APPENDIX A

Essential Fish Habitat

Life History Requirements for Essential Fish Habitat Species

ATLANTIC COD (*Gadus morhua*)

Atlantic cod is an economically important member of the family *Gadidae*. This fish ranges in North America from southern Greenland and southeast Baffin Island, south to Cape Hatteras, North Carolina (winter) (Robins and Ray, 1986). The proposed project area is designated EFH for adult Atlantic cod, which are typically found in bottom habitats dominated by cobble, gravel or rock substrates (NEFMC, 1998). Adults prefer water temperatures below 50ºF (10ºC), depths from 33 to 492 feet (10 to 150 meters) and tolerate a wide range of salinities. Most cods are observed spawning during the fall, winter and early spring (NEFMC, 1998).

ATLANTIC BUTTERFISH (*Peprilus triacanthus*)

For juveniles, offshore EFH is the pelagic waters found over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine through Cape Hatteras, North Carolina. Inshore, EFH is the "mixing" and/or "seawater" portions of all the estuaries where juvenile butterfish are "common," "abundant," or "highly abundant" on the Atlantic coast, from Passamaquoddy Bay, Maine to James River, Virginia. Generally, juvenile butterfish are present in depths between 10 meters (33 feet) and 366 meters (1,200 feet) and temperatures between approximately 3°C (37°F) and 28°C (82°F).

Both juveniles and adults are found over the shelf during the winter months, and spend the spring and fall in the estuaries. Schools of adults and larger juveniles form over sandy, sandy-silt, and muddy substrates. During summer, butterfish move toward the north and inshore to feed and spawn. Spawning occurs from June to August, and peaks progressively later at higher latitudes. During winter, butterfish move southward and offshore to avoid cool waters. Butterfish are primarily pelagic, and form loose schools that feed upon small fish, squid, and crustaceans. Smaller juveniles evade predation by associating with floating objects and organisms such as jellyfish. Inshore and in the surf-zone, butterfish prey on plankton, thaliaceans, squid, and copepods (Overholtz, 2000).

Juvenile and adult butterfish may be present at the dredging area, but would likely temporarily vacate the shoal areas once dredging begins. No indirect impacts to juveniles or adults are expected due to dredging because butterfish are pelagic and their prey is largely found in the water column. The dredging area would be confined to portions of the two shoals and butterfish prey species are present throughout the surrounding areas. Dredging operations should not cause significant adverse impacts to the EFH for this species. Any adverse impacts, such as increased turbidity and loss of benthic prey would be highly localized and temporary.

ATLANTIC SEA HERRING (*Clupea harengus*)

For adults, EFH consists of pelagic waters and bottom habitats in the Gulf of Maine, Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where Atlantic herring adults are found: water temperatures below 10° C (50° F), water depths from 20 to 130 meters (66 to 427 feet), and salinities above 28 ppt.

Adult herring are found in pelagic waters and bottom habitats of the Mid-Atlantic Bight at water depths from 20 to 130 meters (65 to 426 feet). They primarily feed on zooplankton, krill, and fish larvae. Adult herring prefer temperatures below 10° C (50° F), and salinities above 28 ppt. Spawning occurs at depths of 15 to 46 meters (50 to 150 feet), at temperatures below 15°C, and salinities from 32 to 33 ppt. The bottom substrates on which they spawn consist of gravel, sand, and shell fragments, and eggs are occasionally found on aquatic macrophytes. The eggs are spawned in areas of well-mixed water, with tidal currents between 1.5 and 3.0 knots, with the majority of spawning in and adjacent to the project area occurring between July and November.

Adult Atlantic herring may be present in the water column at the dredging areas. Atlantic herring are highly motile and would be able to vacate the shoal areas during dredging operations. Adult Atlantic herring are not generally associated with bottom habitats and are unlikely to be affected by activities in the proposed project area. No indirect impacts to adults are expected due to dredging as prey species are present throughout the surrounding areas.

BLACK SEA BASS *(Centropristus striata)*

EFH consists of: 1) north of Cape Hatteras, the pelagic waters found over the Continental Shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina; and 2) estuaries where black sea bass were identified as common, abundant, or highly abundant in NOAA's Estuarine Living Marine Resources (ELMR) database. Generally, the habitats for the transforming (to juveniles) larvae are near the coastal areas and into marine parts of estuaries between Virginia and New York. When larvae become demersal, they are generally found on structured inshore habitat such as sponge beds. Wintering adults (November through April) are generally offshore, south of New York to North Carolina. Temperatures above 6° C (43^{o}F) seem to be the minimum requirements. Structured habitats (natural and man-made), and sand and shell substrate are preferred.

Black sea bass is a demersal species found in temperate and subtropical waters all along the Atlantic coast, from the Gulf of Maine to the Gulf of Mexico. In the Mid-Atlantic, black sea bass migrate to inshore coastal areas and bays in the springtime and offshore areas in the fall as the temperatures change. The species is strongly associated with structured habitats including jetties, piers, shipwrecks, submerged aquatic vegetation, and shell bottoms.

Potential impacts to the black sea bass EFH within both the offshore dredging site and the nearshore sand placement area are expected to be minimal and limited to temporary disturbance of bottom sediments. Significant displacement is not expected, as much of the underwater habitat (*i.e.*, structures) that the species is strongly associated with is not prevalent in the proposed project area.

BLUEFIN TUNA (*Thunnus thynnus*)

Spawning, eggs, and larvae: In the Gulf of Mexico from the 100 meter depth contour to the EEZ, continuing to the mid-east coast of Florida. Juveniles (<231 cm FL): In waters off North Carolina, south of Cape Hatteras, to Cape Cod. Adults (≥231 cm FL): In pelagic waters of the

central Gulf of Mexcio and the mideast coast of Florida. North Carolina from Cape Lookout to Cape Hatteras, and New England from Connecticut to the mid-coast of Maine.

BLUEFISH *(Pomatomus saltatrix)*

EFH consists of: 1) North of Cape Hatteras, pelagic waters found over the continental shelf (from the coast out to the limits of the EEZ) most commonly above 49 feet (15 meters), from Montauk Point, New York, south to Cape Hatteras; 2) south of Cape Hatteras, 100% of the pelagic waters greater than 45 feet over the continental shelf (from the coast out to the eastern edge of the Gulf Stream) through Key West, Florida; and 3) the "slope sea" and Gulf Stream between latitudes 29^{o} 00' N and 40^{o} 00' N. Bluefish larvae are not generally found inshore so there is no EFH designation inshore for larvae. Generally, bluefish larvae are present April through September in temperatures greater than 18^{o} C (64^{o}F) in shelf salinities greater than 30 ppt. Bluefish adults are highly migratory and distribution varies seasonally and according to the size of the individuals comprising the schools. Bluefish are generally found in shelf salinities greater than 25 ppt.

EFH is defined within the project area for juvenile and adult bluefish. Eggs of this species are pelagic and highly buoyant; with hatching and early larval development occurring in oceanic waters in the MAB, a coastal region running from Massachusetts to North Carolina. The young move inshore to estuaries, which serve as chief habitat for juveniles. Adults travel northward in spring and summer and to the south in fall and winter. Southerly migration may be closer to shore than northerly movement, although movement in both directions is characterized by inshore-offshore movement. It is believed that estuarine and nearshore waters are important habitats for juveniles and adults from Maine to Florida (NMFS, 2006). Adult bluefish prey on squid and other fish such as silverside.

Bluefish are a schooling, pelagic species not associated with bottom habitats; therefore dredging operations should not significantly impact preferred habitat. Since bluefish are sight feeders, increased turbidity in the proposed project area may affect their ability to locate prey. Being highly mobile, however, bluefish should be able to avoid and/or quickly exit areas impacted by dredging operations. Wilber *et al.* (2003) reported in a study of the response of surf zone fish to beach nourishment in northern New Jersey that bluefish avoided areas of active beach fill operations. Any adverse impacts, such as increased turbidity and loss of benthic prey would be highly unlikely.

CLEARNOSE SKATE (*Raja eglanteria)*

The species occurs along the eastern U.S. coast from Nova Scotia to northeastern Florida, as well as in the northern Gulf of Mexico from northwestern Florida to Texas. Adults and juveniles are found year-round (bottom-trawls) and the species shows seasonal movements. In winter, most are found on the Continental shelf from the Delmarva Peninsula to Cape Hatteras to the 200 meter depth contour. In spring/summer, both adults and juveniles concentrate inshore in shallower waters. They are found on soft bottoms and rocky or gravelly bottoms. Egg cases are deposited in spring and early summer on the east coast and hatch mid-summer. Prey items

include polychaetes, amphipods, shrimps, crabs and small fish. Adverse temporary impacts of dredging operations may include larval entrainment, and decreased prey populations.

COBIA *(Rachycentron canadum)*

EFH for all stages of cobia includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone. For cobia, EFH also includes high salinity bays, estuaries, and seagrass habitat. In addition the Gulf Stream is an EFH because it provides a mechanism to disperse coastal migratory pelagic larvae. For cobia. Cobia occur in the South and Mid-Atlantic Bights.

Cobia is a pelagic species found in small schools near piers, buoys, boats, and platforms, sandy shoals, and offshore sandbars. Cobia are also associated with large marine animals such as sea turtles, rays, and sharks; in fact, they are often mistaken for remora (suckerfish). While usually found in the coastal areas, they occasionally inhabit inshore bays and inlets. Females form large aggregations and spawn during the day in the inshore area just outside coastal bays, inside bays, and in other areas within estuaries from June to mid-August. Spawning occurs once every 9 to 12 days, often up to 15 times per season (Florida Museum of Natural History, 2009). Cobia eggs are planktonic, and float freely in the water column. In the spring, the adults migrate north from the warmer waters of the Florida Keys to the coastal waters of Virginia. Cobia feed on crustaceans, invertebrates, and occasionally other pelagic fish (NOAA, 2009).

This coastal migratory pelagic species may be impacted by proposed project activities, especially juveniles and adults which tend to feed on crabs and inhabit inshore environments. Disturbance to bottom habitat by dredging may affect prey availability in the project area. However, these adverse impacts are likely to be highly localized and temporary.

DUSKY SHARK *(Charcharinus obscurus)*

For neonate/early juveniles, EFH consists of shallow coastal waters, inlets and estuaries to the 25-meter (82-foot) isobath from the eastern end of Long Island, New York, to Cape Lookout, North Carolina; from Cape Lookout south to West Palm Beach, Florida, in shallow coastal waters, inlets and estuaries and offshore areas to the 100-meter (328-foot) isobath.
For late juveniles/subadults, EFH includes off the coast of southern New England, coastal and pelagic waters between the 25- and 200-meter (82- and 656-foot) isobaths; shallow coastal waters, inlets and estuaries to the 200-meter (656-foot) isobath from Assateague Island at the Virginia/Maryland border to Jacksonville, Florida (NOAA, 2008).

Dusky shark habitat ranges from shallow inshore waters to beyond the continental shelf. Although the shark feeds near the bottom, it can also be found anywhere in the water column up to 378 meters (1,240 feet) deep. Mating occurs in the spring, followed by a gestational period of either 8 or 16 months, depending on the number of birth seasons in a given year. While juveniles inhabit estuaries and shallow coastal waters, adults are not found in estuaries or waters with lower salinities. The dusky shark preys on a variety of fish and invertebrates, such as herring, grouper, sharks, skates, rays, crabs, squid, and starfish. The species is highly migratory, moving

north during the summer and wintering in warmer southern waters. Males and females make the seasonal migrations separately (Florida Museum of Natural History, 2009).

EFH for neonates and juveniles may be adversely affected by dredging operations associated with the proposed project, as the species is known to frequent the bottom habitats of coastal areas. The disturbance of bottom sediments associated with dredging could interfere with feeding, predation, avoidance, and migratory movements of this shark species. The dusky shark would experience a deficit of prey items in the immediate dredging area; however, this adverse impact is expected to be temporary and highly localized.

KING MACKEREL *(Scomberomorus cavalla)*

EFH for all stages of king mackerel includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, from the Gulf Stream shoreward, including *Sargassum.* For king mackerel, EFH also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is considered EFH because it provides a mechanism to disperse coastal migratory pelagic larvae. For king mackerel, EFH occurs in the South Atlantic and Mid-Atlantic Bights (USACE, 2009).

King mackerel live in large schools in pelagic waters at depths from about 23 to 34 meters (75 to 112 feet). Spawning takes place over the Outer Continental Shelf from May through October, with peaks between late May and early July, and between late July and early August. The larval stage of this species is very brief, with growth rates of 0.51 mm to 1.27 mm (0.02 to 0.05 inches) per day (Florida Museum of Natural History, 2009). Larvae are found in estuaries with water temperatures from 26° to 31° C (79° to 88° F). Juveniles prey on fish larvae, small fish such as anchovies, and squid. In addition to pelagic fish and squid, adults prey on mollusks, shrimp, and other crustaceans. The adult king mackerel is present in waters with temperatures above 20° C (68° F), so their migration along the Atlantic coast migration depends heavily on the temperature of the coastal waters.

King mackerel is a coastal, pelagic species not associated with bottom habitats. Therefore dredging operations should not significantly impact king mackerel EFH. Being highly mobile, king mackerel should be able to avoid and/or quickly exit areas impacted by dredging operations. Adverse impacts to king mackerel EFH, such as increased turbidity and decreased prey populations, would be highly localized and temporary.

LITTLE SKATE (*Leucoraja erinacea)*

The species is occurs from Nova Scotia to Cape Hatteras and is one of the dominant members of the demersal fish community of the Atlantic. The center of abundance is the northern section of the Mid-Atlantic Bight and on Georges Bank, where it is found year-round over almost the entire range of temperatures recorded for these areas. Little skate move seasonally (offshore/inshore) as well as move north to south with seasonal temperature changes. Both juveniles and adults are found out to the 200 meter depth contour in areas with sandy, gravelly bottoms and also occur in mud. The Little skate buries in depression during the day and more active at night. Eggs are laid in May-July and hatched November-January. Prey species include the invertebrates decapods

and amphipods, polychaetes, crabs, shrimps, bivalves, squid, and small fishes. Adverse temporary impacts of dredging operations may include larval entrainment, and decreased prey populations.

MONKFISH *(Lophius americanus)*

For eggs, EFH consists of surface waters of the Gulf of Maine, Georges Bank, southern New England, and the Middle Atlantic south to Cape Hatteras, North Carolina. Generally, the monkfish egg veils are found at sea surface temperatures below 18° C (64° F), and water depths from 15 to 1000 meters (49 to 3,281 feet). Monkfish egg veils are most often observed from March to September. For larvae, EFH is the pelagic waters of the Gulf of Maine, Georges Bank, southern New England and the Middle Atlantic south to Cape Hatteras. Generally, the following conditions exist where monkfish larvae are found: water temperatures 15° C (59°F) and water depths from 25 - 1000 meters (82 to 3,281 feet). Monkfish larvae are most often observed from March to September.

Monkfish are demersal, and prefer sand, mud, and shell habitats. They can be found from inshore up to 899 meters (2,950 feet) deep, at a wide range of temperatures. Fish, crustaceans, mollusks, shrimp, squid and even seabirds are prey for juvenile and adult monkfish. Larval monkfish prey on zooplankton in the water column. Spawning occurs from February to October, from the southern part of the range to the north. Monkfish are believed to spawn over inshore shoals and in deeper offshore waters.

