RESOLUTION 2019-109

RESOLUTION ADOPTING A BEACH MANAGEMENT PLAN FOR THE PROTECTION OF FEDERAL AND STATE LISTED SPECIES

BE IT RESOLVED, the Mayor & Council of the Borough of Belmar, in cooperation with the NJ Department of Environmental Protection Division of Fish and Wildlife and US Department of the Interior Fish and Wildlife Service have created a Beach Management Plan for the purpose of protecting Federal and State listed species.

BE IT FURTHER RESOLVED, the Mayor and Council of the Borough of Belmar hereby adopt said plan and a copy of the said plan shall remain on file in the Municipal Clerk's Office and Department of Public Works.

Councilman offered the above resolution and moved its adoption.

Seconded by and adopted by the following vote on roll call:

Council members:	AYES	NAYS	ABSTAIN	ABSENT
Mr. Carvelli				
Mr. McCracken				
Ms. Wann				
Mr. Brennan				
Mayor Walsifer				

Adopted:

BOROUGH OF BELMAR

BEACH MANAGEMENT PLAN

For the Protection of

Federally and State-Listed Species

May 2019

IN COOPERATION WITH:

New Jersey Department of Environmental Protection
Division of Fish and Wildlife
Endangered and Nongame Species Program

and

United States Department of the Interior
Fish and Wildlife Service
New Jersey Field Office

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I. INTRODUCTION

A. PURPOSE

The purpose of this beach management plan (BMP) is to provide a framework for cooperation among the Borough of Belmar (Borough), the New Jersey Department of Environmental Protection's (NJDEP) New Jersey Division of Fish and Wildlife's (NJDFW) Endangered and Nongame Species Program (ENSP), and the United States Fish and Wildlife Service's (USFWS) New Jersey Field Office (NJFO) in the stewardship of birds and plants listed as endangered, threatened or of special concern under Federal and/or State law (listed species) occurring on the Borough's beaches. Through this BMP, the parties seek to provide for the long-term protection and recovery of species populations in the Borough and the State, while balancing potentially conflicting missions. In the BMP, the parties define and describe the roles and responsibilities of the Borough, the NJDFW, and the USFWS in the protection and management of listed species within the Borough. Protective statutes and regulations are summarized in Section B of this Introduction.

Through this BMP, the parties endeavor to increase the nesting success of listed bird species, to provide habitat for migratory birds, and to foster the continued recovery of listed plant species in the Borough by reducing detrimental human activities and decreasing predation. Through this BMP, the parties hope to effect a progressive shift of specific beach management responsibilities to the Borough and citizens of Belmar, particularly for those aspects of management that protect listed species from activities permitted, encouraged, sponsored, or performed by the Borough. This BMP is the result of meetings and discussions among the Borough's Mayor, Council, Business Administrator, Environmental Commission, Police, Beach and Public Works Departments; the NJDFW; and the USFWS.

This BMP is consistent with the USFWS's Recreational Activities (Appendix A) and Fireworks (Appendix B) Guidelines, and with the State Coastal Zone Management Rules (Appendix C). This BMP also satisfies the Terms and Conditions of the September 2002 Programmatic Biological Opinion on the Effects of Completion of Sections I and II of the Atlantic Coast of New Jersey Beach Erosion Control Project Sea Bright to Manasquan, Monmouth County, New Jersey on the Piping Plover (*Charadrius melodus*) and Seabeach Amaranth (*Amaranthus pumilus*) (PBO) (Appendix D) between the USFWS and the U.S. Army Corps of Engineers, New York District (Corps) with respect to municipal management planning for the Borough, and is intended to meet the conditions of permits issued by the NJDEP's Division of Land Use Regulation (DLUR) requiring management planning in municipalities receiving beach nourishment.

The parties to this BMP acknowledge that the aforementioned guidelines, rules, terms, and conditions may be periodically revised, and agree to adjust the management of listed species as appropriate to ensure continued compliance, including revision of this BMP if necessary.

B. APPLICABLE LAWS AND REGULATIONS

1. Federal

Clean Water Act (CWA) (86 Stat. 816; 33 U.S.C. 1344 *et seq.*): Regulates discharges into waters of the United States. The CWA is administered by the U.S. Environmental Protection Agency (EPA) and the Corps.

Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*): Establishes that endangered and threatened animals and plants are of aesthetic, ecological, educational, historical, recreational, and scientific value to the nation and its people. Section 4 provides for listing wildlife and plants as threatened or endangered, including criteria for listing and de-listing species. Section 6 authorizes cooperative agreements and funding for States to establish programs for conservation of threatened and endangered species. Section 7 directs all Federal agencies to consult with the USFWS regarding any proposed Federal action that may affect a federally listed species. Section 9 prohibits take of federally listed wildlife and restricts collection, destruction, and transport of endangered plants. Section 10 establishes permits for scientific collection, and permits for take of listed wildlife that is incidental to an otherwise lawful non-Federal action contingent upon preparation of a Habitat Conservation Plan. Implementing Federal regulations are found at 50 CFR 17 and 50 CFR 402. The Federal list of threatened and endangered species is found at 50 CFR 17.11 and 17.12. The ESA is administered jointly by the USFWS and the National Marine Fisheries Service.

Migratory Bird Treaty Act (MBTA) (40 Stat. 755; 16 U.S.C. 703-712): prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests except when specifically authorized by the U.S. Department of the Interior. The MBTA is administered by the USFWS.

2. State

New Jersey Endangered and Nongame Species Conservation Act of 1973 (ENSCA), as amended (N.J.S.A. 23:2A *et seq.*): Establishes a list of wildlife species designated by the State of New Jersey as threatened and endangered, and prohibits taking, possessing, transporting, exporting, processing, selling, or shipping listed species. Implementing State regulations are found at N.J.A.C. 7:25-4. The State list of threatened and endangered wildlife is found at N.J.A.C. 7:25-4.13 and 4.17. The ENSCA is administered by the ENSP.

New Jersey Endangered Plant Species List Act (EPSLA) (N.J.S.A. 13:1B *et seq.*): Finds that plant species have medicinal, genetic, ecological, educational and aesthetic value to the citizens of New Jersey and that the perpetuation of many native plant species is in jeopardy. The Act establishes an official State list of endangered plants found at N.J.A.C. 7:5C1-1 *et seq.* and directs the Office of Natural Lands Management (ONLM) to establish and monitor a list of plant species of concern at N.J.A.C 7:5C-3.1. The EPSLA is administered by the ONLM.

