pipe	Vibratory	NA	40.0

For behavioral disturbance, sea turtles would need to be within 130 feet from the pile driving location. As the pile driving will only be required along the short stretch of the diffuser, this impact area is relatively small. It is likely that sea turtles would be able to escape to areas close by with more tolerable noise levels. A “soft-start” will also give them more time to exit the area.

Table 5: Estimated Distances to Cetacean Injury and Behavioral Thresholds

Type Pile	Hammer Type	Distance (m) to 180 dB RMS (injury)	Distance (m) to 160 dB RMS (behavior for impulsive noise)	Distance (m) to 120 dB RMS (behavior for non-pulse noise)
14" Steel Pipe	Cushioned Impact	NA	36.0	NA
14" Steel Pipe	Cushioned Impact	NA	36.0	NA
14" Steel Pipe	Cushioned Impact	NA	65.0	NA
14" Steel Pipe	Vibratory	NA	NA	270.0

Cetaceans, such as whales and dolphins, are significantly more affected by vibratory pile driving as opposed to cushioned impact hammer type. It is unlikely that cetaceans will be present during construction, but if they are spotted in the action area during pile driving, cushioned impact will be utilized in lieu of vibratory if possible. If vibratory pile driving must be used, and cetaceans are in the area, they would still need to be within 885 feet from the pile driving location to experience only behavioral disturbance. As the pile driving will only be required along the short stretch of the diffuser, this impact area is relatively small. Since they are highly mobile, it is likely that cetaceans would be able to escape to areas close by with more tolerable noise levels. A “soft-start” will also give them more time to exit the area.

As mentioned above, mitigation techniques will be implemented during pile driving to reduce the noise in the action area. Since this project will be performed during the winter months, there will be fewer marine species present during pile driving. Also, based on the tables above, the species that are present would need to be very close to the project site. With such a small footprint, and abundant area surrounding the action area, the species would have plenty of space to disperse in order to avoid areas with intolerable noise. The use of a “soft-start” as mentioned above would give fish additional time to vacate the action

area prior to exposure to harmful sound levels, thus further reducing the potential exposure risk. Based on the best possible information available, it is not anticipated that noise will not have a significant effect on any species in the area during construction.

Sediment Plume

Both the installation of piles and dredging activities in the action area will disturb ocean floor sediment and cause an increase in turbidity within the surrounding area based on background levels of 5.0-10.0 mg/L. It is anticipated that pile driving activities will produce total suspended solids concentrations of between 5.0-10.0 mg/l within 300 feet of the pile driving (FHWA 2012), mechanical dredging activities will create concentrations between 15.0 to 191.0 mg/l at around 2,000 feet from the source (USACE 2001), and cutterhead dredging will create concentrations between 11.5 to 282.0 mg/L within a 1,000 foot radius of the location of the cutterhead dredge (Nightingale and Simenstad 2001). It should also be noted that these TSS concentration values, retrieved from NOAA's Section 7 Guidance websites (<http://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/consultation/turbiditytable.html>), are based on projects that included transporting dredged material through the water column for removal. Should cast-aside be approved for the Ocean Outfall project, dredged material will only be moved 10 to 20 feet in the water column (from the seafloor), thus reducing the TSS impacts within the remaining 20 to 30 feet before the water surface. All suspended solids concentration levels are below those shown to have adverse effect on fish (580 mg/L for the most sensitive species, but 1,000 mg/L is more typical) (Burton 1993). Adverse effects to species due to increased suspended solids in the area are unlikely as the work will be performed during the months where fewer species are present, and the concentrations are not high enough to pose a threat to those species that may be present. As discussed in further detail below and in the EIS, Atlantic sturgeons are a federally endangered species that may be in the area during construction. Although there have been no directed studies on the effects of temporary suspended solids on Atlantic sturgeon, sturgeon juveniles and adults are often documented in turbid waters and are not known to be influenced by high TSS (Dadswell 1984). In addition, limited information is available on the effects of increased turbidity on sea turtles and marine mammals (whales). Due to their ability to breathe air, sea turtles and marine mammals are not subject to the same potential respirator effects from high turbidity as fish are. TSS plumes are most likely to affect these species if it causes a barrier to normal migratory behaviors or if the higher levels affects nearby pray. As sturgeon, sea turtles, and whales are highly mobile, they will likely be able to avoid any sediment plumes, with undetectable changes of movement and relocate to find alternative sources of pray nearby. Based on the best available information, the effects of suspended sediment resulting from both pile driving and dredging on species in the action area will be insignificant and discountable.