Monkfish eggs and larvae may be present in the water column within the project area from March to September. If they are present at the offshore shoals during dredging, some eggs and larvae may be entrained during dredging operations; however, this will be temporary and localized to the area being dredged. In addition, eggs and larvae may be disturbed by the turbidity created in the water column. The sediment is expected to settle from the water column shortly after dredging activities cease. In addition, eggs and larvae may be when sand is pumped along the shoreline. It is expected that these adverse impacts to monkfish EFH, however, would be temporary and highly localized.

RED HAKE *(Urophycis chuss)*

EFH for eggs includes the surface waters of the Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Generally, hake eggs are found in areas where sea surface temperatures are below 10° C (50° F) along the inner continental shelf with salinity less than 25 ppt. Eggs are most often present during the months from May through November, with peaks in June and July. EFH for larvae includes surface waters of Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Generally, red hake larvae are found where sea surface temperatures are below 19° C (66° F), water depths are less than 200 meters, and salinity is greater than 0.5 ppt. Red hake larvae are most often observed from May through December, with peaks in September and October. EFH for juveniles consists of bottom habitats with a substrate of shell fragments, including areas with an abundance of live scallops, in the Gulf of

Maine, on Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Generally, red hake juveniles are found where water temperatures are below 16° C (61° F), depths are less than 100 meters (328 feet), and salinity ranges from 31 to 33 ppt.

Red hake migrate seasonally,coming from as far north as Maine to the warmer southern waters of Virginia and North Carolina. Spawning for red hake populations throughout the eastern Atlantic occurs in the Mid-Atlantic Bight. Not much is known about the eggs, other than that they float near the surface and hatching occurs about a week after spawning. Larvae can be found in the upper water column from May through December. Juveniles are pelagic and stay close to floating debris and patches of *Sargassum* until they are approximately 2 months old, at which time they become demersal. Juveniles prefer silty, fine sand sediments while adults favor muddy substrates (NOAA, 1999b).

Potential impacts to red hake EFH would be limited to temporary disruption of juvenile habitats due to dredging operations. Because significant population centers for this species tend to occur from New Jersey northward of the project area, project impacts would negligible.

SANDBAR SHARK *(Charcharinus plumbeus)*

For neonates/early juveniles, EFH consists of shallow coastal areas to the 25-meter (82-foot) isobath from Montauk, Long Island, New York, south to Cape Canaveral, Florida (all year); nursery areas in shallow coastal waters from Great Bay, New Jersey, to Cape Canaveral, Florida, especially Delaware and Chesapeake Bays (seasonal-summer); shallow coastal waters to up to a depth of 50 meters (164 feet) on the west coast of Florida and the Florida Keys from Key Largo to south of Cape San Blas, Florida. Typical parameters include salinity greater than 22 ppt and temperatures greater than 21° C (70° F). For late juveniles/subadults, EFH includes offshore southern New England and Long Island, both coastal and pelagic waters; also, south of Barnegat Inlet, New Jersey, to Cape Canaveral, Florida, shallow coastal areas to the 25–meter (82-foot) isobath; also, in the winter, in the Mid-Atlantic Bight, at the shelf break, benthic areas between the 100- and 200-meter (328- and 656-foot) isobaths; also, on the west coast of Florida, from shallow coastal waters to the 50–meter (164-foot) isobath, from Florida Bay and the Keys at Key Largo north to Cape San Blas, Florida. For adults, EFH is on the east coast of the United States, shallow coastal areas from the coast to the 50-meter (164-foot) isobath from Nantucket, Massachusetts, south to Miami, Florida; also, shallow coastal areas from the coast to the 100-meter (328-foot) isobath around peninsular Florida to the Florida panhandle near Cape San Blas, Florida, including the Keys and saline portions of Florida Bay.

The sandbar shark is the most common gray shark along the Mid-Atlantic Coast (Chesapeake Bay Program, 2009). From late May to early June, females head to the inlets and coastal bays of Virginia to give birth to litters of between 6 and 13 pups. The pups remain in the area until September or October, when they school and migrate south, along with the adults, to the warmer waters of North Carolina and Florida. The sharks begin to return to the coastal waters of Virginia around April. Pups and juveniles feed primarily on crustaceans, graduating to a more diverse diet of fish from higher in the water column, as well as rays skates, mollusks, and crustaceans near or in the benthic layer. The sharks are bottom-dwellers found in relatively

shallow coastal waters 18 to 61 meters (60 to 200 feet) deep on oceanic banks and sand bars with smooth, sandy substrates. The adults can also occasionally be found in estuaries in turbid waters with higher salinity (Florida Museum of Natural History, 2009).

Because sandbar sharks favor habitats such as sand shoals, EFH may be adversely affected by dredging operations associated with the proposed project. No impacts to neonates/early juveniles are expected, as they tend to congregate in estuaries. Juveniles and adults are opportunistic bottom feeders whose prey items might be negatively impacted by dredging operations. The disturbance of bottom sediments associated with dredging could interfere with feeding, predation, avoidance, and migratory movements of this shark species. However, these adverse impacts are expected to be temporary and highly localized.

SCALLOPED HAMMERHEAD (*Sphyrna lewini*)

Neonate/YOY (≤60 cm TL): Coastal areas in the Gulf of Mexico from Texas to the southern west coast of Florida. Atlantic east coast from the mid-east coast of Florida to southern North Carolina. Juveniles (61 to 179 cm TL): Coastal areas in the Gulf of Mexico from the southern to mid-coast of Texas, eastern Lousainia to the southern west coast of Florida, and the Florida Keys. Offshore from the mid-coast of Texas to eastern Louisiania. Atlantic east coast of Florida through New Jersey. Adults (≥180 cm TL): Coastal areas in the Gulf of Mexico along the southern Texas coast, and eastern Lousainia through the Florida Keys. Offshore from southern Texas to eastern Louisiania. Atlantic east coast of Florida to Long Island, NY.

SCUP *(Stenotomus chrysops)*

For juveniles, EFH includes: 1) offshore, the demersal waters over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina; and 2) inshore, the estuaries where scup are identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. In general during the summer and spring, juvenile scup are found in estuaries and bays between Virginia and Massachusetts, in association with various sands, mud, mussel and eelgrass bed type substrates and in water temperatures greater than 7.2°C (45o F) and salinities greater than 15 ppt. For adults, EFH consists of: 1) offshore, the demersal waters over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina; and 2) inshore, the estuaries where scup were identified as being common, abundant, or highly abundant in the ELMR database for the "mixing" and "seawater" salinity zones. Generally, wintering adults (November through April) are usually offshore, south of New York to North Carolina, in waters above 7.2° C (45o F).

Although EFH is not designated for eggs and larvae within the project areas, they can be found inshore from May through September in Virginia in waters between 13 and 23° C (55 o and 73o F) and in salinities greater than 15 ppt. Both juveniles and adults are demersal. Juveniles are found in a variety of benthic habitats in offshore waters, as well as inshore estuaries and bays in temperatures greater than 7° C (45o F) and salinities greater than 15 ppt. Adults are found both inshore and offshore of Virginia during warmer months. From November through April, they are found offshore in waters above 7° C (45o F). Scup form schools based on their body size, utilizing a wide range of areas, such as smooth and rocky bottoms, and around piers, rocks,

underwater infrastructure, wrecks, and mussel beds, at depths of 2 to 37 meters (6 to 120 feet) (MDFG, 2009). Migration occurs from the coastal waters in the summer to offshore waters in the wintertime (USACE, 2009).

The disturbance of bottom sediments associated with dredging could adversely impact scup EFH and interfere with the feeding, predation, avoidance, and migratory movements of scup juvenile and adult pelagic life stages. As a demersal species, there is a possibility that scup may become entrained in the dredge. However, no permanent effects to the species or the shallow water habitat are anticipated. Any adverse impacts, such as increased turbidity and loss of benthic prey would be highly localized and temporary.

SHORTFIN MAKO (*Isurus oxyrinchus*)

At this time, insufficient data is available to differentiate EFH by size classes, therefore, EFH is the same for all life stages. Neonate/YOY, Juveniles, and Adults: EFH designation for all life stages have been combined and are considered the same. Localized areas in the central Gulf of Mexico and the Florida Keys. In the Atlantic, localized areas off of Florida, South Carolina, and Maine, and from Cape Lookout though southern New England.

SMOOTH DOGFISH (*Mustelus canis*)

Neonate/YOY (≤59 cm TL): At this time, available information is insufficient for the identification of EFH for this life stage, therefore all life stages are combined in the EFH designation. Juveniles (60 to 80 cm TL): At this time, available information is insufficient for the identification of EFH for this life stage, therefore all life stages are combined in the EFH designation. Adults (≥81 cm TL): At this time, available information is insufficient for the identification of EFH for this life stage, therefore all life stages are combined in the EFH designation.

SPANISH MACKEREL *(Scomberomorus maculatus)*

EFH for all stages of Spanish mackerel includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters, from the surf to the shelf break zone, but from the Gulf Stream shoreward, including *Sargassum.* All coastal inlets and all state designated nursery habitats are of particular importance to Spanish mackerel. EFH also includes high salinity bays, estuaries, and seagrass habitat. In addition, the Gulf Stream is considered EFH because it provides a mechanism to disperse coastal migratory pelagic larvae. For Spanish mackerel, EFH occurs in the South Atlantic and Mid-Atlantic Bights.

Spanish mackerel eggs are found in open water off the coast of Virginia from April through September. The Spanish mackerel is most commonly found in waters with a temperature above 20° C (68° F) and salinity greater than 30 ppt. The species prefers the waters from the surf zone to shelf break from the Gulf Stream shoreward, especially sandy shoal and reef areas, and can occasionally be found in shallow estuaries and in grass beds. In the open ocean, Spanish mackerel feed on pelagic fish including herring, sardines, mullet, and anchovy; shrimp; crabs; and squid (NOAA, 2009). Spanish mackerel are a fast-swimming, highly migratory species

which is found in large schools. They winter in the warm pelagic waters of Florida, moving north along the coast to Virginia waters in April or May.

Spanish mackerel are a fast moving coastal, pelagic species not associated with bottom habitats. Therefore, dredging operations should not significantly impact Spanish mackerel EFH. Being highly mobile, Spanish mackerel should be able to avoid and/or quickly exit areas impacted by dredging operations. Adverse impacts, such as increased turbidity and absence of prey would be highly localized and temporary.

SUMMER FLOUNDER *(Paralicthys dentatus)*

EFH for larvae, juveniles and adults consists of: 1) north of Cape Hatteras, the demersal waters over the continental shelf (from the coast out to the limits of the EEZ), from the Gulf of Maine to Cape Hatteras, North Carolina; 2) south of Cape Hatteras, the waters over the continental shelf (from the coast out to the limits of the EEZ) to depths of 150 meters (500 feet) from Cape Hatteras, North Carolina, to Cape Canaveral, Florida; and 3) inshore, all of the estuaries where summer flounder were identified as being present (rare, common, abundant, or highly abundant) in the ELMR database for the "mixing" and "seawater" salinity zones. In general, juveniles use several estuarine habitats as nursery areas, including salt marsh creeks, seagrass beds, mudflats, and open bay areas in water temperatures greater than 3° C (37o F) and salinities from 10 to 30 ppt.

Generally summer flounder inhabit shallow coastal and estuarine waters during warmer months and move offshore on the outer continental shelf at depths of 150 meters (500 feet) in colder months. The geographical range of the summer flounder encompasses the shallow estuarine waters and outer continental shelf from Nova Scotia to Florida. Adult and juvenile summer flounder normally inhabit shallow coastal and estuarine water during the warmer months of the year. Adults seem to prefer sandy habitat in order to avoid predation and conceal themselves from prey. Seasonal temperature shifts appear to drive juveniles and adults in and out of estuary habitats (NOAA, 1999c). Juveniles prey on crustaceans, small pelagic fish and shrimp, and adults feed opportunistically on a variety of fish, crustaceans, squid, and polychaetes.

Larvae, juvenile and adult summer flounder may face minimal impacts from proposed project activities. The project area itself does not appear to offer favorable habitat to this species which seems to prefer estuarine environments. Minor temporary impacts, including disturbance of bottom habitat by dredging operations, may occur as the flounder enter into and exit the favored estuarine environments.. Also, flounder that remain on the bottom during dredging could be entrained and destroyed.

SURF CLAM *(Spisula solidissima)*

Juveniles and adults are found throughout the substrate, to a depth of 1 meter (3 feet) below the water/sediment interface, within Federal waters throughout the Atlantic Exclusive Economic Zone (EEZ), which is the area that extends 200 nautical miles from the United States coastline. The species generally occurs from the beach zone to a depth of about 61 meters (200 feet), but beyond about 38 meters (125 feet) abundance is low.

The surf clam is a bivalve mollusk which prefers substrates of fine to medium grained sand, in waters with salinities above 14 parts per thousand (ppt) (NJMSC, 2009). The clam rarely moves locations unless it becomes uncovered, it filter-feeds on plankton in its immediate area. Surf clams reproduce by releasing eggs and sperm directly into the water column. Larvae are planktonic for approximately three weeks, at which time they grow a hard shell and settle to the bottom (NEFSC, 2006).

The location of the offshore borrow areas fall within the area designated as EFH for the juvenile and adult surf clam. The dredging of these offshore sand shoals is expected to cause temporary adverse effects to this non-motile organism. Entrainment in the dredger would destroy surf clams in the areas of the shoals where sand is dredged, but the population would have the ability to rebound from undisturbed adjacent areas. Studies conducted from 1997 through 2012 do not indicate a prominent presence of surf clam in the proposed borrow areas. Previous studies indicate that benthic invertebrate communities destroyed by the dredge are able to rebound within a few years (Diaz et al., 2004). Dredging would also cause an increase in turbidity, which may temporarily impair the ability of the clams to feed by filtering plankton from the water.

TIGER SHARK *(Galeocerdo cuvieri)*

For tiger shark larvae (referred to as "neonates"), EFH extends from shallow coastal areas to the 200 m isobath in Cape Canaveral, Florida, north to offshore Montauk, Long Island, NY (south of Rhode Island); and from offshore southwest of Cedar Key, FL north to the Florida/Alabama border from shallow coastal areas to the 50 m isopath.

The tiger shark is found in turbid coastal and pelagic waters of the Continental shelf, at depths of up to 350 meters (1,148 feet), although the shark has a tolerance for a wide variety of marine habitats (MBS, 2009). Tiger sharks have been found in estuaries and inshore as well. Prey items for the tiger shark include fish, crustaceans, mollusks, and plankton. Little is known about the nursery areas for tiger sharks, though they are believed to occur in offshore areas (NMFS, 2006b). Females are thought to produce a litter of pups every other year.

Although it is possible that there may be tiger sharks in the project area, it is unlikely that they would experience significant adverse effects. A highly mobile species, the shark would be able to temporarily leave disturbed areas while dredging and placement of sand on the shoreline is occurring. Because of the shark's highly varied diet, the activities of the proposed action are not expected to cause difficulties in finding prey. Only short-term localized impacts on the tiger shark are anticipated.

WHITE SHARK (*Carcharodon carcharias*)

Neonate/YOY, Juveniles, and Adults: EFH designation for all life stages have been combined and are considered the same. Along the mid- and southern west coast of Florida in the Gulf of Mexico, and along the mid- and northern east coast of Florida, South Carolina, and North Carolina in the Atlantic. Maryland to Cape Cod.