New Jersey Coastal Zone Management Rules (N.J.A.C. 7:7): Constitute the substantive rules of the NJDEP regarding the use and development of coastal resources, to be used primarily by

the DLUR in reviewing permit applications under the New Jersey Coastal Area Facility Review Act (CAFRA) (N.J.S.A. 13:19-1 *et seq.* as amended to July 19, 1993), the New Jersey Wetlands Act of 1970 (N.J.S.A. 13:9A-1 *et seq.*), the New Jersey Waterfront Development Law (N.J.S.A. 12:5-3), Water Quality Certification (Section 401 of the CWA), and Federal Consistency Determinations (Section 307 of the Federal Coastal Zone Management Act (104 Stat. 4779; 16 U.S.C. 3951 *et seq.*)). The Rules are administered by the DLUR.

C. LISTED SPECIES

1. Species Known to Occur on the Borough of Belmar Beaches

The following species have been documented on the Borough's beaches. The total number of listed species observed from 2014 through 2018 is provided in Table 1. The parties to this BMP anticipate the continuing presence of these species in the Borough and the continued suitability of Borough beaches as habitat for these species.

(a) Piping Plover (*Charadrius melodus*)

Piping plovers are small, territorial shorebirds that breed on the New Jersey shore between March and August. Nests consist of a shallow scrape in the sand located above the high tide line. Flightless chicks are led by their parents to feeding areas, including the intertidal zone. The plover diet consists of invertebrates that are plucked from damp sand or mud areas or gleaned from wrack material. In 2018, a pair of piping plovers nested on the Borough's Protected Zone beach and fledged two chicks. Piping plovers are federally listed as threatened under the ESA, State-listed as endangered under the ENSCA, and protected by the MBTA.

(b) Least Tern (*Sterna antillarum*)

Least terns are small, colonial-nesting seabirds, present on the New Jersey shore between April and September. Nests consist of a shallow scrape in the sand located above the high tide line. Flightless chicks remain in the colony, where they are fed by their parents. The least tern diet consists of fish that the birds hunt from the air by hovering and diving. Tern colonies in the Borough have ranged from 0 to 502 individuals per year since 2000. In 2018, a peak number of 247 adults were observed in the Protected Zone and 76 chicks were fledged. Least terns are State-listed as endangered under the ENCSA and protected by the MBTA.

(c) American Oystercatcher (*Haematopus palliatus*)

American oystercatchers are territorial shorebirds, nesting on New Jersey beaches from April through August. They make their nests on beaches by scraping a shallow depression in the sand just above the high tide line and also nest on back-bay islands. The oystercatcher diet consists of invertebrates such as mussels, crustaceans, and marine worms mainly plucked from sand of the intertidal zone. One to two pairs of American oystercatchers have nested in the Borough's Protected Zone since 2014, and in 2018 one pair nested and fledged two chicks. American oystercatchers are designated as a State species of special concern by ENSP and are protected by the MBTA.

(d) Black Skimmer (*Rynchops niger*)

Black skimmers are colonial beach-nesting seabirds present on the New Jersey shore between April and September. Nests consist of a shallow scrape in the sand located above the high tide line of beaches; smaller nesting colonies may also occur in back-bay marsh islands. Flightless chicks remain in the colony, where they are fed by their parents. The black skimmer diet consists of fish and crustaceans that the birds hunt from the air by skimming the water with the elongated lower part of their bill. Black skimmers first nested on Borough's beaches in 2015, when a colony nesting in the Protected Zone peaked with a population total of 193 adults and produced 129 fledged chicks. In 2018, 65 adults were observed but no chicks were fledged. Black skimmers are State-listed as endangered under the ENSCA and protected by the MBTA.

(e) Common Tern (*Sterna hirundo*)

Common terns are generally similar to least terns in their breeding and feeding behaviors. This species started nesting in the Protected Zone in 2015. In 2018, a peak number of 37 adults were documented in the Protected Zone with no chicks fledged. Common terns are designated as a State species of concern by ENSP and protected by the MBTA.

(f) Seabeach Amaranth (*Amaranthus pumilus*)

Seabeach amaranth is an annual plant visible on New Jersey's Atlantic coastal beaches between May and November. Seabeach amaranth is usually found growing in nearly pure sand. The species requires sparsely vegetated upper beach habitat that is not flooded during the growing season. Seeds are dispersed by wind and water, and are present on the beach year-round. Seabeach amaranth was last documented on the Borough's beaches in 2018, with 11 plants in the Protected Zone and 16 plants in the Recreational Zone. Seabeach amaranth is federally listed as threatened under the ESA and State-listed as endangered under the EPSLA.

(g) Seabeach Knotweed (*Polygonum glaucum*)

Seabeach knotweed is an annual plant visible on the New Jersey shore between May and November. Most seabeach knotweed occurrences in New Jersey are on sandy beaches where the plants generally occur above the limit of the tide. In 2017, 192 plants were documented in the Protected Zone. Twenty-five plants were documented in 2018. Seabeach knotweed is State-listed as endangered under the EPSLA.

(h) Seabeach Purslane (*Sesuvium maritimum*)

Seabeach purslane is an annual plant occurring in beach habitats. Seabeach purslane was documented in 2001 in the Borough's Protected Zone. Seabeach purslane is designated as a State species of concern by the ONLM.

Table 1. Total Number of Listed Species Observed on Borough of Belmar Beaches between 2014 and 2018

SPECIES	OBSERVED	2018	2017	2016	2015	2014
Piping Plover	Pairs	1	0	0	0	1
	Fledged	2	0	0	0	0
Least Tern	Peak Adults	247	119	98	178	153
	Fledged	76	11	50	51	18
American Oystercatcher	Pairs	1	2	1	1	2
	Fledged	2	1	0	4	3
Black Skimmer	Peak Adults	65	119	96	193	0
	Fledged	0	0	48	129	0
Common Tern	Peak Adults	37	68	232	74	0
	Fledged	0	0	150	129	0
Seabeach Amaranth	Plants	27	3	1	0	0
Seabeach Knotweed	Plants	25	192	17	0	0

2. Species That May Potentially Occur on the Borough of Belmar Beaches

The following species have not been documented in the Borough, but could become established in the future. The parties to this BMP will work cooperatively to manage these species if they colonize or utilize the Borough's beaches. The habitat management and species protections laid out in this BMP are expected to be sufficient to protect the following species if they become established; therefore, BMP revision would likely not be necessary.

(a) Red Knot (*Calidris canutus rufa*)

Red knots are long distance migrants that breed in the Arctic and winter as far south as Tierra del Fuego, Argentina. While small numbers of red knots are present in New Jersey year round, most are seasonal visitors to New Jersey beaches, stopping during spring (May through early June) and fall (mid-July through November) migration periods to rest and refuel. The Borough is not an area known to be frequented by red knots during their migrations and the USFWS proposes no specific conservation measures or management actions pertaining to red knot. However, Borough staff should be aware of their potential short-term presence and avoid disturbance if encountered. If higher levels of red knot usage are documented on Belmar beaches in the future, protective measures may be added to this BMP. Red knots are federally listed as threatened under the ESA, State-listed as endangered under the ENSCA, and protected by the MBTA.