NPDES

The Rehoboth Beach WWTP currently receives wastewater from the City of Rehoboth and surrounding areas of Henlopen Acres and Dewey Beach and discharges the treated effluent to the Lewes-Rehoboth Canal. The original treatment plant was completed in 1989 and was upgraded in two phases, in 1994 and 1997, to reduce the nitrogen and phosphorus discharge as required. Minor upgrades were also implemented at the plant in 2002 to improve grit removal.

The Rehoboth Beach WWTP is an advanced secondary treatment plant that produces an effluent of higher quality than that of a typical secondary treatment plant. It is currently meeting and achieving higher levels of treatment than required by the current existing permit limits with effluent concentrations and loading well below the permitted amounts. The design capacity of the plant is considered adequate, and there are no plans to expand the capacity either now or in the future.

Post construction, treated effluent from the Rehoboth Beach WWTP will be diffused into the water 6000 LF offshore. This effluent will have been treated through ENR treatment as described above and modelling predicts rapid dilution to background levels. The plume of effluent, to a point of 1:10,000 dilutions, is only expected to extend 1,000 ft south of the diffuser assembly.

The Rehoboth Beach WWTP will be permitted through the NPDES in two phases. The first phase is to allow the plant to continue to discharge into the Lewes and Rehoboth Canal during construction. The second phase will take effect once the ocean outfall is complete, and will permit the plant to discharge

through the diffuser in the Atlantic Ocean. The Rehoboth Beach WWTP currently meets and will continue to meet NPDES regulations set forth for this particular treatment facility. Refer to Section 5 of the EIS for further detailed information on anticipated effluent characteristics and potential impacts. Effluent discharge is anticipated to have no significant impacts.

Project Vessels

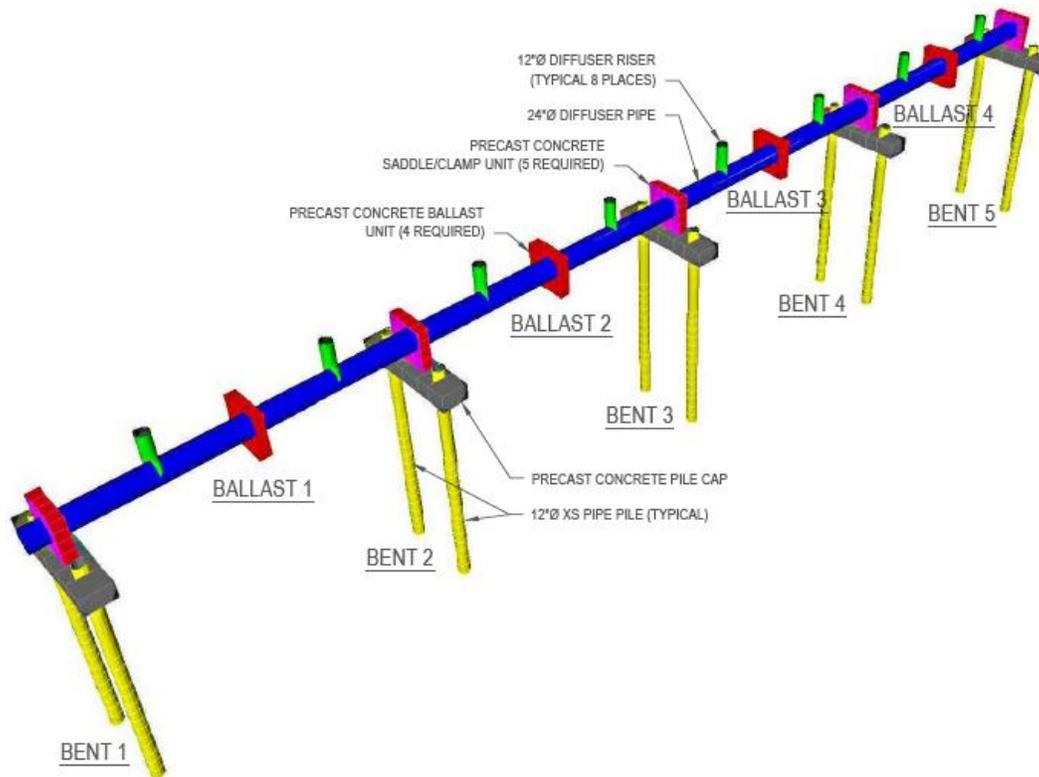
Large whales and turtles are vulnerable to injury and mortality from ship strikes due to propeller wounds or blunt trauma. Reports on show that little to no lethal or serious injuries to whales occur at speeds below ten knots, and few collisions occur at speeds below 6 knots (Laist et al. 2001). Little is known in regards to the correlation between vessel type/speed and turtle injury or mortality, but it is assumed that lower speeds pose less risk since the turtles would have more time to maneuver away from the vessel path.