WINDOWPANE FLOUNDER (*Scopthalmus aquosus*)

For eggs and larvae, EFH consists of pelagic waters around the perimeter of the Gulf of Maine, on Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras. Generally, windowpane flounder larvae are found at sea surface temperatures less than 20° C (68° F) and water depths less than 70 meters (230 feet). Larvae are often present from February to November with peaks in May and October in the middle Atlantic and July through August on Georges Bank. EFH for juveniles is bottom habitat with a substrate of mud or fine-grained sand, around the perimeter of the Gulf of Maine, on Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras. Generally, windowpane flounder juveniles are found at water temperatures below 25° C (77° F), at depths from 1 to 100 meters (3 to 328 feet), and salinities between 5.5 to 36 ppt. EFH for adults is comprised of bottom habitats with a substrate of mud or fine-grained sand around the perimeter of the Gulf of Maine, on Georges Bank, southern New England and the middle Atlantic south to the Virginia-North Carolina border. Generally, windowpane flounder adults are found in water temperatures below 26.8° C (80° F), depths from 1 to 75 meters (3 to 246 feet), and salinities between 5.5 to 36 ppt.

EFH for spawning adults is bottom habitats comprised of mud or fine-grained sand in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to the Virginia-North Carolina border. Spawning windowpane flounder are found in water temperatures below 21° C (70° F), depths from 1 to 75 meters (3 to 246 feet), and salinities between 5.5 to 36 ppt. Windowpane flounder are most often observed spawning during the months February to December with a peak in May in the middle Atlantic.

Windowpane flounder inhabit estuaries, nearshore waters, and the continental shelf of the middle Atlantic. The species is demersal and prefers substrates of sand or mud. Juveniles that settle in shallow inshore waters move to deeper waters as they grow, migrating to nearshore or estuarine habitats in the southern MAB in the autumn. Juvenile and adult windowpane feed on small crustaceans and various fish larvae.

There may be some limited adverse impacts to windowpane flounder, particularly juveniles and adults due to their presence year-round (slightly less in the warmest summer months) in bottom habitats like the type present at the dredging sites. The disturbance of benthic sediments organisms caused by dredging operations would likely cause a temporary, localized reduction in prey species.

WINTER FLOUNDER *(Pleuronectes americanus)*

For eggs, EFH consists of bottom habitats with a substrate of sand, muddy sand, mud, and gravel on Georges Bank, the inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to the Delaware Bay. Generally, winter flounder eggs are found in water temperatures less than 10° C (50° F), salinities from 10 to 30 ppt, and water depths of less than 5 meters (16 feet). On Georges Bank, winter flounder eggs are generally found in water less than 8° C (46° F) and less than 90 meters (295 feet) deep. Winter flounder eggs are often observed from February to June with a peak in April on Georges Bank. For larvae, EFH consists of pelagic and bottom waters of Georges Bank, the inshore areas of then Gulf of Maine, southern New

England, and the middle Atlantic south to the Delaware Bay. Generally, winter flounder larvae are found in sea surface temperatures less than 15° C (59° F), salinities from 4 to 30 ppt, and water depths of less than 6 meters (20 feet). On Georges Bank, winter flounder larvae are generally found in water less than 8° C (46° F) and less than 90 meters (295 feet) deep. Winter flounder larvae are often observed from March to July with peaks in April and May on Georges Bank.

For juveniles, EFH is bottom habitats with a substrate of mud or fine grained sand on Georges Bank, the inshore areas of the Gulf of Maine, southern New England and the middle Atlantic south to the Delaware Bay. Generally, winter flounder juveniles are found in water temperatures below 28°C (82° F), depths from 0.1 to 10 meters, and salinities from 5 to 33 ppt. Juveniles over one year old prefer water temperatures below 25°C (77° F), depths from 1 to 50 meters (3 to 164 feet), and salinities between 10 and 30 ppt. For adults, EFH includes bottom habitats including estuaries with a substrate of mud, sand, and gravel on Georges Bank, the inshore areas of the Gulf of Maine, southern New England and the middle Atlantic south to the Delaware Bay. Generally, winter flounder adults are found in water temperatures below 25° C (77° F), at depths from 1 to 100 meters (3 to 328 feet), and salinities between 15 and 33 ppt.

EFH for spawning adults consists of bottom habitats, including estuaries with a substrate of sand, muddy sand, mud, and gravel on Georges Bank, the inshore areas of the Gulf of Maine, southern New England and the middle Atlantic south to the Delaware Bay. Spawning adults are found at water temperatures below 15° C (59° F), depths of less than 6 meters (20 feet), except on Georges Bank where they spawn as deep as 80 meters (262 feet), and salinities between 5.5 and 36 ppt. Winter flounder spawn from February through June.

Winter flounder eggs are found inshore on sandy bottoms and algal mats. Approximately six weeks after hatching, larvae become demersal and their left eye migrates to the right side of their body. The coloring of the winter flounder includes shades of light sandy brown, enabling the fish to blend in with the substrate. Juveniles inhabit these inshore areas with sand or sand-silt substrates until they reach one year of age. Adults are found in offshore waters during the warm summer months, where they feed on shrimp, clams, worms, and other invertebrates. Winter flounder feed during the day due to its dependence on eyesight to locate prey. During the winter, adults migrate to inshore coastal areas with sandy, clay, and gravel bottoms. The flounder buries itself so that only the eyes are above the substrate. Winter flounder spawn from winter through springtime in shallow inshore waters, usually at the same location each year.

Winter flounder are demersal and can be found on sandy bottoms similar to those found in the project area, and as a result EFH is likely to be adversely affected by the proposed project. If any adult or juvenile flounder are present at the dredging sites, they would likely vacate the area when dredging begins, however, juveniles may be more vulnerable because of slower swimming speeds.

WINTER SKATE (*Leucoraja ocellata)*

This species occurs from the south coast of Newfoundland and the southern Gulf of St. Lawrence to Cape Hatteras. Its center of abundance is on Georges Bank and in the northern section of the

Mid-Atlantic Bight, but in both areas it is second in abundance to the Little Skate (*Leucoraja erinacea*). It is not quite evident if Winter skate undergo seasonal movements from collection data, however adults were collected in fewer numbers than juveniles during spring and fall Massachusetts inshore trawl surveys.

Adults and juveniles generally range from the shoreline to 371 meters in depth, and most abundant at depths less than 111 meters as year-round residents. Winter skate has been recorded over a temperature range of -1.2 to 19 degrees C and in to sandy and gravelly bottoms and sometimes mud bottoms. Like the Little skate, Winter skate are known to remain buried in depressions during the day and are more active at night, most likely due to diel foraging. Food prey items are generally polychaetes and amphipods, decapods, isopods, bivalves, and fishes. Adverse temporary impacts of dredging operations may include larval entrainment, and decreased prey populations.

WITCH FLOUNDER *(Glyptocephalus cynoglossus)*

EFH for eggs consists of surface waters of the Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Witch flounder eggs are generally found at sea surface temperatures below 13° C (55° F) over deep water with high salinities. Eggs are most often observed during March through October.

Witch flounder eggs are spawned from March through October, with May and June as the peak months. Eggs are spawned close to the bottom of deep pelagic waters, but they rise to the top of the water column where they develop and hatch. Eggs and larvae are found in waters with a temperature between 4° to 13° C (40° to 55° F). After metamorphosis, juveniles become demersal and generally remain in waters from 30 to 150 meters (98 to 492 feet), including the continental slope off Virginia (NOAA, 1999a).

YELLOWTAIL FLOUNDER (*Pleuronectes ferruginea*)

Yellowtail flounder is a right-eye flounder (family *Pleuronectidae*) that ranges in North America from southern Labrador south to Chesapeake Bay (Robins and Ray, 1986). The proposed project area is a designated EFH for eggs, and larvae of this species. Yellowtail flounder eggs are usually found in surface water below 59^{o}F (15^{o}C). They are found in water from 98 to 295 feet (30 to 90 meters) deep with salinities ranging from 32 to 34 ppt. Eggs are most commonly seen from mid-March to July, with a peak from April to June. Yellowtail flounder larvae usually inhabit surface waters from 33 to 295 feet (10 to 90 meters) deep. They prefer waters below 63^{o}F (17^{o}C) and salinities from 32 to 34ppt.

References: www.nero.noaa.gov
www.nefsc.noaa.gov

APPENDIX B

Air Quality Emissions

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3391

REPLY TO
ATTENTION OF

CENAP-PL-E

United States Army Corps of Engineers, Philadelphia District
DRAFT General Conformity Determination Notice

On October 30, 2012, New York State (DR-4085) and New Jersey State (DR-4086) declared Super Storm Sandy a Major Disaster. In response to the unprecedented breadth and scope of the damages sustained along the New York and New Jersey coastlines, the U.S. Congress passed Public Law (PL) 113-2 "Disaster Relief Appropriations Act 2013", also known as House Resolution (H.R.) 152-2 Title II which was signed into law on January 29, 2013. PL 113-2, which states "That the amounts... are designated by the Congress as being for an emergency requirement pursuant to section 251(b)(2)(A)(i) of the Balanced Budget and Emergency Deficit Control Act of 1985", provides funding for numerous projects to repair, restore and fortify the coastline in both states as a result of the continuing emergency as people and property along the coast remain in a vulnerable condition until the coastline is restored and fortified. To this end, New Jersey Governor Christie signed Executive Order No. 140 on September 25, 2013, which authorized the means for the State to acquire all lands outside the State's ownership needed to ensure the sustainability of its coastline, and improve safeguards to diminish the impacts of future storm events, including flood protection for coastal communities that were impacted by the storm. To protect the investments by the Federal, State, local governments and individuals to rebuild damaged sites, it is imperative that these emergency disaster relief projects proceed as expeditiously as possible.

There are a number of coastal projects that were previously proposed and authorized but unconstructed (ABU). The Barnegat Inlet to Little Egg Harbor Inlet (Long Beach Island) [WRDA 2000, Title 1, §101a (1)] project is an ABU project that is anticipated to start construction after April 2014 and this document represents the General Conformity Determination required under 40CFR§93.154 by the United States Army Corps of Engineers (USACE). USACE is the lead Federal agency that will contract, oversee, approve, and fund the project's work, and thus is responsible for making the General Conformity determination for this project.

USACE has coordinated this determination with the New Jersey Department of Environmental Protection (NJDEP) [see NJDEP letter provided as Attachment A]. The Philadelphia-Wilmington-Atlantic City PA-New Jersey-Maryland-Delaware nonattainment area is currently classified as "marginal" nonattainment for the 2008 8-hour ozone standard. Ozone is controlled through the regulation of its precursor emissions, which include oxides of nitrogen (NOx) and volatile organic compounds (VOCs).

The equipment associated with this project that is evaluated under General Conformity (40CFR§93.153) includes direct and indirect nonroad diesel sources, such as dredging equipment and land based earth-moving equipment. The primary precursor of concern with this type of equipment is NOx, as VOCs are generated at a significantly lower rate. The NOx emissions associated with the project are estimated to range from 455 to 520 tons per calendar year for 2014 and 2015 respectively (see emissions estimates provided as Attachment B). The project exceeds the NOx trigger level of 100 tons in any calendar year and as a result, the USACE is required to fully offset the emissions of this project. The project does not exceed the VOC trigger level of 50 tons in any calendar year.

USACE is committed to fully offsetting the emissions generated as a result of the disaster relief coastal work associated with this project. USACE recognizes that the feasibility and cost-effectiveness of each offset option is influenced by whether the emission reductions can be achieved without introducing delay to the construction schedule that would prevent timely disaster relief.

USACE will demonstrate conformity with the New Jersey State Implementation Plan by utilizing the emission offset options listed below. The demonstration can consist of any combination of options, and is not required to include all or any single options to meet conformity. The options for meeting general conformity requirements include the following:

a. Emission reductions from project and/or non-project related sources in an appropriately close vicinity to the project location. In assessing the potential impact of this offset option on the construction schedule, USACE recognizes the possibility of lengthening the time period in which offsets can be generated as appropriate and allowable under the general conformity rule (40CFR§93.163 and §93.165).
b. Use of a portion of the Department of Defense Joint Base McGuire and Lakehurst State Implementation Plan emissions budget, as determined by the NJDEP, and in coordination with the United States Environmental Protection Agency (EPA).
c. Use of Clean Air Interstate Rule (CAIR) ozone season NOx Allowances with a distance ratio applied to allowances, similar to the one used by stationary sources found at N.J.A.C 7:27-18.5(c) Table 2.
d. Use of Surplus NOx Emission Offsets (SNEOs) generated under the Harbor Deepening Project (HDP). As part of the mitigation of the HDP, USACE and the Port Authority of New York & New Jersey developed emission reduction programs coordinated through the Regional Air Team (RAT). The RAT is comprised of the USACE, NJDEP, EPA, New York State Department of Environmental Conservation, and other stakeholders. SNEOs will be applied in concurrence with the agreed upon SNEO Protocols to ensure the offsets are real, surplus, and not double counted.

Due to unpredictable nature of dredge-related construction and the preliminary estimates of sand required to restore the integrity of the coastlines, the project emissions will be monitored as appropriate and regularly reported to the RAT to assist the USACE in ensuring that the project is fully offset.

In summary, USACE will achieve conformity for NOx using the options outlined above, as coordinated with the NJDEP and coordinated through the RAT.

Date

John C. Becking, P.E.
Lieutenant Colonel, Corps of Engineers
District Engineer

Attachment A

Bob Martin, Commissioner, NJDEP Letter to Colonel Paul E. Owen, P.E., Commander New York District, USACE and Lieutenant Colonel John C. Becking, PE., Commander Philadelphia District, USACE
November 4, 2013

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF THE COMMISSIONER
Mail Code 401-07
P.O. Box 402
Trenton, NJ 08625-0402
TEL # (609) 292-2885
FAX # (609) 292-7695

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

BOB MARTIN
Commissioner

November 4, 2013

Colonel Paul E. Owen, P.E
Commander-NY District
U.S. Army Corps of Engineers
26 Federal Plaza
New York, NY 10278

Lieutenant Colonel John C. Becking, P.E (Chris)
Commander-Philadelphia District
U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, PA 19107-3390

Re: Clean Air Act and Superstorm Sandy Coastal Restoration and Repair Projects

Dear Colonel Owen and Colonel Becking:

The purpose of this letter is to assist the United States Army Corps of Engineers (USACE) in complying with the requirements of the Clean Air Act as USACE performs coastal restoration and repair projects in New Jersey.

Superstorm Sandy significantly diminished the protective value of New Jersey's beach and dune system, leaving New Jersey coastal communities vulnerable to damage from future storms. The New Jersey Department of Environmental Protection has been working with your Districts to ensure that federal emergency coastal restoration and repair projects start as quickly as possible.

Emissions of oxides of nitrogen (NO_x) for several of the Authorized but Unconstructed beach and dune repair/restoration projects will be greater than 100 tons/calendar year. As a result, USACE must demonstrate that those projects meet the so-called "General Conformity" requirements of the Clean Air Act. Under the General Conformity rule, federal agencies must work with state governments in a nonattainment area (such as New Jersey) with the goal of ensuring that federal actions conform to the air quality plans established by the state.