(b) Seabeach Sandwort (*Honckenya peploides*)

Seabeach sandwort is a perennial plant found in beach and salt marsh habitats. It is State-listed as endangered under the EPSLA.

D. GOVERNMENT ENTITIES

Borough: Borough of Belmar, County of Monmouth, State of New Jersey.

Corps: U.S. Army Corps of Engineers, New York District. The Corps Regulatory Program issues permits for placement of fill material in waters of the United States and for construction activities in navigable waters, pursuant to Section 404 of the Federal CWA and Section 10 of the Rivers and Harbors Act of 1899 (30 Stat. 1151, as amended; 33 U.S.C. 403 *et seq.*), respectively. Corps permits are required for activities such as wetland fill, beach nourishment, and construction or maintenance of ocean groins and jetties. The Corps' Civil Works Planning Program carries out shore protection, flood control, navigation, and ecosystem restoration projects as directed by Congress, including the New Jersey Shore Protection Study that includes beach nourishment in the Borough.

DLUR: New Jersey Department of Environmental Protection, Division of Land Use Regulation. The DLUR administers the State permitting program for activities in wetlands and within New Jersey's Coastal Zone. Permits from the DLUR are required for activities such as disturbance of wetlands, beach and dune maintenance, construction or maintenance of structures on the beach, beach nourishment, and construction or maintenance of groins, jetties, seawalls, and bulkheads.

ENSP: New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Endangered and Nongame Species Program. The ENSP is responsible for listing, monitoring, and managing State-listed wildlife species, and administration of the New Jersey ENSCA.

NJDEP: New Jersey Department of Environmental Protection. The NJDEP is the State Department that oversees environmental laws and policies, and includes the DLUR, the NJDFW, and the ONLM.

NJDFW: New Jersey Department of Environmental Protection, Division of Fish and Wildlife. The NJDFW is charged with protecting and managing the State's fish and wildlife to maximize their long-term biological, recreational, and economic values. In addition to the ENSP, the NJDFW includes the Bureaus of Freshwater Fisheries, Land Management, Law Enforcement, Marine Fisheries, Shellfisheries, Wildlife Management, Information and Education; and Offices of Administration, Environmental Review, and Fish and Wildlife Health and Forensics.

NJFO: New Jersey Field Office, Ecological Services, U.S. Fish and Wildlife Service. Within New Jersey, the NJFO's responsibilities include review of Federal projects, monitoring and management of federally listed species (both wildlife and plants), partnering with local landowners on habitat restoration, and administration of the ESA.

OEM: The Borough Office of Emergency Management. The OEM is the Borough office responsible for managing States of Emergency.

ONLM: New Jersey Department of Environmental Protection, Division of Parks and Forestry, Office of Natural Lands Management. The ONLM is responsible for administration of the New Jersey Natural Heritage Database on biodiversity resources, promulgation and amendment of

New Jersey's Endangered Plant Species List, and administration and management of State-owned lands designated to the Natural Areas System.

USCG: United States Coast Guard. The USCG is a branch of the United States Armed Forces operating under the U.S. Department of Homeland Security. The USCS is unique among the U.S. military branches for having a maritime law enforcement mission and a federal regulatory agency mission as part of its mission set. The USCS has roles in maritime homeland security, maritime law enforcement, maritime patrol, search and rescue, marine environmental protection, and the maintenance of river, intracoastal and offshore aids to navigation.

USFWS: U.S. Fish and Wildlife Service. The USFWS is the principal agency through which the Federal government carries out its responsibilities to conserve, protect, and enhance the nation's fish and wildlife and their habitats for the continuing benefit of the people. The primary responsibilities of the USFWS are migratory birds, endangered species, certain marine mammals, anadromous fish, and wildlife resources on Federal land.

E. ACRONYMS AND DEFINITIONS

ATV: all-terrain vehicle.

beach nourishment: addition of sand in designed contours to extend a beach and the nearshore shallows seaward.

Biological Opinion: a document that includes: (1) the opinion of the USFWS as to whether or not a proposed Federal action is likely to jeopardize the continued existence of federally listed species; (2) a summary of the information on which the opinion is based; and (3) a detailed discussion of the effects of the action on federally listed species. Issuance of a Biological Opinion concludes formal consultation between the USFWS and a Federal action agency pursuant to Section 7 of the ESA, and an accompanying Incidental Take Statement authorizes, if appropriate, limited incidental take of federally listed wildlife in the course of implementing the Federal action.

brood: a group of young birds hatched at one time and cared for by the same parents.

Conservation Measures: actions to benefit or promote the recovery of listed species that are included by a Federal agency as an integral part of a proposed action. These actions will be taken by the Federal agency and serve to minimize or compensate for project effects on the federally listed species impacted by the proposed action. Conservation Measures are usually included in a Biological Opinion.

consultation: the process required by Section 7 of the ESA through which the USFWS works with a Federal action agency to determine if a proposed Federal action is likely to adversely affect a listed species under USFWS jurisdiction, or jeopardizes the continued existence of such a species. Federal actions include discretionary actions that are carried out, funded, or authorized by a Federal agency.

colonial nesters: lest terns, common terns, and/or black skimmers.

Declared Emergency: a state declared by Borough, County, State, and/or Federal governments in anticipation of, during, or following an event that threatens human health, safety, or property. Throughout this BMP, "State of Emergency" (SOE) signifies a state of Declared Emergency. The term "emergency" is defined below.

The New Jersey Coastal Zone Program Permit Rules (N.J.A.C. 7:7-1.1 *et seq.*) require prior authorization to conduct any action under a declared SOE in the event of an emergency or to avert a threat to property. The ESA's exception is limited to "bodily harm". Therefore, actions taken to avert a threat to property can only be conducted after (1) a formal declaration of an SOE, (2) with prior authorization from the NJDEP under N.J.A.C. 7:7-21 and **(3) with the prior advice from the USFWS that the action is not likely to result in a "take" of a federally protected species.** Communication with the NJDFW would apply in items (1) through (3) should actions be requested to avert a threat to property.