Barges and small boats will be required for the construction of the ocean outfall. The barges will be shallow draft types and will operate at speeds less than 10 knots to reduce the risk of injury to larger species in the area. In addition, a lookout will be present at all times to identify any issues or obstructions that may warrant the stoppage of the vessel or project. This includes the presence of species such as whales and sea turtles.

The barges and boats are expected to remain within a close range to the project footprint with the exception of the trips to and from shore. During this trip, vessels will take a direct route between the project area and the docking location (likely Cape May located 16 miles North-East of the project area across the inlet of Delaware Bay). Weather permitting, the barge will remain at the project location, and will only return to shore for emergencies or if it is no longer required at the project site. Each day, smaller vessels will transport employees to and from the barge. This will reduce the risk of the barge coming into contact with larger marine species.

In-Water Structures

The permanent structure that will remain in-water post construction will be the diffuser assembly. At the end of the ocean outfall pipe, there will be a 125 foot long diffuser assembly with ten (10) 12" diameter diffuser risers placed in 12 foot increments. The diffuser risers will extend approximately three (3) feet. In addition to the diffuser risers, concrete ballast saddleclamps, and pillow blocks will be exposed. Below is an illustration showing the design of the diffuser assembly:



Description of the Action Area

The action area is defined as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action” (50CFR Section 402.02) (i.e., where listed species may experience effects (contact with disposed material, loss of habitat, increased turbidity and noise, increased vessel traffic) resulting from the action). For this project, the action area includes the exit pit of the horizontal directional drill, the footprint of the open-cut trench excavation area, extents of suspended solids plume caused by pile driving and excavation activities, vessel travel routes, and the extents of increased noise levels caused by pile driving. See attached figure for estimated extents of the action area. This area is expected to encompass all of the effects of the proposed project.

Based on the best available bathymetric data and surveys performed in the area, the seafloor depth at the action area is expected to be approximately 40 feet (12 m). This will vary slightly throughout the action area, but in general the ocean floor is relatively constant. This depth may also vary slightly based on tides, but this is not a significant change compared to the overall depth at this location. Previous surveys have shown that the action area substrate is sandy with some silt. Refer to the attached soil borings, vibracore and marine survey report for more details.

Aquatic Biota Habitat

Minor short term impacts to benthic biota are expected for the trenched portion of the ocean outfall pipe due to excavation and backfill operations. Benthic communities in the disturbed area will initially decline, but resettling and recolonization will occur rapidly. Benthic biota sampling would be done before and after construction to determine what effect, if any, construction had on the benthic community. Refer to Section 1.9 of the EIS for additional information on the biological environment within the project area.