USACE must demonstrate compliance for the following projects:

1. Sea Bright to Ocean Township Beach Erosion Control Project (Elberon to Loch Arbour)
2. Manasquan Inlet to Barnegat Inlet
3. Barnegat Inlet to Little Egg Harbor Inlet (Long Beach Island)
4. Brigantine Inlet to Great Egg Harbor Inlet (Absecon Island)
5. Great Egg Harbor Inlet to Townsends Inlet

NJDEP does not have the authority to exempt USACE from General Conformity requirements.

Due to the extraordinary nature of the emergency created by Sandy and the ongoing threat to health and safety that would arise from any delay in undertaking these projects, all compliance options should be jointly considered, including invoking the emergency exemption in the Conformity Rules at 40 C.F.R. § 93.153(e), and seeking a Presidential exemption under section 118(b) of the Clean Air Act.

Alternatively, the USACE may comply with General Conformity for the projects by purchasing ozone season NOx allowances created pursuant to the federal Clean Air Interstate Rule (CAIR) (an emissions program created by the United States Environmental Protection Agency to reduce emissions from power generation facilities). The Department requests that USACE give greater weight to allowances from facilities close to New Jersey in its purchases. See N.J.A.C 7:27-18.5(c) Table 2. USACE may also use Surplus NO_x emission Offsets (SNEOs) that were generated by USACE and others as part of the New York - New Jersey Harbor Deepening Project. Further, the Department of Defense may be willing to reallocate to USACE emissions from its emissions budget for Joint Base McGuire and Lakehurst.

Coastal restoration and repair projects will enhance the sustainability of New Jersey's coastline and diminish the impacts of future storms. I would like to acknowledge the coordinated effort between USACE and the Department's staff to identify opportunities for these projects to meet their regulatory obligations and move forward in a timely manner. I appreciate your time and attention to this matter. Should you have any further questions or need for assistance, please do not hesitate to contact Jane Kozinski, Assistant Commissioner, at (609) 292-2795.

Sincerely,

Bob Martin
Commissioner

c: Jane Kozinski, Assistant Commissioner, NJDEP
Chris Salmi, Assistant Director, Division of Air Quality, NJDEP

Attachment B

General Conformity Related Emission Estimates

Emissions have been estimated using project planning information developed by the Philadelphia District, consisting of anticipated equipment types and estimates of the horsepower and operating hours of the diesel engines powering the equipment. In addition to this planning information, conservative factors have been used to represent the average level of engine load of operating engines (load factors) and the average emissions of typical engines used to power the equipment (emission factors). The basic emission estimating equation is the following:

E = hrs x LF x EF

Where:

E = Emissions per period of time such as a year or the entire project.
hrs = Number of operating hours in the period of time (e.g., hours per year, hours per project).
LF = Load factor, an estimate of the average percentage of full load an engine is run at in its usual operating mode.
EF = Emission factor, an estimate of the amount of a pollutant (such as NO_x) that an engine emits while performing a defined amount of work.

In these estimates, the emission factors are in units of grams of pollutant per horsepower hour (g/hphr). For each piece of equipment, the number of horsepower hours (hphr) is calculated by multiplying the engine's horsepower by the load factor assigned to the type of equipment and the number of hours that piece of equipment is anticipated to work during the year or during the project. For example, a crane with a 250-horsepower engine would have a load factor of 0.43 (meaning on average the crane's engine operates at 43% of its maximum rated power output). If the crane were anticipated to operate 1,000 hours during the course of the project, the horsepower hours would be calculated by:

250 horsepower x 0.43 x 1,000 hours = 107,500 hphr

The emissions from diesel engines vary with the age of an engine and, most importantly, with when it was built. Newer engines of a given size and function typically emit lower levels of pollutants than older engines. The NO_x emission factors used in these calculations assume that the equipment pre-dates most emission control requirements (known as Tier 0 engines in most cases), to provide a reasonable "upper bound" to the emission estimates. If newer engines are actually used in the work, then emissions will be lower than estimated for the same amount of work. In the example of the crane engine, a NO_x emission factor of 9.5 g/hphr would be used to estimate emissions from this crane on the project by the following equation:

$$\frac{107{,}500 \text{ hphr} \times 9.5 \text{ g } NO_x/\text{hphr}}{453.59 \text{ g/lb} \times 2{,}000 \text{ lbs/ton}} = 1.1 \text{ tons of } NO_x$$

As noted above, information on the equipment types, horsepower, and hours of operation associated with the project have been obtained from the project's plans and represent current best estimates of the equipment and work that will be required. Load factors have been obtained from various sources depending on the type of equipment. Marine engine load factors are primarily from a document associated with the New York and New Jersey Harbor Deepening Project (HDP): "Marine and Land-Based Mobile Source Emission Estimates for the Consolidated Schedule of 50-Foot Deepening Project, January 2004," and from EPA's 1998 Regulatory Impact Analysis (RIA): "EPA Regulatory Impact Analysis: Control of Commercial Marine Vessels." Land-side nonroad equipment load factors are from the documentation for EPA's NONROAD emission estimating model, "Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling, EPA420-P-04-005, April 2004."

Emission factors have also been sourced from a variety of documents and other sources depending on engine type and pollutant. The NO_x emission factors for marine engines have been developed primarily from EPA documentation for the Category 1 and 2 standards (RIA, "Control of Emission from Marine Engines, November 1999) and are consistent with emission factors used in documenting emissions from the HDP, while the VOC emission factors for marine engines are from the Port Authority of New York and New Jersey's "2010 Multi-Facility Emissions Inventory" which represent the range of marine engines operating in the New Jersey harbor and coastal region in terms of age and regulatory tier level. Nonroad equipment NO_x emission factors have been derived from EPA emission standards and documentation, while the nonroad VOC emission factors have been based on EPA's Diesel Emissions Quantifier (DEQ, accessed at: *www.epa.gov/cleandiesel/quantifier/*), run for moderately old equipment (model year 1995). On-road vehicle emission factors have also been developed from the DEQ, assuming a mixture of Class 8, Class 6, and Class 5 (the smallest covered by the DEQ) on-road trucks.

As noted above, the emission factors have been chosen to be moderately conservative so as not to underestimate project emissions. Actual project emissions will be estimated and tracked during the course of the project and will be based on the characteristics and operating hours of the specific equipment chosen by the contractor to do the work.

The following pages summarize the estimated emissions of pollutants relevant to General Conformity, NO_x and VOC, in sum for the project and by calendar year based on the schedule information also presented (in terms of operating months per year). Following this summary information are project details including the anticipated equipment and engine information developed by the Philadelphia District, the load factors and emission factors as discussed above, and the estimated emissions for the project by piece of equipment.

U.S. Army Corps of Engineers
NAP - ABU Sandy-Related Projects
General Conformity Related Emission Estimates
DRAFT

1-Nov-13

Summary of emissions estimated using NAP-provided equipment and activity data

Project	Total Emissions NOx (tons)	VOC
Barnegat Inlet to Little Egg Inlet (LBI)	973.7	32.0

Project	Cubic yards	Estimated In-State Emissions, tons per year 2013	2014	2015	2016	2017	2018
NOx							
Barnegat Inlet to Little Egg Inlet (LBI)	7,800,000	0.0	454.4	519.3	0.0	0.0	0.0
VOC							
Barnegat Inlet to Little Egg Inlet (LBI)	7,800,000	0.0	14.9	17.1	0.0	0.0	0.0

Schedule by month:

Project	Total months	Calendar months of operation 2013	2014	2015	2016	2017	2018
Barnegat Inlet to Little Egg Inlet (LBI)	15		June	Aug			

Months per year:

Project	Total months	Operating months per year 2013	2014	2015	2016	2017	2018
Barnegat Inlet to Little Egg Inlet (LBI)	15		7	8			

Months per ozone season (the ozone season is 1 May - 30 Sept each year):

Project	Total O_3 Season Months	Operating months per ozone season 2013	2014	2015	2016	2017	2018
Barnegat Inlet to Little Egg Inlet (LBI)	8		4	4			

U.S. Army Corps of Engineers
NAP - ABU Sandy-Related Projects
Conformity Related Emission Estimates
Barnegat Inlet to Little Egg Inlet (LBI)
DRAFT

1-Nov-13

Equipment/Engine Category	Type	# of Engines	HP	Total Hours	LF	Emission factors NOx (g/hphr or g/mi)	Emission factors VOC (g/hphr or g/mi)	Emissions In state waters NOx (tons)	Emissions In state waters VOC (tons)	Emissions Out of state waters NOx (assume all mob/demob in state waters)	Emissions Out of state waters VOC (assume all mob/demob in state waters)
Marine - mob/demob											
Hopper Dredge, propulsion	Hopper Dredge, propulsion	2	4,500	273.6	0.80	9.7	0.37	21.1	0.80	0.0	0.0
Hopper Dredge, auxilary	Hopper Dredge, auxiliary	1	1,000	273.6	0.40	7.5	0.20	0.9	0.02	0.0	0.0
Hopper Dredge, dredge pumps	Hopper Dredge, pumps	2	1,500	0.0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
Hopper Dredge, jet pumps	Hopper Dredge, pumps	1	2,100	0.0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
Tugboat - Propulsion	Ocean tow - propulsion	1	1,000	273.6	0.69	9.7	0.37	2.0	0.08	0.0	0.0
Tugboat - Secondary	Ocean tow - auxiliary	1	50	273.6	0.40	7.5	0.20	0.0	0.00	0.0	0.0
Crew/Survey Workboat - Propulsion	Crewboat propulsion	1	100	273.6	0.50	9.7	0.37	0.1	0.01	0.0	0.0
Crew/Survey Workboat - Secondary	Crewboat auxiliary	1	40	273.6	0.40	7.5	0.20	0.0	0.00	0.0	0.0
Derrick Barge - Prime Engine	Dredge auxiliary	1	200	273.6	0.40	7.5	0.20	0.2	0.00	0.0	0.0
Derrick Barge - Auxiliary Engine	Dredge auxiliary	1	40	273.6	0.40	7.5	0.20	0.0	0.00	0.0	0.0
Floating booster pump, prime engine	Booster pump	1	5,200	0.0	0.43	9.5	0.20	0.0	0.00	0.0	0.0
Floating booster pump, 2nd engine	Booster pump	1	200	0.0	0.43	9.5	0.20	0.0	0.00	0.0	0.0
Offshore survey boat - propulsion	Crewboat propulsion	1	500	273.6	0.69	9.7	0.37	1.0	0.04	0.0	0.0
Offshore survey boat - secondary	Crewboat auxiliary	1	40	273.6	0.43	7.5	0.20	0.0	0.00	0.0	0.0
Land-side											
Land-side, nonroad	Dozer	1	410	0	0.59	9.5	0.19	0.0	0.00	0.0	0.0
Land-side, onroad	Truck, small			680		10.3	0.54	0.3	0.01	0.0	0.0
Mob/Demob subtotal								**25.8**	**1.0**	**0.0**	**0.0**
Marine											
Hopper Dredge, propulsion	Hopper Dredge, propulsion	2	4,500	8,172	0.80	9.7	0.37	514.3	19.62	114.8	4.4
Hopper Dredge, auxilary	Hopper Dredge, auxiliary	1	1,000	8,172	0.40	7.5	0.20	21.6	0.58	5.4	0.1
Hopper Dredge, dredge pumps	Hopper Dredge, pumps	2	1,500	8,172	0.80	7.5	0.20	60.3	1.61	101.9	2.7
Hopper Dredge, jet pumps	Hopper Dredge, pumps	1	2,100	0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
Tugboat - Propulsion	Ocean tow - propulsion	1	1,000	8,172	0.69	9.7	0.37	60.3	2.30	0.0	0.0
Tugboat - Secondary	Ocean tow - auxiliary	1	50	8,172	0.40	7.5	0.20	1.4	0.04	0.0	0.0
Crew/Survey Workboat - Propulsion	Crewboat propulsion	1	100	8,172	0.50	9.7	0.37	4.4	0.17	0.0	0.0
Crew/Survey Workboat - Secondary	Crewboat auxiliary	1	40	8,172	0.40	7.5	0.20	1.1	0.03	0.0	0.0
Derrick Barge - Prime Engine	Dredge auxiliary	2	200	8,172	0.40	7.5	0.20	10.8	0.29	0.0	0.0
Derrick Barge - Auxiliary Engine	Dredge auxiliary	2	40	8,172	0.40	7.5	0.20	2.2	0.06	0.0	0.0
Floating booster pump, prime engine	Booster pump	1	5,200	8,172	0.43	9.5	0.20	191.4	4.03	0.0	0.0
Floating booster pump, 2nd engine	Booster pump	1	200	8,172	0.43	9.5	0.20	7.4	0.15	0.0	0.0
Offshore survey boat - propulsion	Crewboat propulsion	1	500	8,172	0.69	9.7	0.37	30.1	1.15	0.0	0.0
Offshore survey boat - secondary	Crewboat auxiliary	1	40	8,172	0.43	7.5	0.20	1.2	0.03	0.0	0.0
Land-side											
Land-side, nonroad	Dozer	1	410	12,470	0.59	9.5	0.19	31.6	0.63	0.0	0.0
Land-side, nonroad	Other diesel engines	1	87	9,390	0.59	9.5	0.19	5.0	0.10	0.0	0.0
Land-side, onroad	Truck, small	1		12,722		10.3	0.54	5.1	0.26	0.0	0.0
Beachfill subtotal									**31.0**	**222.1**	**7.2**
Total project emissions								**973.7**	**32.0**	**222.1**	**7.2**

On-road estimates based on hours, assumed average speed listed below, and g/mile emission factors.
Assumed average on-road speed, mph: 35

U.S. Army Corps of Engineers
NAP - ABU Sandy-Related Projects
Conformity Related Emission Estimates
Barnegat Inlet to Little Egg Inlet (LBI)
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1-Nov-13