Within the Borough, the Mayor or Office of Emergency Management (OEM) declares all Emergencies, and the OEM manages the Emergency. A copy of the Emergency Declaration Document is on file at the Borough Business Administrator Office, 601 Main Street. Once the Emergency has been declared, the OEM, Mayor, or Chief of Police confirm and notify the Borough Business Administrator. Activities responding to a State of Emergency (SOE) may include the following:

> **SOE Beach Nourishment:** placement of clean sand on the beach to protect human life or health or public or private structures, signified by a Declared Emergency and eligibility for DLUR permits under N.J.A.C. Section 7:7-10.3 of the New Jersey Coastal Zone Management Rules. Emergency Beach Nourishment is included in the definition of "SOE Post-storm Beach or Dune Restoration."
>
> **SOE Clean-up:** removal from the beach of large debris that poses a threat to human health or safety using vehicles and equipment, signified by a Declared Emergency.
>
> **SOE Raking:** mechanical beach raking necessary to remove from the beach debris that poses a threat to human health or safety (*e.g.*, medical waste, hazardous materials), signified by a Declared Emergency.
>
> **SOE Post-storm Beach or Dune Restoration:** activities listed at Section 7:7-10.3(b) of the New Jersey Coastal Zone Management Rules to restore beaches or dunes impacted by coastal storms with a recurrence interval equal to or exceeding a 5-year storm event, signified by a Declared Emergency and eligibility for DLUR permits under Section 7:7-10.3. Placement of sand and other materials (beach nourishment) and sand scraping (defined below) are among the activities listed at 7:7-10.3(b).

emergency: a situation presenting imminent risk to human life, health or safety.

emergency vehicle: a vehicle responding to an emergency.

essential vehicle: a vehicle required to provide for safety, law enforcement, maintenance of public property, or access to private dwellings not otherwise accessible.

feral: wild, untamed or un-owned, referring to animals that are normally pets such as cats or dogs.

Fireworks Guidelines: the USFWS document entitled *Guidelines for Managing Fireworks in the Vicinity of Piping Plovers and Seabeach Amaranth on the U.S. Atlantic Coast* (Appendix B).

fledged: able to fly. Beach-nesting bird chicks are presumed to have survived the nesting season once fledged; monitoring and management restrictions are usually relaxed once all chicks are fledged. For management purposes, piping plover chicks are considered fledged when observed in sustained flight for at least 15 meters, irrespective of age. In most cases, piping plovers attain flight capability by 35 days of age, but longer pre-flight periods may occur. (Appendix E)

growing season: the time of year when seabeach amaranth is present on the beach; usually May 15 through November 30.

harass: an act which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering.

harm: an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

high tide line: the daily high tide line demarcated by wet sand. Note: this definition is used only for the sole purpose of clarifying driving restrictions in this BMP. It is not to be interpreted as a regulatory or technical term for any Federal or State permit or for any sand scraping or beach raking activities conducted by the Borough.

incidental take: take of listed fish or wildlife species that results from, but is not the purpose of, carrying out an otherwise lawful activity.

listed species: for the purposes of this BMP, a species that is: (1) listed or proposed for listing as endangered or threatened, or designated as a candidate for listing, by the USFWS pursuant to the ESA and its implementing Federal regulations; (2) listed as endangered or threatened by the State pursuant to the New Jersey ENSCA and its implementing State regulations; (3) listed by the State as endangered pursuant to the New Jersey EPSLA; and/or (4) listed as a State species of concern by the ENSP or the ONLM.

nesting area: an area occupied by nesting piping plovers and/or colonial nesters in the current or recent nesting seasons, including areas used for courtship, territorial displays, egg-laying and incubation, and chick brooding and foraging.

nesting season: the time of year when nesting piping plovers and/or colonial nesters are present on the beach; usually March 15 through August 31 if both plovers and colonial nesters are present; when black skimmers are present the nesting season may extend into September.

Plant Protection Strip: an area located immediately adjacent to the landward limit of the beach (*e.g.*, primary dune, boardwalk, bulkhead, etc.) that incorporates special conditions related to raking, scraping, and driving, which are intended to promote establishment of listed beach plants by limiting activities that disturb seed banks, seedlings and mature plants.

Plant Protection Strip fencing: PVC posts, erected with signs when available (but not flagging, string, or tape), to identify the location of Plant Protection Strip.

predator exclosure: staked wire fencing that encircles a piping plover nest as a barrier to predators while permitting passage of plover adults and chicks; netting is normally installed on the top of the structure to prevent entry by avian predators.

predator management: activities to reduce the adverse effects of predators on listed bird species, including but not limited to monitoring, minimizing food sources, use of predator exclosures, and predator population control through trapping or other means of removal.

productivity: a measure of piping plover and colonial nester breeding success measured as the number of chicks fledged per pair of nesting birds.

Programmatic Biological Opinion (PBO): a Biological Opinion that addresses a Federal program rather than a single Federal action; such programs typically guide implementation of future agency actions by establishing standards, guidelines, or governing criteria to which future actions must adhere.

Recreational Activities Guidelines: the USFWS document entitled *Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act* (Appendix A).

routine: not associated with a State of Emergency (SOE) or with an emergency.

sand scraping: mechanical redistribution of sand from the lower beach profile to the upper beach profile, or alongshore; also known as sand mining or sand transfer.

service animal: any guide dog, signal dog, or other animal individually trained to provide assistance to a person with a disability (*e.g.*, seeing-eye dogs).

SOE: State of Emergency; see Declared Emergency.

supervised beach: a life-guarded bathing beach.

symbolic fencing: string-and-post fencing marked with flagging and signs, intended to protect listed species by restricting human entry into an area.

take: to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a listed species, or attempt to engage in any such conduct.

Terms and Conditions: specific methods by which a Federal action agency must implement actions necessary or appropriate to minimize the extent of incidental take of federally listed wildlife in the course of carrying out an otherwise lawful Federal action. Terms and Conditions are usually included in an Incidental Take Statement that accompanies a Biological Opinion.

Winter Sand Berm: the result of temporarily moving sand from the tide line to the mid-upper beach area to protect infrastructure from winter storms.

wrack: organic material including seaweed, seashells, driftwood, and other materials deposited on beaches by tidal action; often forms a "wrack line" along the high water mark.

II. MANAGEMENT ZONES

Pursuant to the binding provisions of the PBO, BMPs establish protective zones for the protection and management of listed species. Up to three types of management zones may be identified in a municipality: Protective, Precautionary, and Recreational. The relative importance of protective management practices in each beach management zone considers existing human uses, habitat conditions, and past distribution and occurrence of listed species.

Protective and Precautionary Zones are managed to promote the protection and recovery of listed species and the enhancement of their habitat; recreational uses are accommodated consistent with species protections. Protective measures in these zones include year-round or seasonal restrictions on certain activities (*e.g.* beach raking, beach maintenance, dogs on beach). Recreational Zones are comprised of developed recreational beaches; any documented listed species receive protection as required by applicable State and Federal laws and regulations.

Two separate management zones are identified on the Borough beaches consisting of one Protected Zone and one Recreational Zone (see Figure 1), based on their current and historical use by beach-nesting birds and colonization by listed plants. The relative importance of protective management practices in each management zone considers existing human uses, habitat conditions, and past distribution and occurrence of listed species.