Ocean salinity near the ocean floor, where the outfall is proposed to be built, typically varies between 30 and 31 practical salinity units (psu). Closer to the surface, salinity is significantly lower, dropping to as low as 20 psu at multiple sample locations multiple times throughout the year.

Land Based Activities

The only land based activities that will occur during this project are the stockpile/staging area, entry pit for the HDD portion of the outfall and the pipe laydown areas along the beach and/or roads. The HDD staging area is located within the Deauville Beach parking lot and sand dunes west of the beach. Terrestrial species identified for this area, as discussed in the letter received from Delaware Division of Fish & Wildlife dated October 12, 2015, include the federally listed piping plover, which has been observed as migrating through and roosting along the beach area. Work/staging is recommended to avoid the beach from March 15th through June 15th and August 1st through September 15th. It is anticipated that construction of the outfall would avoid this timeframe however if construction activities extend into these timeframes, the extents and impacts of these activities will be minor and are not anticipated to effect surrounding species.

Two pipe string laydown options will be implored along the beach and Ocean Drive. Prior to the installation of the directional drill portion of the outfall, a pipe string will be prepared prior to the pipe being pulled into the bore hole. Locations for the pipe string include north along the beach or north along Ocean Drive. The pipe string will be supported by rollers positioned every 50 feet. Dune impacts will be minor. Beach access for construction vehicles, if needed, will be via an existing vehicle beach access path located on the north side of the Deauville Beach parking area. Dune restoration and re-vegetation will be implemented as required.

NMFS Listed Species (and Critical Habitat) in the Action Area

Based on the endangered species maps and information provided by NOAA's Protected Resource Division, an email from a NOAA affiliate dated October 1, 2015 (see attached), the EIS, and the review letter from the Delaware Division of Fish & Wildlife (see attached), the following species have been found within the project action area.

1. Cetaceans (Whales)

Six species of endangered large whales occur seasonally off the Mid-Atlantic coast of the U.S. including North Atlantic right whale (*Eubalaena glacialis*), fin whales (*Balaenoptera physalus*, sei whales (*Balaenoptera borealis*), humpback whales (*Megaptera novaeangliae*), sperm whales (*Physeter microcephalus*), and blue whales (*Balaenoptera musculus*). Although all six of these species occur near the project location, only three – right, humpback, and fin whales – are likely to occur in the action area. Sperm, blue, and sei whales are typically found in waters much further offshore and are not expected to be anywhere near the action area.

North Atlantic right whales (*eubalaena glacialis*) inhabit much of the east coast of the United States, mainly between 20° and 60° latitude, and inhabit the action area seasonally. During winter, right whales are typically found in lower latitudes and coastal waters where calving takes place. The majority of the western North Atlantic population range from wintering and calving areas in coastal waters off the southeastern United States to summer feeding and nursery grounds in New England waters and north to the Bay of Fundy and Scotian Shelf where right whales forage on extremely dense patches of zooplankton, primarily copepods. Two critical habitats were designated for right whales including a stretch from Cape Canaveral, FL to Cape Fear, NC and from Cape Cod, MA to northern Main. Right whales would typically use the area surrounding the project for migration between critical areas. Other major habitats or congregation areas include the coastal waters of the southeastern United States, the Great South Channel, Georges Bank/Gulf of Maine, Cape Cod, the Bay of Fundy, and the Scotian Shelf (Waring et al. 2014). The action area is not located within any of these areas. Due to the lack of concentrations of copepods in the action area, feeding by right whales is likely to be rare in the action area. Based on this best available information, it is expected that during construction, the majority of North Atlantic right whales will inhabit the southern designated critical area for wintering and calving, and will not be present within the action area.