Equipment/Engine Category	Type	# of Engines	HP	Total Hours	LF	Emission factors NOx (g/hphr or g/mi)	Emission factors VOC (g/hphr or g/mi)	Emissions In state waters NOx	Emissions In state waters VOC (tons)	Emissions Out of state waters NOx (assume all mob/demob in state waters)	Emissions Out of state waters VOC (assume all mob/demob in state waters)
Marine - mob/demob											
Hopper Dredge, propulsion	Hopper Dredge, propulsion	2	4,500	273.6	0.80	9.7	0.37	21.1	0.80	0.0	0.0
Hopper Dredge, auxilary	Hopper Dredge, auxiliary	1	1,000	273.6	0.40	7.5	0.20	0.9	0.02	0.0	0.0
Hopper Dredge, dredge pumps	Hopper Dredge, pumps	2	1,500	0.0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
Hopper Dredge, jet pumps	Hopper Dredge, pumps	1	2,100	0.0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
Tugboat - Propulsion	Ocean tow - propulsion	1	1,000	273.6	0.69	9.7	0.37	2.0	0.08	0.0	0.0
Tugboat - Secondary	Ocean tow - auxiliary	1	50	273.6	0.40	7.5	0.20	0.0	0.00	0.0	0.0
Crew/Survey Workboat - Propulsion	Crewboat propulsion	1	100	273.6	0.50	9.7	0.37	0.1	0.01	0.0	0.0
Crew/Survey Workboat - Secondary	Crewboat auxiliary	1	40	273.6	0.40	7.5	0.20	0.0	0.00	0.0	0.0
Derrick Barge - Prime Engine	Dredge auxiliary	1	200	273.6	0.40	7.5	0.20	0.2	0.00	0.0	0.0
Derrick Barge - Auxiliary Engine	Dredge auxiliary	1	40	273.6	0.40	7.5	0.20	0.0	0.00	0.0	0.0
Floating booster pump, prime engine	Booster pump	1	5,200	0.0	0.43	9.5	0.20	0.0	0.00	0.0	0.0
Floating booster pump, 2nd engine	Booster pump	1	200	0.0	0.43	9.5	0.20	0.0	0.00	0.0	0.0
Offshore survey boat - propulsion	Crewboat propulsion	1	500	273.6	0.69	9.7	0.37	1.0	0.04	0.0	0.0
Offshore survey boat - secondary	Crewboat auxiliary	1	40	273.6	0.43	7.5	0.20	0.0	0.00	0.0	0.0
Land-side											
Land-side, nonroad	Dozer	1	410	0	0.59	9.5	0.19	0.0	0.00	0.0	0.0
Land-side, onroad	Truck, small			680		10.3	0.54	0.3	0.01	0.0	0.0
Mob/Demob subtotal								**25.8**	**1.0**	**0.0**	**0.0**
Marine											
Hopper Dredge, propulsion	Hopper Dredge, propulsion	2	4,500	8,172	0.80	9.7	0.37	514.3	19.62	114.8	4.4
Hopper Dredge, auxilary	Hopper Dredge, auxiliary	1	1,000	8,172	0.40	7.5	0.20	21.6	0.58	5.4	0.1
Hopper Dredge, dredge pumps	Hopper Dredge, pumps	2	1,500	8,172	0.80	7.5	0.20	60.3	1.61	101.9	2.7
Hopper Dredge, jet pumps	Hopper Dredge, pumps	1	2,100	0	0.80	7.5	0.20	0.0	0.00	0.0	0.0
Tugboat - Propulsion	Ocean tow - propulsion	1	1,000	8,172	0.69	9.7	0.37	60.3	2.30	0.0	0.0
Tugboat - Secondary	Ocean tow - auxiliary	1	50	8,172	0.40	7.5	0.20	1.4	0.04	0.0	0.0
Crew/Survey Workboat - Propulsion	Crewboat propulsion	1	100	8,172	0.50	9.7	0.37	4.4	0.17	0.0	0.0
Crew/Survey Workboat - Secondary	Crewboat auxiliary	1	40	8,172	0.40	7.5	0.20	1.1	0.03	0.0	0.0
Derrick Barge - Prime Engine	Dredge auxiliary	2	200	8,172	0.40	7.5	0.20	10.8	0.29	0.0	0.0
Derrick Barge - Auxiliary Engine	Dredge auxiliary	2	40	8,172	0.40	7.5	0.20	2.2	0.06	0.0	0.0
Floating booster pump, prime engine	Booster pump	1	5,200	8,172	0.43	9.5	0.20	191.4	4.03	0.0	0.0
Floating booster pump, 2nd engine	Booster pump	1	200	8,172	0.43	9.5	0.20	7.4	0.15	0.0	0.0
Offshore survey boat - propulsion	Crewboat propulsion	1	500	8,172	0.69	9.7	0.37	30.1	1.15	0.0	0.0
Offshore survey boat - secondary	Crewboat auxiliary	1	40	8,172	0.43	7.5	0.20	1.2	0.03	0.0	0.0
Land-side											
Land-side, nonroad	Dozer	1	410	12,470	0.59	9.5	0.19	31.6	0.63	0.0	0.0
Land-side, nonroad	Other diesel engines	1	87	9,390	0.59	9.5	0.19	5.0	0.10	0.0	0.0
Land-side, onroad	Truck, small	1		12,722		10.3	0.54	5.1	0.26	0.0	0.0
Beachfill subtotal									**31.0**	**222.1**	**7.2**
Total project emissions								**973.7**	**32.0**	**222.1**	**7.2**

On-road estimates based on hours, assumed average speed listed below, and g/mile emission factors.
Assumed average on-road speed, mph: 35

U.S. Army Corps of Engineers
NAP - ABU Sandy-Related Projects
Conformity Related Emission Estimates
Factors used in these project calculations
DRAFT

1-Nov-13

Load Factors / Emission Factors - Marine

		Emission factors, g/hphr	
Marine Engines	**Load Factor**	**NOx**	**VOCs**
Blast barge - auxiliary	0.40	7.50	0.20
Blast barge - compressor	0.43	7.50	0.20
Booster pump	0.43	9.50	0.20
Clamshell - conventional	0.43	9.70	0.20
Clamshell - diesel electric	0.43	9.70	0.20
Crewboat auxiliary	0.40	7.5	0.20
Crewboat propulsion	0.50	9.70	0.37
Dredge auxiliary	0.40	7.50	0.20
Excavator - conventional	0.59	9.70	0.20
Excavator - diesel hydraulic	0.59	9.70	0.20
Hopper Dredge, auxiliary	0.40	7.50	0.20
Hopper Dredge, compressor	0.80	7.50	0.20
Hopper Dredge, propulsion	0.66	9.70	0.37
Hopper Dredge, pumps	0.80	7.50	0.20
Hydraulic Pipeline Dredge - Main Pump	0.80	9.70	0.20
Hydraulic Pipeline Dredge - Secondary	0.43	7.50	0.20
Hydraulic Pipeline Dredge - El. Generator	0.43	7.50	0.20
Ocean tow - auxiliary	0.40	7.5	0.20
Ocean tow - propulsion	0.69	9.70	0.37
Other diesel engines	0.75	11.00	0.20
Tender auxiliary	0.40	7.5	0.20
Tender propulsion	0.69	9.70	0.37

Load Factors / Emission Factors - Land-side

		Emission factors, g/hphr	
Equip Types	**Load Factor**	**NOx**	**VOCs**
Backhoe	0.21	9.50	0.19
Booster pump	0.43	9.50	0.19
Compactor	0.59	9.50	0.19
Compressor	0.43	9.50	0.19
Concrete saw	0.59	9.50	0.19
Conveyor	0.43	9.50	0.19
Crane	0.43	9.50	0.19
Crawler tractor	0.21	9.50	0.19
Dozer	0.59	9.50	0.19
Drilling rig	0.43	9.50	0.19
Excavator	0.59	9.50	0.19
Forklift	0.59	9.50	0.19
Generator	0.43	9.50	0.19
Grader	0.59	9.50	0.19
Light plants	0.43	9.50	0.19
Off-road truck	0.59	9.50	0.19
Other diesel engines	0.57	9.50	0.19
Pump	0.43	9.50	0.19
Rubber tired loader	0.59	9.50	0.19
Screen	0.43	9.50	0.19
Skid Steer Loader	0.21	9.50	0.19
Winch	0.43	9.50	0.19

Emission factor source: EPA emission standards (NOx); PANYNJ air emissions inventory (VOCs)
2010 PANYNJ Emissions Inventory, marine vessel emisison factors used as a reasonable surrogate for the variety of vessels in use in the New York/New Jersey area in the absence of specific information regarding the vessels to be used on any specific project.

2010 PANYNJ Emissions Inventory		**VOC**
Propulsion (g/kWhr)	Table 5.35	0.50
Propulsion (g/hphr)		0.37
Auxiliary (g/kWhr)	Table 5.35	0.27
Auxiliary (g/hphr)		0.2

Off-road: DEQ results for representative 600 hp crawler tractor (MY 1995)

Default hrs/year:	936	
Horsepower:	600	
Emissions, short tons per year:		0.1925
Estimated EF, g/hphr:*		0.183
Conversion factor, VOC/THC		1.053
Estimated VOC EF, g/hphr:		0.19

* Hydrocarbons provided by DEQ converted to VOC

Assumed LF for off-road: 0.59 (from PANYNJ Emissions Inventory)
Conversion factor 0.7457 kW/hp
g/kWhr x kW/hp = g/hphr

On-road emission factors
DEQ results (using MOVES)
Short Haul | Class 6 (19,501-26,000 lbs); Run with defaults, 2004 MY assumed, CY 2015, 1 truck
Short Haul | Class 8a (33,001-60,000); Run with Class 7 defaults (no Cl 8 short haul), 2004 MY assumed, CY 2015
Short Haul | Class 5 (16,001-19,500 lbs); Run as closest to 8,600-lb vehicle available in DEQ, 2005 MY, 2015 CY

Truck type	**miles**	**gallons**		**NOx**	**VOC***
Short Haul | Class 6	45,149	5,526	tpy	0.4061	0.038
			g/mi	8.16	0.764
Short Haul | Class 8a	45,149	6,060	tpy	0.5334	0.033
			g/mi	10.72	0.669
Short Haul | Class 5	19,610	2,448	tpy	0.2232	0.012
			g/mi	10.33	0.536

* Hydrocarbons provided by DEQ converted to VOC

Lookup table for emission estimating equations:

	Emission factors, g/mile	
	NOx	**VOC***
Truck, large	10.72	0.67
Truck, medium	8.16	0.76
Truck, small	10.33	0.54

APPENDIX C

Correspondence

MEMORANDUM FOR: The Record

FROM: Charles MacIntosh
Acting Chief, Planning Division

SUBJECT: Reinitiating Section 7 Consultation for Beach Nourishment Projects due to the listing of the Atlantic sturgeon

The US Army Corps of Engineers (Corps), Philadelphia District has an on-going beach nourishment program along the Atlantic Coast of New Jersey and Delaware for the purpose of storm damage reduction. The Corps has previously completed formal consultation on these and other projects throughout the District pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended. Specifically, in September 1995, the Philadelphia District initiated formal consultation under the Endangered Species Act with regard to potential impacts associated with dredging projects permitted, funded or conducted by the Philadelphia District. "A Biological Assessment of Federally Listed Threatened and Endangered Species of Sea Turtles, Whales, and the Shortnose Sturgeon within Philadelphia District Boundaries: Potential Impacts of Dredging Activities" was forwarded to NMFS for their review. A Biological Opinion was issued by NMFS on November 26, 1996 (NMFS, 1996) for all dredging projects carried out by the District. The Opinion stated that dredging projects within the Philadelphia District may adversely affect sea turtles and shortnose sturgeon, but are not likely to jeopardize the continued existence of any threatened or endangered species under the jurisdiction of NMFS. For projects within the Philadelphia District, the anticipated incidental take by injury or mortality is three (3) shortnose sturgeon. This Opinion was amended with a revised Incidental Take Statement (ITS) on May 25, 1999.

On October 6, 2010, NMFS published a Notice in the Federal Register proposing to list three Distinct Population Segments (DPSs) of Atlantic sturgeon in the Northeast Region of NMFS. The New York Bight Distinct Population Segment, which includes all Atlantic sturgeon whose range occurs in watersheds that drain into coastal waters, including Long Island Sound, the New York Bight, and the Delaware Bay, from Chatham, MA to the Delaware-Maryland border on Fenwick Island, as well as wherever these fish occur in coastal bays, estuaries, and the marine environment from Bay of Fundy, Canada, to the Saint Johns River, FL, was proposed for listing as endangered. On February 6, 2012, NMFS issued two final rules (77FR 5880 and 77 FR 5914) listing five DPSs of Atlantic sturgeon as threatened or endangered under the ESA. The effective date of the listing was April 6, 2012. In response to this listing, the Corps participated in a conference call with NMFS to discuss the listing and the potential impact of the listing on on-going Corps projects. In subsequent discussions, the Corps and NMFS agreed that an updated Biological Assessment would be completed to address potential impacts to the Atlantic sturgeon for all the District's dredging projects.

The purpose of this memorandum is to reinitiate consultation on the District's beach nourishment projects and to document the determination that allowing the beach nourishment projects to continue during the reinitiation period will not violate ESA sections 7(a)(2) and 7(d). Absent any unforeseen circumstances, we expect the reinitiation period to extend until approximately December 31, 2013. At the end of the reinitiation period, the Corps will replace the 1995 Biological Assessment with a new assessment that will analyze the effects of the beachfills along the Atlantic of New Jersey and Delaware on listed species, including the newly listed species of Atlantic sturgeon, and consider more recent information on sea turtles and other species that has become available since the 1996 Biological Opinion was completed.

Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (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. As indicated below, the Corps and NMFS have determined that formal Section 7 consultation on the District's beach nourishment projects must be reinitiated due to the new listing of the Atlantic sturgeon Distinct Population Segments (DPSs).

The Atlantic sturgeon population has been divided into 5 distinct population segments (DPSs) (Gulf of Maine, New York Bight, Chesapeake Bay, Carolina, and South Atlantic). These DPSs were configured to account for the marked difference in physical, genetic, and physiological factors within the species, as well as the unique ecological settings and unique genetic characteristics that would leave a significant gap in the range of the taxon if one of them were to become extinct (ASSRT, 2007). On February 6, 2012, the Northeast Region of NMFS listed the Gulf of Maine population as threatened and the New York Bight (NYB) and Chesapeake Bay (CB) DPSs as endangered. The Philadelphia District's Atlantic Coast Beach Nourishment Projects fall within the boundaries of the NYB population.

Atlantic sturgeon spend a majority of their adult phase migrating through marine waters. Consequently, they may be present in borrow areas being used for beach nourishment activities. Incidental take from dredges is possible. Therefore, we have determined that Atlantic sturgeon may be affected by beach nourishment projects within the Philadelphia District.

In light of changes to the project status and conditions and the availability of new information on several listed species, the Corps will reassess the effects and jeopardy analyses for sea turtles, shortnose sturgeon and whales in a new Biological Assessment. In the process, we will also consider whether there is a need to revise the analysis of the status of the species, environmental baseline, and cumulative effects. Additionally, we will reflect the change in the listing of loggerhead sea turtles from a single species to separate DPSs, a change that did not previously trigger reinitiation.

Section 7(a)(2) Analysis for the Reinitiation Period

The Section 7(a)(2) analysis below for Atlantic sturgeon is only applicable to the proposed action during the reinitiation period and does not address the Corps' obligation to insure the action over

a longer term is not likely to jeopardize listed species. A jeopardy determination commensurate with the temporal scope of the action is appropriately made only in the new Opinion. The dredging and placement activities associated with the Philadelphia District's beach nourishment program do not affect any critical habitat; therefore, critical habitat will not be addressed below.

Scope of the Analysis

In the analysis below, the Corps determines whether, during the reinitiation period, the Corps continues to ensure that potential impacts of beach nourishment activities are not likely to jeopardize the NYB Atlantic sturgeon DPS. The period of impacts to be considered begins now until completion of a new Opinion. Barring unforeseen circumstances, it is anticipated that a new Opinion will be completed by approximately December 31, 2013. Therefore, the period of analysis will be from now until December 31, 2013.

Effects of the Beach Nourishment Activities During the Reinitiation Period

"To jeopardize the continued existence of" means to engage in an action that reasonably would be expected , directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02). To make a jeopardy determination, the Corps will consider whether there will be a reduction in reproduction, numbers, or distribution. If there is a reduction in one or more of those factors, it must be determined whether that reduction will cause an appreciable reduction in the likelihood of survival and recovery of the species.