PROTECTED ZONE:
Shark River Inlet south to Belmar Fishing Club ("Environmental Beach") (approximately 0.1 mile)

This zone will be managed to promote the protection and recovery of listed species and the enhancement of their habitats. Recreational uses will be accommodated consistent with species protections. Limited uses include emergency access, hand-cleaning of debris, and outfall pipe and beach/dune maintenance and inspections when necessary.

RECREATIONAL ZONE:
Belmar Fishing Club south to the southernmost municipal boundary (approximately 1.4 miles)

This zone is comprised of the developed recreational beaches. Any listed species documented in this zone will receive protection as required by applicable State and Federal laws and regulations. Use of municipal vehicles and daily beach raking from April to October will not be restricted in the Recreational Zone, except within the Plant Protection Strips as discussed below, and for piping plover chicks, as discussed later in the plan. Plant Protection Strips will be shore-parallel management areas established along back (landward) portion of the Recreational Zone to promote establishment of listed beach plants. The goal of the Plant Protection Strips is to increase connectivity between plant populations in the Protected Zone and further north (*e.g.*, in Seven Presidents Park, Sea Bright, Sandy Hook) and additional populations to the south (*e.g.*, at Spring Lake North, Wreck Pond and the National Guard Training Center).

The Plant Protection Strips will be at least 10 percent of the width of the beach from 1st Avenue to the Spring Lake border, as determined at the start of each growing season. However, because various infrastructure and intensive activity exists in some segments of Belmar's back-beach, making a strip along the entire length of the beach impractical for Borough operations or not conducive for the establishment and survival of rare beach plants, the Borough will designate some stretches of less than 10% (including no strips in some areas) and others more than 10% to equal a 10% average of the back beach area. The seaward limit of the Plant Protection Strips will be marked by PVC posts and signs, as deemed necessary by the Borough to restrict beach raking and vehicle use in the strips. The USFWS and the Borough will periodically review the location and effectiveness of Plant Protection Strips and make adjustments as necessary and appropriate based on the Borough's management needs, habitat conditions, and beach widths. Based on conditions at the time of this plan, 17 areas are designated Plant Protection Strips A through Q, running north to south, listed below and shown in Figures 2 and 3.

A. Along south edge of pier from landscaped area to high water line (west to east) – 30 feet wide
B. Staging area between 1st and 2nd (100 feet wide)
C. Between 2nd and 3rd, between lockers (30 feet wide)
D. Between 3rd and 4th, between public bathroom and playground (30 feet wide)
E. Between 4th and 5th, between lockers (30 feet wide)
F. Between 6th and 7th, between lockers (30 feet wide)
G. Between 7th and 8th, between lockers and playground (30 feet wide)
H. Between 8th and 9th, whole block (30 feet wide)
I. Between 9th and 10th, between lockers (30 feet wide)
J. Between 10th and 11th, whole block (30 feet wide)
K. Between 11th and 12, between lockers and playground (30 feet wide)
L. Between 12th and 13th, between entrance ramps (30 feet wide)
M. Between 13th and 14, whole block (30 feet wide)
N. Between 15th and 16th (30 feet wide)
O. Between 17th and 18th (12 feet wide)
P. Between 18th and 19th, between bathroom and lockers (12 feet wide)
Q. Between 20th and North Blvd. (10 feet wide)

Provisions of this BMP that apply to the Plant Protection Strips are covered under each section, below, and summarized here.

- There will be no driving, sand scraping, or heavy equipment use within the Plant Protection Strips year-round, except during an SOE.

- There will be no mechanical beach raking in the Plant Protection Strips between May 15 and November 30, except during an SOE. Any routine (non-SOE) beach raking proposed between December 1 and May 14 will be coordinated with USFWS.

- No additional sand fencing will be placed within the Plant Protection Strips.

- Except where listed species have been documented and fenced or marked, there will be no restrictions on hand-collection of trash from the Plant Protection Strips and—where otherwise permitted by the Borough— no restrictions on pedestrian access or daily placement and use (but not storage) of chairs, blankets, umbrellas, or other non-motorized beach equipment.

- Temporary structures (*e.g.* lifeguard sheds) and seasonal equipment storage will be placed outside the Plant Protection Strips.