Humpback whales (*megaptera novaeangliae*) are highly mobile, and have been known to migrate large distances from their feeding grounds in the winter to their calving grounds in the summer. During the winter, most humpback whales migrate to the West Indies for mating and calving. These whales will migrate along the coast of the United States to their feeding grounds located in higher latitudes such as

the Gulf of Maine where they feed on herring, sand lance, and other small fish (Waring et al. 2014). It is unlikely that humpback whales will be present in the action area as the project will be conducted during the winter when these whales will likely be calving in the subtropical waters. It is only expected that humpback whales could be in the action area between April and November. This would create an overlap with construction of only a month. Based on the best available information, it is expected that during construction, it is unlikely that any humpback whales will be present.

Fin whale (*balaenoptera physalus*) are similar to humpback whales in that they will spend their calving period in subtropical and tropical areas during the winter, and migrate north to the cold waters during the summer. It is thought that some calving takes place between October and January in the mid-Atlantic region (Hain et al. 1992); however, it is unknown where calving, mating, and wintering occurs for most of the population. Fin whales are very migratory and move seasonally in and out of feeding areas in the north. Their overall migration pattern is extremely complex, and thus, specific routes have not been documented (Clark 1995). It is unlikely, but possible that fin whales will be present in the action area during construction.

All listed species of whales have the possibility of being present in the waters off of Rehoboth Beach. Whales typically only use this area for migratory purposes, and are usually seen during the spring and fall each year (March-May and September-November), but could potentially be in the action area during construction. As this project will be performed during the winter, it is unlikely that any whales will be present. If whales are present during construction, they are known to be highly mobile, and could likely vacate the area before any injury is sustained.

2. *Sturgeon*

Atlantic sturgeons (*acipenser oxyrinchus oxyrinchus*) originating from the New York Bight, Chesapeake Bay, South Atlantic and Carolina DPSs are listed as endangered, while those from the Gulf of Maine DPS are listed as threatened. Sturgeons are anadromous, meaning the adults will spawn in freshwater in the spring and early summer, and migrate into estuarine and marine waters where they spend a majority of their lives. Since sturgeon spawn in freshwater rivers, there is no risk of eggs or juveniles being present within the action area. Juveniles will typically reside in estuarine waters for months to years before making their way to the ocean. Subadults and adults spend most of their lives in coastal waters and estuaries at depths of 10-50 meters, but will go to depths of 160 feet with gravel or sand bottoms. As the project is located within an area similar to these conditions, it is likely that Atlantic sturgeon could be present during construction. However, sturgeons are very mobile, and would likely be able to remove themselves from the action area. As mentioned above, mitigation techniques are being implemented to help protect these species from any harm. A “soft start” during pile driving will give sturgeon a chance to vacate the area prior to noise levels reaching a harmful level. Although it is possible that Atlantic sturgeon will be present in the action area during construction, it is unlikely that any will be harmed.

Shortnose sturgeons are almost exclusively found in bays and rivers extending landward from the Atlantic Ocean. Although these sturgeons are found within Delaware Bay, it would be unlikely to find one off the coast of Rehoboth Beach in the action area as they typically remain in rivers and bays. Shortnose sturgeons are not anticipated to be in the action area at any point.

3. *Sea Turtles*

Loggerhead (*caretta caretta*), Kemp's ridley (*lepidochelys kempii*), leatherback (*dermochelys coriacea*), and green sea turtles (*chelonian mydas*) could all be found within the project area. Although each species has slightly different mating and migratory cycles, they are typically very similar. Sea turtles normally do not nest in waters as far north as Rehoboth Beach. Any sea turtles found in the project action area would be migrating through and possibly foraging. Sea turtles would most likely be present in the project area from May to November. The presence of a sea turtle in this area outside of that window is considered extremely unlikely. Since the project is anticipated to stretch from October to March, the only overlap would be 1-2 months. Since it is weather depending, it is not yet known whether dredging or pile driving will be performed during this period. If these activities occur, precautionary methods, as

described in this letter, will be implemented to reduce the risk of impact. If any sea turtles are found in the project area during construction, they are likely opportunistically foraging as they migrate to overwinter in southern waters. The following table describes the foraging behavior for all species and life stages that could be present:

Species	Life Stage	Diet	Feeding Area
Loggerhead	Pelagic and Benthic Juveniles	Omnivorous	Bottom and surface
	Sub-adults	Benthic Invertebrates	Along coast
	Adults	Benthic Invertebrates	Along coast
Green	Juveniles	Omnivorous	Along coast and in protected bays and lagoons
	Adults	Herbivorous	Nearshore areas
Kemp's Ridley	Juveniles	Benthic invertebrates	Protected coastal areas
Leatherback	Juveniles	Soft bodied organisms (jellyfish)	Offshore oceanic or coastal neritic areas
	Adults	Soft bodied organisms (jellyfish)	Offshore oceanic or coastal neritic areas

Mitigation

In order to reduce any potential impacts to local and migratory species in the project action areas, the following mitigation techniques will be implemented as necessary and appropriate:

1. Timeline - It is anticipated that construction will be approximately 5 months and begin in October. The HDD portion of the outfall is anticipated to be approximately 3 months and the marine open-cut trench and diffuser installation will be 2 months, although these two portions may overlap. It appears that most species are present in this action area during the summer months, so avoiding this time will limit the chance of causing harm to any species listed as threatened or endangered by NMFS. The ocean outfall construction is anticipated to be completed from October to March.
2. Benthic Resources - Benthic resources are known to be within the project area. To avoid disruption of these resources, the outfall will be installed using HDD for at least the first 3000 LF, and open cut trenched the remaining 3000 LF. This will limit the amount of dredging required. Since this is a pipe installment, the footprint will be linear and small (50' wide trench). This will limit the area of impact for benthic resources.
3. Structures - Ultimately, the outfall pipe will be completely covered with only the diffuser assembly protruding from the ocean floor. Once construction is complete, and sediment is returned, there will be no new structures present at this location.
4. Pile Driving – It is anticipated that pile driving will occur for the diffuser support piles. These piles will be of 12-14 inches in diameter. Noise mitigation techniques that will reduce the noise level will be used when possible. This includes limiting the time the activities occur, using vibratory

hammers instead of impact hammers, using cushion blocks if an impact hammer is required, bubble curtains, and/or utilizing a "soft start". Requirements will be coordinated with the Contractor to assure these techniques are used.

5. Vessel Operations – Barges/vessels will be required for the dredging and outfall pipe installment processes. To avoid conflict with species such as turtles, whales, and other large species, a shallow draft barge/vessel will be used in order to maximize the distance between the vessel and the ocean floor. This will allow for maximum zone of passage. Barges/Vessels will operate at speeds of less than 10 knots, and will be prepared to reduce speed or halt if there is a whale or sea turtle present in the area. Additionally, barge/vessel-based observers would be stationed onboard during construction activities to identify any whale or turtle in the vessel's navigation path or project area. Prior to construction each day, the waterway in the vicinity of the project area will be visually inspected and/or inspected using an underwater camera, sonar, or other equipment to determine if any listed species are within the project area or surrounding waters.

Conclusions

Based on the above analysis that all effects of the proposed action will be insignificant and/or discountable, we have determined that the Rehoboth Beach Ocean Outfall Project is not likely to adversely affect any listed species or critical habitat under NMFS's jurisdiction. We certify that we have used the best scientific and commercial data available to complete this analysis. We request your concurrence with this determination.