Atlantic sturgeon

With regard to potential physical injuries to Atlantic sturgeon, the potential exists for them to become entrained during dredging operations. Dickerson (2006, as cited by ASSRT, 2007) believes that direct physical impacts to sturgeon is associated with dredging machinery *(i.e*. drag arms, pumps). It is expected, however, that most adult sturgeon would actively avoid a working dredge. O'Herron *et al.* (1985) did a study of shortnose sturgeon in the upper tidal Delaware River to assess potential impacts of maintenance dredging of the Duck Island and Perriwig ranges between June and November 1983. They found no evidence of sturgeon killed or injured by the dredging operation. They also observed that adult shortnose sturgeon had a tendency to move away from the dredge and returned only after the dredge had left the area. The chance of the dredges being used for these projects coming into contact with an Atlantic sturgeon during the dredging operations is extremely small. Unlike the more confined area of river dredging, dredging in the Inlet and offshore borrow areas currently proposed for use represent a very small percentage of the habitat available to Atlantic sturgeon. In addition, since the coastal environment represents a migration area, as opposed to a spawning area, potential impacts are expected to be minimal.

The dredging associated with the beach nourishment would result in short-term adverse impacts to water quality in the immediate vicinity of the dredging and beach nourishment operations. Dredging in the proposed borrow areas will generate turbidity, resulting in sedimentation impacts within the immediate vicinity of the operations. Short-term increased turbidity can affect organisms in several ways. Primary production in phytoplankton and/or benthic algae may become inhibited from turbidity. Suspended particulate matter can clog gills and inhibit filter-feeding species. Reilly *et al*., 1983 determined that high turbidity could inhibit recruitment by

pelagic larval stocks. In addition, midwater nekton like finfish and mobile benthic invertebrates may migrate outside of the area where turbidity and deposition occur.

The amount of turbidity and its associated plume is mainly dependent on the grain size of the material. Generally, the larger the grain-size, the smaller the area of impact. The period of turbidity is also less with larger grain-sized materials. The proposed borrow locations contains medium to fine sands, which are coarser grained than silts and clays. Turbidity resulting from the resuspension of these sediments is expected to be localized and temporary in nature.

Similar water quality effects on aquatic organisms could likely be incurred from the deposition of borrow material on the beach. Increased turbidity resulting from the deposition of a slurry of sand will be temporary in nature and localized. This effect will not be significant as turbidity levels are naturally high in the high-energy surf zone. Organisms in the surf zone versus deep water areas will be less likely to suffer adverse effects from turbidity because they have already adapted to these conditions. Material taken from the proposed borrow areas will have low quantities of silt, therefore, high levels of turbid waters after deposition should not persist.

Depending upon the duration, location, distance to the fish, and type of sound (i.e., explosions vs. vessel sounds), man-made noise in the marine environment has the potential to impact Atlantic sturgeon. Studies have found that there are a wide range of potential impacts in response to sounds by fish, ranging from death to behavioral responses. According to Normandeau, 2012, little research has been done on the effects of sound from dredging on marine life, and therefore, little data is available. Behavioral reactions to dredging are to be expected, however, with possible negative consequences. Behavioral changes could consist of a mild "awareness" of the sound, a startle response (but otherwise no change in behavior) (Wardle *et al*., 2001), small temporary movements for the duration of the sound, or larger movements that might displace fish from their normal locations for short or long periods of time. Depending upon the level of behavioral change, there may be no significant impact on individual fish or fish populations or there may be a substantial change (e.g. movement from a feeding or breeding site) which could negatively impact the survival of a population (Popper and Hastings, 2009).

The noise associated with dredging and sand placement activities will be fairly continuous throughout the course of the construction activities but they are not expected to have a significant impact on the sturgeon. It is expected that sturgeon will avoid the borrow areas during construction but will return once work is complete. Due to the open water nature of the borrow areas, this temporary movement away from the borrow area does not constitute a significant effect to the species.

Through the implementation of protective measures for Atlantic sturgeon the Corps believes it will be possible to minimize and in some cases eliminate any impacts to the species. Since the implementation of NMFS's original Biological Opinion for dredging within the Philadelphia District in 1996, no sea turtles, whales or sturgeon have been taken during dredging in offshore and inlet borrow areas along the Atlantic Coast. Prior to the implementation of the UXO screening, all hopper dredging from June through November included turtle monitoring, which equates to approximately 15 years worth of monitoring in these areas with no takes.

Based on this information, the Corps has determined that the continued implementation of the Philadelphia District's beach nourishment projects during the reinitiation period is not likely to jeopardize the continued existence of the Atlantic sturgeon NYB DPS.

Section 7(d) Considerations

Section 7(d) of the Endangered Species Act (ESA) prohibits Federal agencies from making any irreversible or irretrievable commitment of resources with respect to the agency action that would have effect of foreclosing the formulation or implementation of any reasonable and prudent alternatives at the conclusion of the consultation. This prohibition is in force until the requirements of section 7(a)(2) have been satisfied. Section 7(d) does not prohibit all aspects of an agency action from proceeding during consultation; non-jeopardizing activities may proceed as long as their implementation would not violate section 7(d). As explained above, continuation of the District's beach nourishment projects under the 1996 Opinion pending completion of reinitiated consultation will not result in jeopardy to listed species. Congress intended section 7(d) to prevent an action agency from "steamrolling" a project by developing it to a stage at which options that would avoid jeopardizing listed species, and that would have been available a the onset of the action, are not longer reasonable and prudent due to the foregone commitment of resources to the original project design.

Since the beach nourishment activities that would be conducted during the reinitiation period are nourishment cycles for previously approved and constructed projects, this work would not preclude the implementation of reasonable and prudent measures for future nourishment activities. Nourishment of these projects generally takes place on 2 to 6 year cycles. Due to impacts from Hurricane Sandy, some of the projects are being nourished outside of their normal cycles. If consultation results further conservation recommendations, these recommendations will be included in all future beach nourishment activities.

Conclusions

While it is possible for Atlantic sturgeon to become entrained in the dredge during dredging operations, this is highly unlikely due to the transient nature of the species in the marine environment and their tendency to avoid dredging operations. Minor and temporary impacts to water quality and prey resources are expected within the borrow and placement areas. Minor and temporary impacts associated with regard to noise are also expected. In order to minimize impacts to all listed species, hydraulic cutterhead dredges will be used to the greatest extent possible.

Based on this analysis, we have determined that reinitiation of consultation for beachfill projects within the Philadelphia District is required and that allowing dredging to continue during the reinitiation period will not violate section 7(a)(2) or 7(d). This 7(a)(2) determination is only applicable during the reinitiation period (i.e., until approximately December 31, 2013) and does not address the Corps' longer term obligation to ensure the action is not likely to jeopardize the continued existence of listed species.

References:

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Environmental Branch

Ms. Rene Orr
Bureau of Ocean Energy Management
U.S. Department of the Interior
Strategic Resources Office
1849 C Street, NW
Mail Stop 5238
Washington, DC 20240

Re: Request to designate "Areas of Significant Sand Resources" offshore New Jersey in Outer Continental Shelf waters.

Dear Ms. Orr:

The Philadelphia District U.S. Army Corps of Engineers (PCOE) is committed to the coastal management strategy of maintaining healthy beaches through beach nourishment. Beaches along the Atlantic Ocean coastline of New Jersey act as buffers to reduce damages from coastal storms for both coastal towns and the diverse wildlife habitat behind them. In addition, healthy beaches also serve as destinations for recreation and tourism, and are the foundations for the economic wellbeing of the coastal communities and the State of New Jersey.

The U.S. Army Corps of Engineers, Philadelphia District requests to enter into a non-competitive negotiated Agreement with the U.S. Department of the Interior, Bureau of Ocean Energy Management (BOEM) in regard to the use of sand from an area on the Outer Continental Shelf (OCS) post-Hurricane Sandy for construction of a federal shore protection project on Long Beach Island, Ocean County, New Jersey.

Under the New Jersey Shore Protection Study, a Final Feasibility Report and Integrated Environmental Impact Statement was completed in 1999 for beach and dune nourishment on the 17-mile stretch of Atlantic Ocean coastline between Barnegat Inlet and Little Egg Inlet, known as Long Beach Island (LBI). The LBI plan will require approximately 7 million cubic yards of sand (see attached Figures). This project has been expedited through the Sandy Relief Act (PL-113-2) for the LBI project to be funded 100% federal and to be built in the upcoming contract currently scheduled to begin September 2013. This was confirmed upon release of the Sandy Relief Act, Second Interim report from the Corps to Congress, dated 30 May 2013.

Initial construction has occurred along 4.5 miles of the LBI shoreline within some sections of the island (*i.e*. the municipalities of Surf City, Ship Bottom, Harvey Cedars, and the Brant Beach section of Long Beach Township). To date, area D1, a 683-acre area centered approximately 2.5 miles off Harvey Cedars in state waters, was utilized as the borrow source.

Sand sources within state waters have been used to supply sand to New Jersey beachfront communities along the Atlantic shoreline; however, some of the sand source locations have been deemed environmentally sensitive and are no longer available for use. Additionally, since the discovery of Discarded Military Munitions (DMM) within area D1 during the initial beachfill operation for the project, the Philadelphia District has been employing munitions screens on the dredging intake pipes for beach nourishment projects to prevent DMM from being deposited on the beaches. Over time, this has resulted in "armoring" of the borrow material as any pebbles, stones or hardened biological substances (*i.e*. crustacean, molluscan shells, *etc*.) larger than the diameter of the screens remain in the borrow area after pumping, rendering less material available for beach nourishment.

Without supplemental sources from other nearshore borrow areas, Area D1 has insufficient quantities to complete the project without imposing adverse environmental impact to the marine habitat with deeper cuts. The PCOE has identified an area 1034 acres (see attached Figure) referred to as D2 in Outer Continental Shelf (OCS) waters that contain compatible sediments for beach nourishment projects. This 1034 acre site was previously identified and evaluated in earlier assessments as two separate areas: D2 and D3. D2, directly east of D1, was delineated and sampled in 2001-2002, and directly southeast of D2, area D3 was delineated and sampled in 2009 and 2012. We propose to utilize hopper dredges within this area as this type of dredge is most effective at maneuvering across large swaths making shallow cuts to minimize detrimental bottom habitat impacts that would result from deeper dredge holes. Hopper dredge lane cuts create relief bottom habitat preferred by many species of fish and offer more flexibility to maximize obtaining suitable grain size for beach nourishment purposes

Under Public Law 103-426, enacted October 31, 1994, we are requesting a cooperative agency agreement (*i.e*. a Memorandum of Agreement) to address the potential use of OCS sand resources. In addition to the above-mentioned 1999 Feasibility Study and Integrated Environmental Impact Statement for this project, a subsequent Environmental Assessment (EA) was prepared and provided to your office in December 2012 for your review. This 2012 EA was prepared to update and incorporate additional data collection on the proposed project and proposed offshore borrow areas (D2 and D3) for this cooperative agency agreement. The EA addresses all National Environmental Policy Act requirements, such as, but not limited to, the Coastal Zone Management Act, the Essential Fish Habitat Assessment, the Endangered Species Act, the National Historical Preservation Act, the Marine Mammal Protection Act, and the Clean Water Act. Coordination with various natural resource agencies, such as the U.S. Environmental Protection Agency, the New Jersey Department of Environmental Protection, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service, is ongoing for this beach nourishment project.

The public benefits of the proposed activity are significant and include shore protection and storm damage reduction and preservation of the beach resource. We request that area D2 (formerly referred to as D2 and D3), be designated as "Areas of Significant Sand Resources" by the Bureau of Ocean Energy Management (BOEM). We expect this designation allows BOEM to provide lease restrictions to either avoid potential sand resource areas or mitigate damages to potential areas. The attached figures identify this area as well as the proposed placement locations. Thank you for considering our request for OCS sand source designation. Please contact Mr. Keith Watson of our Program Management Branch at 215-656-6287 or Ms. Barbara Conlin of our Environmental Resources Branch at 215-656-6557 if you have any questions.

Sincerely,

.

Peter R. Blum
Chief, Planning Division

Enclosures

United States Department of the Interior

BUREAU OF OCEAN ENERGY MANAGEMENT
WASHINGTON, DC 20240-0001

Mr. Peter R. Blum
Chief, Planning Division
Philadelphia District, U.S. Army Corps of Engineers
Wanamaker Building
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390

Dear Mr. Blum:

Thank you for your letter dated June 17, 2013, requesting to enter into a non-competitive negotiated agreement with the U.S. Department of the Interior, Bureau of Ocean Energy Management (BOEM). The request is specifically for the use of 9 million cubic yards of sand from borrow area D2 (formerly known as borrow areas D2 and D3), located on the Outer Continental Shelf, for the purpose of nourishing 11.5 miles of Atlantic Ocean coastline between Barnegat Inlet and Little Egg Inlet, known as Long Beach Island.

We have reviewed your request and find that it does meet the standard for a negotiated agreement under the Outer Continental Shelf Lands Act, and the best instrument for leasing the requested material is a two-party Memorandum of Agreement (MOA) between the U.S. Army Corps of Engineers (USACE) and BOEM. The executed MOA will contain all of the terms and conditions that BOEM will require to extract and place sand for this nourishment cycle.

There are certain requirements that must be completed prior to the issuance of a negotiated agreement to fulfill applicable statutes, including compliance with the National Environmental Policy Act, consultation with the National Marine Fisheries Service related to Essential Fish Habitat, and consultation with U.S. Fish and Wildlife Service regarding the Endangered Species Act. In addition, Coastal Zone Management Act consistency concurrence must be obtained prior to issuance of the MOA. We ask that you continue to work with the Office of Environmental Assessment through Jennifer Culbertson on meeting these requirements. Dr. Culbertson can be reached at (703) 787-1742, or by email at Jennifer.Culbertson@boem.gov.

The Leasing Division, Marine Minerals Program coordinator for this project will be Jennifer Rose, who can be reached at (703) 787-1223, or by email at Jennifer.rose@boem.gov.

Thank you for your request to designate the D2 borrow area as a significant sand resource. At this time, BOEM is internally assessing how such a process might be designed and implemented. We will actively engage with you and all of our stakeholders as we continue to explore this and other mechanisms to effectively manage these very important resources.

If you have any questions, please do not hesitate to call me at (703) 787-1215. We look forward to working with you on this endeavor.

Sincerely,

Colleen Finnegan

Colleen Finnegan
Acting Chief, Marine Minerals Branch

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

Environmental Resources Branch

FEB 0 6 2013

Mr. Eric Davis, Supervisor
U.S. Fish and Wildlife Service
927 North Main Street, Bldg D
Pleasantville, New Jersey 08232

Dear Mr. Davis,

The Philadelphia District, U.S. Army Corps of Engineers initiated construction of the Barnegat Inlet to Little Egg Inlet (Long Beach Island) Federal Hurricane and Shore Protection Project (HSPP) in 2007. The Federally designed and partially constructed project is located in Ocean County, New Jersey. The Long Beach Island shore protection project, as authorized by Congress, provides for restoration of the protective dune and berm along approximately 17 miles of Long Beach Island. The protective berm is 125 ft wide at an elevation +8.0 ft North American Vertical Datum (NAVD) with a 30 ft wide dune crest at elevation +22 ft NAVD. The dune incorporates planted dune grass and sand fencing along the project length. Periodic nourishment of the entire project is estimated to require a total of 1.9 MCY of sand at 7-year intervals. To date, portions of the Federal project construction include Surf City, Harvey Cedars, and Brant Beach.