Figure 1. Borough of Belmar Beach Management Zones

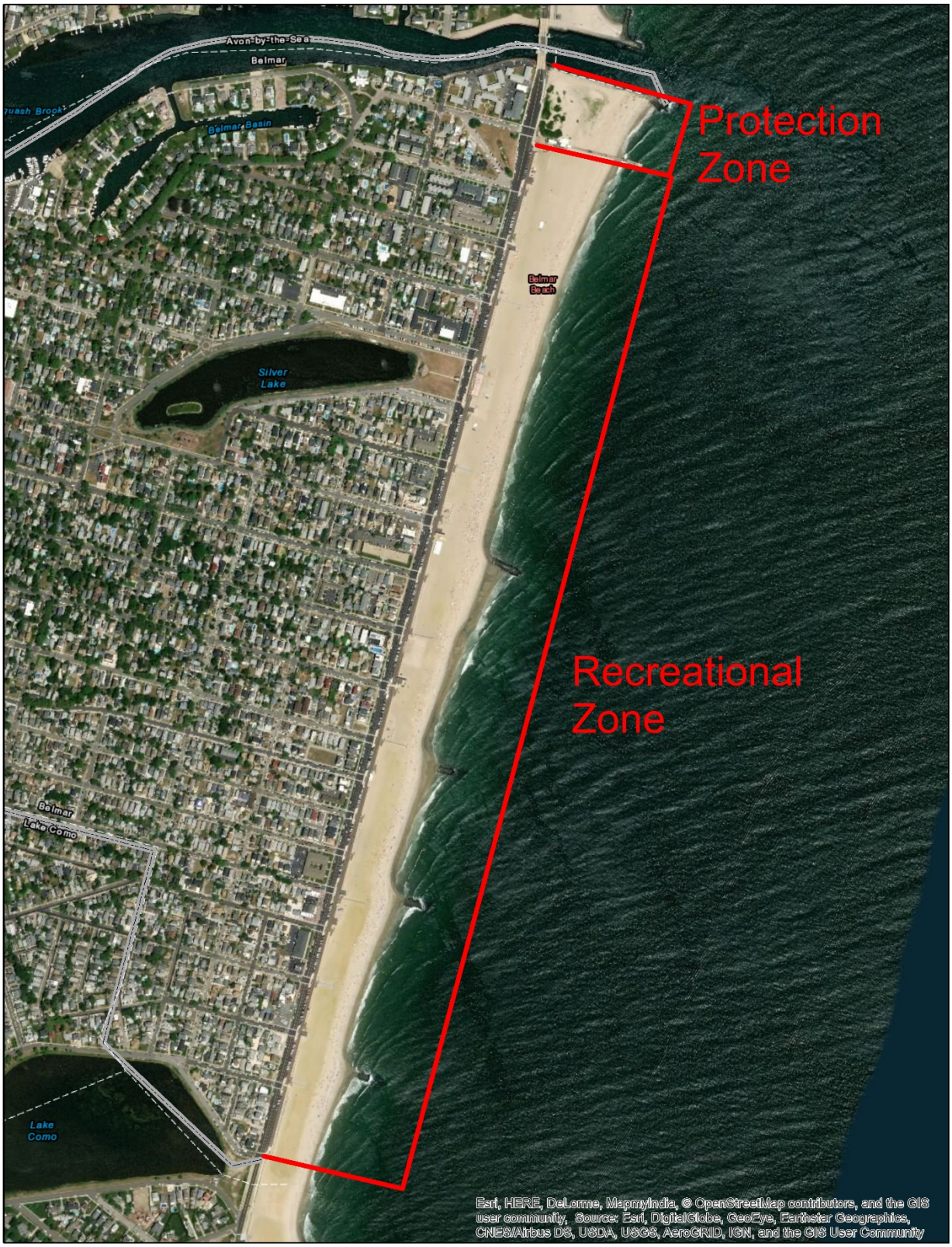

Figure 2. Borough of Belmar North Beach Management Zones

Figure 3. Borough of Belmar South Beach Management Zones

III. RECOVERY GOALS

The parties to this BMP consider the following to be realistic, sustainable targets for listed species on the Borough's beaches based on current and historical uses of listed species and creating a balance with the Borough's recreational and beach maintenance needs. Populations of listed species above these goals will continue to be protected in accordance with applicable State and Federal laws and regulations. These goals may be revised and/or amended when this BMP is periodically updated.

Piping plovers:
- 1 pair in the Protected Zone.
- Productivity greater than or equal to the USFWS recovery goal of 1.5 chicks fledged per pair.

Least terns and Black Skimmers:
- One colony of birds in the Protected Zone with at least moderate productivity (≥0.5 to ≤1.00 chicks fledged per pair) when a colony is present.

American oystercatchers:
- 1 pair in the Protected Zone.
- Productivity of at least 1 chick fledged per pair.

Seabeach amaranth:
- Long-term average population size of at least 50 plants.
- Minimum one-year population size of 10 plants.

Seabeach knotweed and seabeach purslane:
- Effectively protect any plants that occur.

Red knot:
- To effectively protect any red knots that may occur by allowing for undisturbed feeding and roosting activities.

IV. MANAGEMENT ISSUES

Management issues form the basis or framework for this BMP. The major issues are defined, and the roles and responsibilities of each party to the BMP are set forth to address each issue.

A. BIOLOGICAL MONITORING

Background

Basic biological information is routinely collected about listed species occurring on the Borough of Belmar's beaches. The NJDFW monitors beach-nesting birds to determine habitat use, numbers of nesting pairs, nest locations, and reproductive success. The USFWS and/or the ONLM surveys and monitors (when funding is available) seabeach amaranth to determine plant

numbers, size, reproductive status, location, and condition. Additional plants of concern that may occur are recorded incidentally during the surveys. This information is essential in evaluating species trends and progress towards recovery, and in assessing the effectiveness of beach management practices.

NJDFW and USFWS Actions

- The NJDFW will continue intensive surveys, monitoring, and management of nesting birds throughout the Borough's beaches, as per agreement with the USFWS pursuant to Section 6 of the ESA. The NJDFW currently staffs the Borough's nesting area at least 5 days per week during the nesting season, including weekends and holidays.

- The USFWS and/or ONLM will conduct (subject to available funding) annual seabeach amaranth surveys that include the Borough to monitor population trends and distribution, including limited early-season survey work to identify seabeach amaranth plants at risk of damage or destruction.

- The NJDFW and the USFWS will promptly report any new or expanded occurrence of a listed species to the Borough, particularly within the Recreational Zone.

- The NJDFW and the USFWS will regularly report relevant biological information to the Borough (see Section G).

B. PREDATOR MANAGEMENT

Background

Predation is a major factor impairing the productivity of beach-nesting birds in the Borough. The primary predators in the Borough are feral cats (*Felis catus*), red foxes (*Vulpes vulpes*), gulls (*Larus* spp.), crows (*Corvus* spp.), and peregrine falcons (*Falco peregrinus*). Other potential predators include Norway rats (*Rattus norvegicus*), raccoons (*Procyon lotor*) and striped skunks (*Mephitis mephitis*). Reducing predation will involve reducing or eliminating provisions of food from refuse and hand feeding, using predator exclosures, educational outreach, and if necessary, predator removal.

Predators (herbivores) of seabeach amaranth may include moth caterpillars belonging to the Lepidopteran families Noctuidae (cutworms) and Pyralidae (webworms), and aphids. Other potential herbivores include grasshoppers and mammals. Seabeach amaranth may also be affected by fungal diseases.

Borough Actions

- The Borough will review existing municipal ordinances regarding feral cats and free-roaming cats and will revise these or enact new ordinances or policies as appropriate to:

- Promote and phase in the American Bird Conservancy's "Cats Indoors" program for its residents and seasonal visitors.

  - Information regarding the "Cats Indoors" program is available at: https://abcbirds.org/program/cats-indoors/

  - Free downloadable brochures for the "Cats Indoors" program are available for the Borough's use at: https://abcbirds.org/program/cats-indoors/take-action/

- Enforce New Jersey's "No Animal Abandonment" statute (N.J.S.A 4:22-20(a) (b)).

- The Borough will conduct the removal of cats in problem areas outside of the beach, if the cats are impacting nesting birds and it is deemed necessary through consultation with the NJDFW. If the Borough is unable to effectively manage the problem cats, it will explore other alternatives with the NJDFW assistance. The Borough will aid NJDFW in the placement, including transport, of any cats trapped by NJDFW to a local animal shelter (as stipulated by state code), if NJDFW conducts any trapping of cats.

- The Borough will emphasize the importance of its ordinance prohibiting dogs (*Canis lupus*), cats and any other animals on the beach.

  - By ordinance, the Borough prohibits dogs, cats, and any other animals (except service animals) year-round in the Protected Zone [Borough Ordinance Code 18-2.7(l)], and from May 1 through September 30 within the Recreational Zone [Borough Ordinance Code 18-2.7(l)(1)]. All animals, including service animals, are required to be leashed and are prohibited from entering fenced areas.