Sincerely,

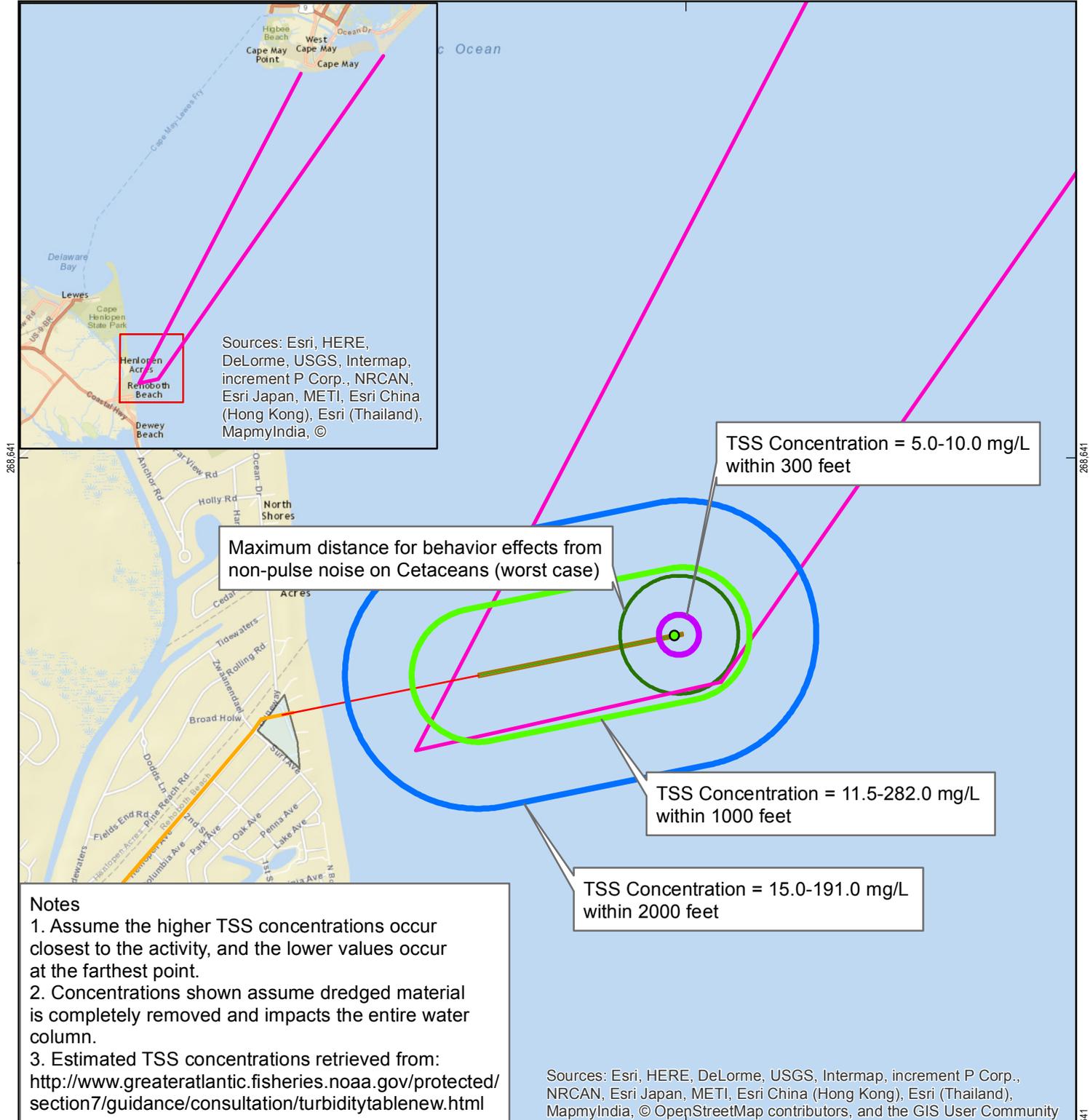
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Legend

- Force Main
- HDD Staging Area
- Outfall HDD
- Outfall Open Cut
- Ocean Outfall
- Project Footprint
- Vessel Travel Extents
- Extent of Noise
- Extents of Plume due to:**
- Cutterhead Dredge
- Mechanical Clamshell Dredging
- Pile Driving