Hurricane Sandy made landfall near Kingston, Jamaica on 24 October, 2012 and as a "post-tropical cyclone", subsequently made landfall near Atlantic City, NJ on 29 October causing extensive flooding, beach erosion, and coastal damage along the shorelines of Delaware, New Jersey and New York. The combined effects of wind, waves, and elevated tidal water levels led to significant erosion and damage to the Long Beach Island HSPP project area. In November 2012, the U.S. Army Corps of Engineers, Philadelphia District prepared a Project Information Report (PIR) for the Federal HSPP project.

The Philadelphia District proposes to use Flood Control and Coastal Emergencies funding (FCCE) to conduct emergency beachfill operations for these beaches along the Long Beach Island coastline that have already been initially constructed. All beach fill will be obtained from the permitted offshore borrow areas. The recommended rehabilitation of the Barnegat Inlet to Little Egg Inlet HSPP will consist of the placement of approximately 2,000,000 cubic yards (CY) of dredged sand.

Coordination with the natural resource agencies is ongoing, as each portion of the project is constructed. No endangered species have been identified within the three beaches proposed for emergency beachfill placement. If endangered species are found to occur in the proposed

placement areas, the construction schedule would adhere to any established environmental windows through coordination with your office.

Subsequent to completion of the Environmental Impact Statement and permitting process, the Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus) was added to the endangered species list by the National Marine Fisheries Service in April 2012. The Philadelphia District will be undergoing a formal Section 7 consultation with NMFS, and is preparing a programmatic biological assessment (BA) for all District coastal projects. However, if formal consultation is not completed in time for the beach repairs, informal consultation will be conducted in the interim to insure compliance with the Endangered Species Act. The Coastal Zone Consistency Determination and Water Quality Certificate (WQC) were issued 15 June 2000 and 20 July 2006. The borrow site(s), quantity, and work will fall within the scope of that authorized by the WQC.

In accordance with procedures outlined in the Biological Opinion on the Effects of Federal Beach Nourishment Activities Along the Atlantic Coast of New Jersey within the U.S, Army Corps of Engineers, Philadelphia District on the Piping Plover (Charadrius melodus) and Seabeach Amaranth (Amaranthus pumilus), this letter serves to request initiation of streamlined (Tier 2) formal consultation under Section 7 of the Endangered Species Act of 1973 (87 Stat. 884; 16 U.S.C. 1531 et seq.) with regard to the proposed beach nourishment activities at the above-mentioned areas. A review of historical nesting information indicates that the project areas have not been utilized by nesting piping plovers in over 15 years and no seabeach amaranth plants have been observed within or in the immediate vicinity of the proposed placement areas. Based on the above information, and the fact that the Corps will follow any conservation measures proposed in our Biological Assessment necessary to protect any listed species that may occur in the project areas, and the reasonable and prudent measures outlined in the Service's Biological Opinion, we have concluded that the proposed beach fill plan is not likely to directly impact piping plover or seabeach amaranth through burial or habitat alteration. These impacts, including potential indirect, secondary, and cumulative impacts, have been fully covered in the Biological Opinion, and are "not likely to adversely affect" either species. Therefore, we believe that the consultation for the emergency rehabilitation of these portions of the previously constructed project can be concluded through informal consultation.

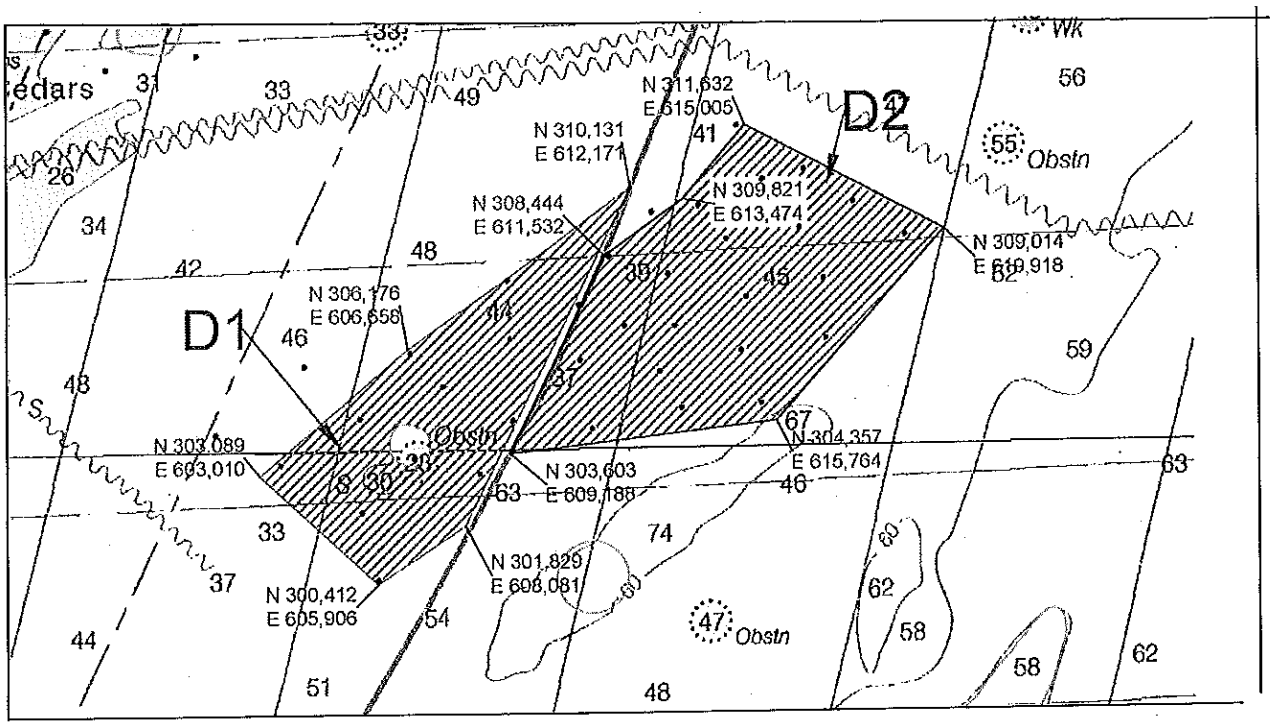
At this time, we are requesting a written response indicating your concurrence with our proposed course of action with regard to direct and indirect impacts to threatened species. We anticipate that the Service's response will conclude the Section 7 consultation process for this phase of the project. We appreciate your attention in this matter. If you have any questions or require additional information, please contact Ms. Barbara Conlin of our Environmental Resources Branch at (215) 656-6557.

Sincerely,

C. MacIntosh

Charles MacIntosh
Acting Chief of Planning

Proposed Borrow Area D2 (Federal waters) and adjacent Borrow Area D1 (state waters).



DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

Environmental Resources Branch

AUG 0 8 2013

Mr. Eric Schrading, Acting Supervisor
U.S. Fish and Wildlife Service
927 North Main Street, Bldg D
Pleasantville, New Jersey 08232

Dear Mr. Schrading:

The Philadelphia District, U.S. Army Corps of Engineers (PCOE) initiated construction of the Barnegat Inlet to Little Egg Inlet (Long Beach Island) Federal Hurricane and Shore Protection Project (HSPP) in 2007. The Federally designed and partially constructed project is located in Ocean County, New Jersey. The Long Beach Island shore protection project, as authorized by Congress, provides for restoration of the protective dune and berm along approximately 17 miles of Long Beach Island. The protective berm is 125 ft wide at an elevation +8.0 ft North American Vertical Datum (NAVD) with a 30 ft wide dune crest at elevation +22 ft NAVD. The dune incorporates planted dune grass and sand fencing along the project length. To date, portions of the Federal project have been constructed and include Surf City, Harvey Cedars, and Brant Beach. The proposed beach template design has not changed from that which was presented in the 1999 EIS. Section 401 Water Quality Certification and a Coastal Zone Consistency Determination were issued by the New Jersey Department of Environmental Protection on 15 June 2000 and 20 July 2006.

Hurricane Sandy made landfall near Kingston, Jamaica on 24 October, 2012 and as a "post-tropical cyclone", subsequently made landfall near Atlantic City, NJ on 29 October causing extensive flooding, beach erosion, and coastal damage along the shorelines of Delaware, New Jersey and New York. The combined effects of wind, waves, and elevated tidal water levels led to significant erosion and damage to the Long Beach Island HSPP project area. In November 2012, the PCOE prepared a Project Information Report (PIR) for the Federal HSPP project and requested Tier 2 consultation with you in February 2013 specifically for the three proposed beaches receiving renourishment.

Under the Disaster Relief Appropriations Act (PL 113-2) the PCOE proposes to place beachfill on the remaining unconstructed portions of the project (*i.e.* Long Beach Township, Ship Bottom Borough, and Beach Haven Borough), as is described in detail in the 1999 EIS. All beachfill will be obtained from the permitted offshore borrow area D1, and upon completion of a Memorandum of Agreement with the Bureau of Ocean

Energy Management (BOEM), Area D2 (a 1034 acre site located in federal waters immediately adjacent to D1). The PCOE, in cooperation with the BOEM, is currently preparing an Environmental Assessment to evaluate the use of Borrow Area D2 in federal waters for the proposed project and a copy of this draft report will be provided for your review upon completion. The PCOE is serving as the lead agency for this Endangered Species Act (ESA) Section 7 consultation. Under the Outer Continental Shelf Lands Act (43 U.S.C. Section 1337(k)), the BOEM has sole jurisdiction over the proposed use of sand from the D2 borrow area because it is located on the Outer Continental Shelf (OCS) in federal waters. The PCOE has jurisdiction over all other aspects of the project in state waters (see attached map depicting Borrow Areas D1 and D2 relative to Long Beach Island).

In accordance with procedures outlined in the Biological Opinion on the Effects of Federal Beach Nourishment Activities Along the Atlantic Coast of New Jersey within the U.S. Army Corps of Engineers, Philadelphia District on the Piping Plover *(Charadrius melodus)* and Seabeach Amaranth (*Amaranthus pumilus*), this letter serves to request initiation of streamlined (Tier 2) formal consultation under Section 7 of the Endangered Species Act of 1973 (87 Stat. 884; 16 U.S.C. 1531 *et seq.*) with regard to the proposed remaining beach nourishment activities. Approximately 11.9 mcy of sand will be dredged (*i.e.* approximately 2.9 mcy from Area D1 and 9 mcy from Area D2) and placed along the Atlantic Ocean shoreline of Long Beach Island from Station 103+00 in northern Long Beach Township to Station 860+00 at the southern end of the island adjacent to, but not including, the Edwin B. Forsythe National Wildlife Refuge (approximately 14 miles in length but excluding the previously constructed beaches at Surf City, Harvey Cedars, and Brant Beach. The proposed construction is expected to take 18-24 months and the work is tentatively scheduled to begin in March 2014. The project area is eroded and has very low habitat suitability for piping plovers. The project area also has had no history of either nesting piping plovers or seabeach amaranth in more than 10 years. This project is needed to address severe coastal erosion and storm damage that resulted from Hurricane.

Coordination with the natural resource agencies is ongoing. The PCOE coordinates regularly with Mr. Todd Pover of the New Jersey Department of Environmental Protection to determine if any listed species are observed in the proposed fill area. If endangered species are found to occur in the proposed placement areas, the construction schedule would adhere to any established environmental windows through coordination with your office.

Based on the above information, and the fact that the Corps will follow any conservation measures proposed in our Biological Assessment necessary to protect any listed species that may occur in the project areas, and the reasonable and prudent measures outlined in the Service's Biological Opinion, we have concluded that the proposed beach fill plan is not likely to directly impact piping plover or seabeach amaranth through burial or habitat alteration. These impacts, including potential indirect, secondary, and cumulative impacts, have been fully covered in the Biological Opinion, and are "not likely to adversely affect" either species. Therefore, we believe

that the consultation for the emergency rehabilitation of these portions of the previously constructed project can be concluded through informal consultation.

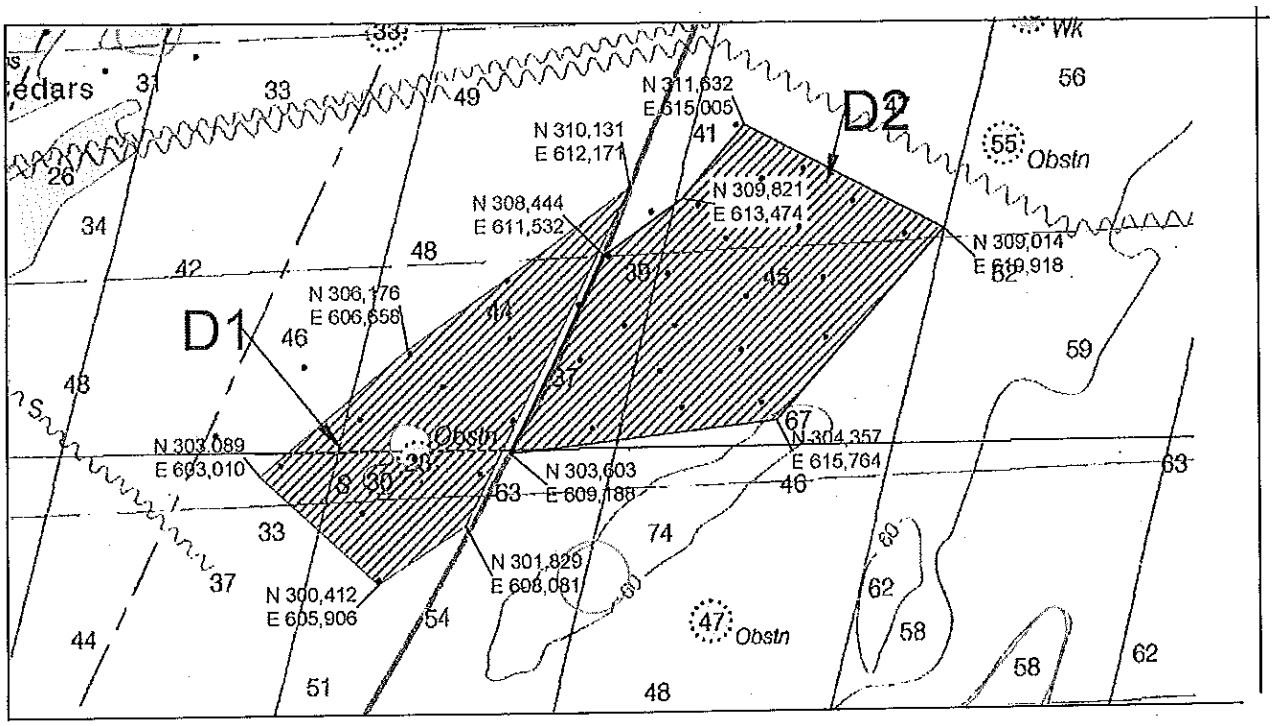
At this time, we are requesting a written response indicating your concurrence with our proposed course of action with regard to direct and indirect impacts to threatened species. We anticipate that the Service's response will conclude the Section 7 consultation process for this phase of the project. We appreciate your attention in this matter. If you have any questions or require additional information, please contact Ms. Barbara Conlin of our Environmental Resources Branch at (215) 656-6557.

Sincerely,

Peter R. Blum, P.E.
Chief, Planning Division

Cc: Dr. Jennifer Culbertson, BOEM

Proposed Borrow Area D2 (Federal waters) and adjacent Borrow Area D1 (state waters).