  - The Borough will enforce the seasonal prohibition of animals on the beach through the Borough's Police Department, and will take any other necessary steps to provide adequate enforcement such as posting signs regarding the pet prohibition at each entrance to the beach.

- By ordinance, no animal is permitted off the owner's property unless it is securely confined and controlled by an adequate leash [(Borough Ordinance Code 22-20.2(a)].

- By ordinance, no person shall purposely or knowingly feed wildlife (including feral cats) within any privately or publicly owned lands of the Borough, including the beach and beachfront [Borough Ordinance Code 24-3.3(a)].

- By ordinance, no person shall purposely or knowingly leave or store any refuse, garbage, food product, pet food, forage product or supplement, salt, seed or birdseed, fruit or grain in a manner that would constitute an attractant to any wild animal, or fail to take remedial action to avoid contact or conflict with wild animals [Borough Ordinance Code 24-3.3 (b-c)].

- Consistent with current State and local regulations, the Borough will not actively block measures, as agreed upon in this plan, to control predator populations recommended and/or undertaken by the NJDFW or the USFWS. The Borough will not enact any new ordinances to prohibit predator management activities.

- By way of signature to this BMP, the Borough gives the NJDFW and the USFWS written permission to engage in predator control activities on Borough beaches, including removal of foxes and other predators including herbivores of seabeach amaranth.

- See also Education and Outreach (Section F).

NJDFW Actions

- The NJDFW will continue to monitor the extent of predation on nesting birds within the Borough (Section A), and will include this in the information reported to the Borough (Section G).

- The NJDFW will erect predator exclosures on piping plover nests where and when appropriate. Use of predator exclosures to reduce plover nest predation may be attempted prior to undertaking predator removal; this decision will be made by NJDFW on a case by case basis. In addition, control of predator populations may be necessary to reduce predation on plover chicks, or on colonial nester and American oystercatcher eggs and chicks (which are not protected by exclosures).

- Any predator population control will be the responsibility of the NJDFW, with the exception of cats outside the beach. The NJDFW will pursue control when necessary and appropriate. The NJDFW will follow Standard Operation Procedures for Predator Management (SOP) (Appendix F) when conducting predator control.

- The NJDFW will notify the Borough Business Administrator and the Borough Police at least one day prior to engaging in any predator control activities; by way of this BMP the Borough grants the NJDFW permission for these activities, as indicated above.

- NJDFW will provide education to the Borough Police, as requested, regarding the importance of enforcing dog leash restrictions within the Protected Zone.

USFWS Actions

- Upon request and within the limits of available staff time and funding, the USFWS will assist the Borough and/or the NJDFW in control of predator populations using USFWS staff or by arranging for removal through the U.S. Department of Agriculture's Animal and Plant Health Inspection Service or other qualified vendors. If USFWS or USDA assistance is needed they will follow the predator SOP.

- In the course of annual seabeach amaranth surveys, the USFWS/ONLM will monitor the extent of seabeach amaranth herbivory and disease within the Borough (if applicable)

(Section A), and will include this in the information reported to the Borough (Section G).

- In the course of annual seabeach amaranth surveys, the USFWS/ONLM will note any observations of herbivory and disease of other listed plant species (Section A), and report this information to the Borough (Section G).

- If herbivory and/or disease threaten the seabeach amaranth recovery goals specified in this plan, the USFWS will recommend and/or implement necessary actions, potentially including application of appropriate pesticides. By way of this BMP, the Borough grants the USFWS permission for these activities, as indicated above. The USFWS will initiate early coordination with the Borough upon detection of an herbivory/disease problem, and will include the Borough in the planning of any proposed control measures. The USFWS will notify the Borough Business Administrator in writing at least 10 days before implementing any herbivore/disease control activities, and will adopt the Borough's recommendations for timing, methods, or other aspects of control operations to the extent possible. The USFWS will post signs in any treated areas as necessary and appropriate. Any USFWS actions are subject to the Intra-Service consultation requirements of Section 7 of the ESA, as well as all applicable regulations regarding pesticide handling and use.

C. HUMAN DISTURBANCE

Background

The broad area of human disturbance includes any human activities that directly or indirectly harm or harass listed plants or birds, including interference with incubation and care of chicks. Recreational beach users and municipal employees may directly harm listed species by crushing beach-nesting bird eggs or plants. In addition, unfledged plover, tern, skimmer, and oystercatcher chicks are highly sensitive to disturbance. Nesting birds may experience low reproductive success if exposed to frequent harassment by vehicles, pedestrians, sunbathers, pets, kites or drones.

Borough Actions

- The Borough will coordinate with the USFWS and ONLM with pre-season delineation of Plant Protection Strips and placement of signage, as needed. See Section II (Management Zones) for a description of the size and location of the Plant Protection Strips. The USFWS and the Borough will periodically review the location and effectiveness of Plant Protection Strips and make adjustments as necessary and appropriate.

- If notified that listed plants occur anywhere on Belmar beaches between Memorial Day and Labor Day, the Borough will symbolically fence the plants with a 3-meter buffer and signage for protection, unless already included in an area fenced as bird habitat or fenced by USFWS. Sand fencing will not be used for this purpose, as it is likely to result in burial of listed plants by accreting sand.

- After Labor Day, if any unfenced seabeach amaranth plants are threatened by human activities (*e.g.*, plants near a beach access structure, a Borough-sponsored clean-up or event is scheduled in an area of plant species occurrence) or beach maintenance activities, the Borough will erect and maintain symbolic fencing, posted with appropriate signs, as recommended by the USFWS or allow existing fence to remain in place. The Borough (or will remove fencing they erect once all plants are gone or the threat is abated, as recommended by the USFWS. (See USFWS Actions, below.)

- The Borough will regulate permanent and temporary private structures and storage of private property on the beach (*e.g.*, catamarans, volleyball nets, shelters, lockers) as needed to protect listed species or their habitat. These structures will be prohibited from Plant Protection Strips.

- Within the Protected Zone, the Borough will not designate any new recreational areas (*e.g.*, supervised beaches) or take any actions to promote increased recreational use without written concurrence from the NJDFW and the USFWS that such designation or action would not adversely affect listed species or their habitats.

- The Borough will work with the NJDFW and the USFWS to regulate existing and new recreational activities as needed to protect listed species.

- The Borough will prohibit and discourage kite flying and drones within 200 meters of posted nesting areas between March 15 and August 31. These regulations will be added to the Borough's beach rules and regulations and signs will be posted. Signage will be added at the entrances to and in the vicinity of the Protected Zone to further discourage use of drones in this area.

- In the Recreational Zone, the Borough may conduct, permit, or sponsor any organized recreational activities or events (*e.g.,* tournaments, races, games, musical events) at any time with no restrictions unless the Borough has been notified that listed species are present. If listed species are present, the Borough will adopt restrictions such as timing, fencing, or alternate locations as recommended by the NJDFW and/or the USFWS.