CLIENTS|PEOPLE|PERFORMANCE

City of Rehoboth Beach
Ocean Outfall Project
Project Action Area

Job Number 86-18693
Revision A
Date May 20, 2016

Figure 1



Adjacent Property Owners

District-Map-Parcel:	Owner(S) Names	Property Address	Billing Address
334-14.05-120.00	Henlopen, Acres Property Owners Corp	Henlopen Acres, Part Of Blk.W-Duneway	PO Box 322 Rehoboth Beach, DE 19971
334-14.09-115.00	Matan, Therese J & One Henlopen LLC	Reh Bch Cp Mtg Assn Surf Ave	4021 Glenridge St Kensington, MD 20895
334-14.09-116.01	Warren, Katherine Norton	SW/Surf Ave 55' SE Of Henlopen	6301 Broad Branch Rd. Chevy Chase, MD 20815
334-14.09-116.02	Triumph Capital , Investments LLLP	SE Corner Surf Ave & Henlopen Ave	6817 Sorrel St Mclean, VA 22101
334-14.09-117.00	Sommer, Michael S & Barbara J Trustees	Surf Ave Lot 51 & P/O Lot 52	51 Surf Ave Rehoboth Beach, DE 19971
334-14.09-164.00	Bacchieri, Gregg & Stacey Bacchieri Trustees	SW/Surf Ave Lot A	102 Ironstone Ln Kennett Square, PA 19348
334-14.09-164.01	Bacchieri, Gregg & Stacey Bacchieri Trustees	SE Corner Surf Ave & Columbia Ave	102 Ironstone Ln Kennett Square, PA 19348
334-14.09-165.00	Fitz, Michael T & Michelle K Bingaman Trustee	Surf Ave Lot 48	42260 Green Meadow Ln Leesburg, VA 20176
334-14.09-166.00	Brown, David B & Gweneth B	Surf Ave Lot 47 W/Imp	2506 Willard St Wilmington, DE 19806
334-14.09-189.00	Fischer, L Richard	Surf Ave Lot 46 & P/O Lot 45 Park Ave	3606 Newark St NW Washington, DC 20016
334-14.09-190.00	Fischer, Kristen Nickole & Ryan Thomas Fischer & Justin Douglas Fischer	Surf Ave P/O Lots 2 44 & 45	3606 Newark St NW Washington, DC 20016
334-14.09-191.00	Nash, Bernard & Phyllis	Cor. Surf Ave. & Oak Ave. Lot 43 &	10771 Mcgregor Dr Columbia, MD 21044
334-14.09-26.00	Shedletsy, John J & Andrea L	Henlopen Acres Lot 4 Blk V	200 Salmons Hollow Rd Brewster, NY 10509
334-14.09-26.01	Beacon Hill, Realty LLC	Henlopen Acres Lot 5 Blk	1508 Applecroft Ln



District-Map-Parcel:	Owner(S) Names	Property Address	Billing Address
		V	Cockeysville, MD 21030
334-14.09-27.00	Smith, Charles R & Carol V	S/S Pine Reach E P/O Lots 2 & 3	4625 Holly Rd Rockville, MD 20853
334-14.09-28.00	Lingo, Bryce M	Henlopen Acres Blk V Lot 1 1/2 & W	PO Box 12 Rehoboth Beach, DE 19971
334-14.09-29.00	Fennell, Stephen A & Barbara C Smith	Henlopen Acres Lot 1 Blk V	7213 Pomander Ln Chevy Chase, MD 20815
334-14.09-215.00	Delaware, State of	Cor. of Surf Ave & Henlopen Ave 21.27	PO Box 778 Dover, DE 19903
334-14.10-1.00	Worth , Alexander A & Robert F Worth & John H Worth & Eleanor M Worth	Surf Ave Lots 41 & 42 Reh Bch Cp Mtg	1220 Park Ave New York, NY 10128
334-14.10-2.00	39 Surf Inc	Surf Ave Lots 39 & 40 Reh Bch Cp Mtg	7013 Wood Thrush Dr Lanham, MD 20706
334-14.18-131.00	Rehoboth, Town of S C Marvel	W Side Atlantic Beach Front	City Mgr Rehoboth Beach, DE 19971