United States Department of the Interior

FISH AND WILDLIFE SERVICE

New Jersey Field Office
Ecological Services
927 North Main Street, Building D
Pleasantville, New Jersey 08232
Tel: 609/646 9310
Fax: 609/646 0352
http://www.fws.gov/northeast/njfieldoffice

In Reply Refer To:
13-CPA-0282

Peter Blum, Chief
Planning Division
Philadelphia District
U.S. Army Corps of Engineers
100 Penn Square East
Philadelphia, Pennsylvania 19107-3390
ATTN: Barbara Conlin

AUG 2 9 2013

Dear Mr. Blum:

The U.S. Fish and Wildlife Service (Service) received your August 8, 2013 request for streamlined (Tier 2) formal consultation regarding U.S. Army Corps of Engineers, Philadelphia District (Corps) proposed beach re-nourishment activities in the approved Barnegat Inlet to Little Egg Inlet, Ocean County, New Jersey Federal Hurricane and Shore Protection Project. Specifically, the Corps proposes to re-nourish the following segments:

- Long Beach Township
- Ship Bottom Borough
- Beach Haven Borough

This response serves as Tier 2 streamlined consultation pursuant to the Service's December 2005 Programmatic (Tier 1) Biological Opinion on the Effects of Federal Beach Nourishment, Re-nourishment, Stabilization, and Restoration Activities along the Atlantic Coast of New Jersey within the Corps, Philadelphia District on the Federally Listed (threatened) Piping Plover (*Charadrius melodus*) and Seabeach Amaranth (*Amaranthus pumilus*) (PBO). This Tier 2 (streamlined) consultation covers only the subject re-nourishment event, including potential direct and indirect effects to federally listed species that may occur during and after construction. Subsequent re-nourishment events will be considered separate Federal actions and will require individual Tier 2 consultations.

AUTHORITY

This response is provided pursuant to Section 7 of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) (ESA) to ensure the protection of

endangered and threatened species and does not address all Service concerns for fish and wildlife resources. These comments do not preclude separate review and comment by the Service directed to the Corps via the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*) for any permits required pursuant to Section 404 of the Clean Water Act (33 U.S.C.1 344 *et seq.*); or comments on any forthcoming environmental documents pursuant to the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321 *et seq.*).

CONSULTATION HISTORY

A chronology of key correspondences among the Service, Corps, and New Jersey Department of Environmental Protection – Endangered and Nongame Species Program (ENSP) regarding the subject project is provided below.

August 8, 2013	The Corps requested consultation for the subject project and indicated that coordination was conducted with Mr. Todd Pover with the Conserve Wildlife Foundation (CWFNJ - representing the ENSP).

PROJECT DESCRIPTION

The project would entail re-nourishing the municipalities of Long Beach Township, Ship Bottom Borough, and Beach Haven Borough. A maximum of 11,900,000 cubic yards of sand is proposed to be placed on the subject beaches from the approved offshore area D1 and 9,000,000 from D2, the latter upon completion of a Memorandum of Agreement with the Bureau of Ocean Energy Management. The berm profile will be returned to the +8.0 feet NAVD design criteria with a 30-foot-wide dune crest at elevation +22 feet NAVD. The Corps tentatively proposes to begin construction in March 2014 and complete the project within 18-24 months. The Edwin B. Forsythe National Wildlife Refuge (Forsythe NWR) will be excluded.

ADHERENCE TO MEASURES TO MINIMIZE IMPACTS TO FEDERALLY LISTED SPECIES

Relevant conservation measures proposed by the Corps for protection of federally listed species, and reasonable and prudent measures (RPMs) imposed by the Service to minimize take of federally listed species, are specified within the PBO and are applicable to all Tier 2 projects carried out under the Corps' program. All applicable measures to protect piping plovers will be followed during the 2013 re-nourishment of Long Beach Township, Ship Bottom Borough, and Beach Haven Borough:

- The beach nourishments will be conducted within the piping plover nesting season. No nesting has occurred in the proposed fill area in the last 10 years. With a proposed starting date of March 2014, the Corps will be unable to obtain nesting data from Mr. Todd Pover prior to project implementation. The Corps

will abide by all Reasonable and Prudent Measures (RPMs) specified in the PBO in the event plovers nest within or near the project area.

- The Corps will notify the Service, ENSP, and CWFNJ of the precise starting date, if the project will be modified, and end date as it approaches completion.

There have been no known occurrences of seabeach amaranth in the proposed areas to be re-nourished.

STATUS OF THE SPECIES

Relevant biological and ecological information for the piping plover and seabeach amaranth was provided to the Corps in the PBO. That information remains pertinent and was considered by the Service in formulating this Tier 2 Biological Opinion.

ENVIRONMENTAL BASELINE

The environmental baseline for the Corps' overall program for Federal beach nourishment, re-nourishment, stabilization, and restoration activities along the Atlantic Coast of New Jersey within the Philadelphia District was established and fully described within the PBO. New information regarding the status of the piping plover and seabeach amaranth within the project area since issuance of the PBO has become available. Specifically, no piping plovers have nested within the proposed re-nourishment areas in the last 10 years, and no seabeach amaranth plants were found during surveys. All other information described within the PBO remains pertinent and was considered by the Service in formulating this Tier 2 Biological Opinion.

EFFECTS OF THE ACTION

Following review of the information provided by the Corps regarding the Long Beach Township, Ship Bottom Borough, and Beach Haven Borough nourishment project, the Service has determined that the potential effects of the project are consistent with those addressed in the PBO and are hereby incorporated by reference. Beach habitats within the Long Beach Township, Ship Bottom Borough, and Beach Haven Borough project area have been degraded by beach erosion, and no piping plover or seabeach amaranth were present within the project area in the past ten years.

The proposed re-nourishment area does not presently provide suitable piping plover nesting habitat. Therefore, no direct adverse impacts to these species are anticipated unless plovers occupy the project area during the 2014 or subsequent nesting seasons.

Following beach nourishment in other areas of New Jersey, piping plovers have established nesting in previously unoccupied sites, and seabeach amaranth has colonized suitable habitats created by beach re-nourishment. However, piping plover nesting and productivity on such stabilized beaches (where no habitat enhancement occurs) is generally lower than on un-stabilized beaches where over-wash zones and or tidal pools

are available. Therefore, it is likely that at least one pair of piping plovers may nest or attempt to nest within the Long Beach Township, Ship Bottom Borough, and Beach Haven Borough project area following the fill, and productivity is anticipated to be lower than on un-stabilized beaches or stabilized beaches with habitat enhancement.

CONCLUSION

Actions and effects associated with the Long Beach Township, Ship Bottom Borough, and Beach Haven Borough re-nourishment permit are consistent with those identified and discussed within the PBO. After reviewing the size and scope of the project, the environmental baseline, the status of federally listed species within the project area, and the effects of the action, it is the Service's Biological Opinion that the 2014-15 Long Beach Township, Ship Bottom Borough, and Beach Haven Borough re-nourishment permit is not likely to jeopardize the continued existence of the piping plover or seabeach amaranth. No Critical Habitat has been designated for these species within the project area; therefore, no Critical Habitat will be affected.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and the Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in the death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of carrying out an otherwise lawful activity.

Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of the agency action is not considered a prohibited taking under the ESA, provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement. The type and amount of anticipated incidental take is consistent with that described in the PBO and does not cause the total annual level of incidental take in the PBO.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

To be exempt from the take prohibitions of Section 9 of the ESA, the Corps must implement all RPMs and terms and conditions, as stipulated in the PBO, to minimize the impact of anticipated incidental take of plovers. The Service has determined that the following new reasonable and prudent measures beyond those specified in the December 2005 Tier I Programmatic Biological Opinion are needed to minimize the impact of

incidental take anticipated for the Long Beach Township, Ship Bottom Borough, and Beach Haven Borough re-nourishment project:

- The Corps shall obtain nesting data from the ENSP/CWFNJ prior to and during project implementation and abide by all RPMs specified in the PBO in the event plovers nest within or near the project area.

The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to demonstrate clear compliance with the RPMs and their implementing terms and conditions in this Biological Opinion; or (2) fails to require Corps staff, contractors, cooperators, and/or permittees to adhere to the terms and conditions of the incidental take statement; and/or (3) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of Section7(o)(2) of the ESA may lapse.

REINITIATION - CLOSING STATEMENT

This concludes Tier 2 formal consultation on the effects of the Corps' proposed 2014-15 beach re-nourishment of Long Beach Township, Ship Bottom Borough, and Beach Haven Borough, Ocean County, New Jersey. As provided in 50 CFR § 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or Critical Habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or Critical Habitat that was not considered in this opinion; or, (4) a new species is listed or Critical Habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

As a reminder, this Tier 2 consultation covers only the 2014-15 Long Beach Township, Ship Bottom Borough, and Beach Haven Borough re-nourishment event, including potential impacts to federally listed species that may occur during and after this cycle of re-nourishment. Subsequent re-nourishment events will be considered separate Federal actions and will require individual Tier 2 consultations. Please contact Carlo Popolizio at (609) 383-3938, extension 32, if you have any questions or require further assistance regarding threatened or endangered species.

Sincerely,

Eric Schrading
Acting Field Supervisor

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQUARE EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390

REPLY TO
ATTENTION OF

Environmental Resources Branch

AUG 0 8 2013

Ms. Mary Colligan
Assistant Regional Administrator
National Marine Fisheries Service
One Blackburn Drive
Gloucester, MA 01930

Dear Ms. Colligan:

The Philadelphia District, U.S. Army Corps of Engineers (PCOE) initiated construction of the Barnegat Inlet to Little Egg Inlet (Long Beach Island) Federal Hurricane and Shore Protection Project (HSPP) in 2007. The Federally designed and partially constructed project is located in Ocean County, New Jersey. The Long Beach Island shore protection project, as authorized by Congress, provides for restoration of the protective dune and berm along approximately 17 miles of Long Beach Island. The protective berm is 125 ft wide at an elevation +8.0 ft North American Vertical Datum (NAVD) with a 30 ft wide dune crest at elevation +22 ft NAVD. The dune incorporates planted dune grass and sand fencing along the project length. The proposed beach template design has not changed from that which was presented in the 1999 EIS. Section 401 Water Quality Certification and a Coastal Zone Consistency Determination were issued by the New Jersey Department of Environmental Protection on 15 June 2000 and 20 July 2006.
To date, portions of the Federal project have been constructed and include Surf City, Harvey Cedars, and Brant Beach.

Hurricane Sandy made landfall near Kingston, Jamaica on 24 October, 2012 and as a "post-tropical cyclone", subsequently made landfall near Atlantic City, NJ on 29 October causing extensive flooding, beach erosion, and coastal damage along the shorelines of Delaware, New Jersey and New York. The combined effects of wind, waves, and elevated tidal water levels led to significant erosion and damage to the Long Beach Island HSPP project area.

Under the Disaster Relief Appropriations Act (PL 113-2) the PCOE proposes to place beachfill on the remaining unconstructed portions of the project (*i.e.* Long Beach Township, Ship Bottom Borough, and Beach Haven Borough), as is described in detail in the 1999 EIS. All beachfill will be obtained from the permitted offshore borrow area D1, and upon completion of a Memorandum of Agreement with the Bureau of Ocean Energy Management (BOEM), Area D2 (a 1034 acre site located in federal waters immediately adjacent to D1).

The PCOE proposes to place approximately 11.9 million cubic yards (MCY) of sand from Borrow Areas D1 and D2 along 14 miles of Atlantic Ocean shoreline on Long Beach Island, New Jersey from Station 103+00 in northern Long Beach Township to Station 860+00 at the southern end of the island adjacent to, but not including, the Edwin B. Forsythe National Wildlife Refuge (and excluding the previously constructed beaches at Surf City, Harvey Cedars, and Brant Beach). The proposed construction is expected to take 18-24 months and the work is tentatively scheduled to begin in March 2014. The project is needed to address severe coastal erosion and storm damage that resulted from Hurricane Sandy.

The PCOE, in cooperation with the BOEM, is currently preparing an Environmental Assessment to evaluate the use of Borrow Area D2 in federal waters for the proposed project and a copy of this draft report will be provided for your review upon completion. The PCOE is serving as the lead agency for this Endangered Species Act (ESA) Section 7 consultation. Under the Outer Continental Shelf Lands Act (43 U.S.C. Section 1337(k)), the BOEM has sole jurisdiction over the proposed use of sand from the D2 borrow area because it is located on the Outer Continental Shelf (OCS) in federal waters. The PCOE has jurisdiction over all other aspects of the project in state waters (see attached map depicting Borrow Areas D1 and D2 relative to Long Beach Island).

A programmatic Biological Opinion (BO) was prepared by your office for all dredging projects within the Philadelphia District (NMFS, 1996). The BO evaluates impacts to dredging projects on shortnose sturgeon, sea turtles, and marine mammals. The BO and an amendment to the BO provide incidental take statements for these species. Specifically, the use of hopper dredges in the Lower Delaware Bay and along the Atlantic Ocean coasts of New Jersey and Delaware requires that sea turtle/marine mammal observer be on-board the dredge to monitor for sea turtles and marine mammals for 50% of the actual dredging time between June 1 and November 30. The use of monitors and the installation of screens on the overflow insure compliance with Section 7 Endangered Species Act Consultation. Since 2007, the Philadelphia District has been required to use UXO (munitions) screening on all beach nourishment jobs. The use of these screens renders the need for turtle monitors on hopper dredges ineffective. Since the implementation of the BO in 1996, no sea turtles, whales or sturgeon have been taken during dredging in offshore and inlet borrow areas along the Atlantic Coast. Prior to the implementation of the UXO screening, all hopper dredging from June through November included turtle monitoring, which equates to approximately 15 years worth of monitoring in these areas with no takes.

Subsequent to completion of the Environmental Impact Statement and permitting process, the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) was added to the endangered species list in April 2012. The Philadelphia District is preparing a programmatic biological assessment (BA) for all District coastal projects. However, in the event that formal consultation is not completed in time for the proposed beach placement operations, we request informal consultation in the interim to insure compliance with the Endangered Species Act. The Coastal Zone Consistency

Determination and Water Quality Certificate (WQC) for this project were issued 15 June 2000 and 20 July 2006. The PCOE and the BOEM will implement all reasonable and prudent measures and associated terms and conditions of the existing incidental take statement and/or those issued with a revised biological opinion. It is our view that potential impacts to Atlantic sturgeon are unlikely in the proposed placement area and offshore borrow areas, and therefore, we request informal consultation under Section 7 of the Endangered Species Act of 1973 (87 Stat. 884; 16 U.S.C. 1531 *et seq.*) with regard to the proposed remaining beach nourishment. Potential impacts to endangered species have been fully evaluated in the EIS (1999) and any potential indirect, secondary, or cumulative impacts to Atlantic sturgeon are not likely to adversely affect the species. Therefore, we believe that the consultation for the emergency rehabilitation of these portions of the previously constructed project can be concluded through informal consultation.

Please provide a written response regarding this concurrence. If you have any questions or require additional information, please contact Ms. Barbara Conlin at Barbara.E.Conlin@USACE.army.mil or at 215-656-6557.

Sincerely,

for C. MacIntosh

Peter R. Blum, P.E.
Chief, Planning Division

Cc: Dr. Jennifer Culbertson, BOEM

Proposed Borrow Area D2 (Federal waters) and adjacent Borrow Area D1 (state waters).