- In the Protected Zone, the Borough will not schedule organized events from March 15-August 31, nor permit picnics, parties or fires, unless the NJDFW and the USFWS have indicated in writing that the activity will not affect listed species (*e.g.*, nesting activity or the growing season has concluded for the year, or listed species are absent from the area). For events scheduled between September 1 and November 30, the Borough will implement any the USFWS fencing recommendations to protect seabeach amaranth.

- The Borough will continue to prohibit use of recreational vehicles on Borough beaches on a year-round basis.

- Other than beach raking (discussed below), the Borough will prohibit all vehicle use in Plant Protection Strips year round, except during an SOE.

- The Borough Police Department maintains supervised and unsupervised beaches throughout the Borough. Patrols are conducted on ATVs and four-wheel drive vehicles. The Borough will implement driving restrictions in the Protected Zone consistent with the USFWS's Recreational Activities Guidelines (Appendix A) and the Borough's Beach Vehicle Use Regulations (Appendix G). Specifically:

    - Between March 15 and November 30, Police Beach Patrols will restrict patrol driving to areas of the Recreational Zone outside of the Plant Protection Strips.

    - Outside of the Plant Protection Strips, no driving restrictions will apply in the Recreational Beach Zone unless the Borough has been notified that piping plover chicks are present in the Protected Zone (see bullet below) or other listed species are present in the Recreational Zone. If listed species colonize the Recreational Zone, the Borough will coordinate with the NJDFW and the USFWS to develop a Recreational Zone Vehicle Use Policy. The policy will be consistent with the Recreational Activities Guidelines if plovers establish nesting in the Recreational Zone.

    - If piping plover chicks are present in the Protected Zone, driving will automatically be temporarily ceased within a 100-meter buffer, the minimum distance outlined under the Recreational Activities Guidelines, from immediately south of the fishing pier to Second Avenue. The driving restriction will be in effect until the chicks are able to fly, either 35 days after hatching or when sustained flight (15 meters) is observed by NJDFW staff, whichever is sooner. If all the chicks die prior to fledgling, the vehicle restriction will be lifted as soon as that mortality is confirmed by NJDFW staff. In the event that the plover chicks move further south on the beach outside the protection zone (i.e. highly mobile chicks), the Borough may need to further adjust driving after consultation with the NJDFW and USFWS. Police will be permitted to use the First Avenue vehicle access when plover chicks are present, if needed, as long as they use a designated travel lane at the westward back of the beach that will extend between First and Second Avenues.

    - Police will only drive in the Protected Zone in response to an emergency.

    - <u>No restrictions apply when emergency vehicles are responding to an emergency as defined in this BMP</u>.

- In addition to Police patrols, municipal vehicles, contractor, and vendor vehicles are occasionally driven on Borough's beaches (*e.g.*, Borough Public Works Department, Beach Patrol and Beach Tag Program).

    - Other than Police or Beach Patrol Emergency Responses or emergency large debris removal by Public Works, no municipal, contractor, or vendor vehicles will be driven in the Protected Zone between March 15 and August 31, unless responding to an emergency or a SOE as defined in this BMP.

    - Municipal vehicles driving in the Protected Zone between September 1 and November 30 will remain at or below the high water line to protect listed plants.

- It is the Borough's responsibility to require any contractor or vendor vehicles to observe the same restrictions as the municipal vehicles.

- Outside of the Plant Protection Strips, no driving restrictions will apply in the Recreational Zone unless the Borough has been notified that piping plover chicks are present in the Protected Zone (see bullet below) or other listed bird species are present in the Recreational Zone. If listed bird species colonize the Recreational Zone, the Borough will include non-Police municipal, contractor, and vendor vehicles in the Recreational Zone Vehicle Use Policy to be developed with the NJDFW and the USFWS. The policy will be consistent with the Recreational Activities Guidelines if plovers establish nesting in the Recreational Zone.

- If piping plover chicks are present in the Protected Zone, driving will automatically be temporarily ceased within a 100-meter buffer, the minimum distance outlined under the Recreational Activities Guidelines, from immediately south of the fishing pier to Second Avenue. The driving restriction will be in effect until the chicks are able to fly, either 35 days after hatching or when sustained flight (15 meters) is observed by NJDFW staff, whichever is sooner. If all the chicks die prior to fledgling, the vehicle restriction will be lifted as soon as that mortality is confirmed by NJDFW staff. In the event that the plover chicks move further south on the beach outside the protection zone (i.e. highly mobile chicks), the Borough may need to further adjust driving after consultation with the NJDFW and USFWS. Municipal vehicles will be permitted to use the First Avenue vehicle access and conduct activities in the work staging area when plover chicks are present, as needed, as long as they use a designated travel lane at the westward back of the beach that will extend between First and Second Avenues.

- The Borough will inform, in writing, all appropriate Borough Departments (*e.g.*, Police, Public Works, Borough Business Administrator, Beach Patrol, Beach Tag, Beach Clubs) and any contractors and vendors of the need to avoid vehicle travel in the Protected Zone from March 15 through November 30—and in the Plant Protection Strips year round— except in bona fide emergency or SOE situations.

NJDFW Actions

- The NJDFW will be responsible for pre-season fencing for nesting shorebirds and will continue to post signs for all nesting areas. The NJDFW will conduct pre-season fencing with symbolic fencing in areas of suitable nesting habitat as necessary and appropriate (in any Beach Zone) in late March or April. The NJDFW will coordinate annually with the Borough regarding the extent of areas that will be pre-season fenced.

- The NJDFW will post all active nesting areas (in any Beach Zone) with appropriate signs and symbolic fencing, including enlarging or adjusting pre-season fencing based on observed nesting activity.

- The NJDFW will remove symbolic fencing within 10 days of the end of any nesting activity, unless fencing is needed longer to protect seabeach amaranth. The NJDFW, the USFWS,

and the Borough will cooperate to remove seabeach amaranth fencing in a timely manner (see USFWS Actions, below). All symbolic fencing will be removed promptly when it no longer provides protection to listed species.

- The NJDFW will inform the Borough Business Administrator, Chief of Police, and Superintendent of Public Works within 2 working days of any areas that have been fenced.

- The NJDFW will provide a timely response to Borough notification of planned events, and will provide recommendations to protect listed species.

USFWS Actions

- Subject to Corps or other funding, the USFWS will conduct limited early-season surveys to identify areas where seabeach amaranth or other listed plants are at risk of being damaged or destroyed, in order to make symbolic fencing recommendations.

- The USFWS will make recommendations after August 31, to the Borough, regarding the extent and duration of symbolic fencing needed to protect seabeach amaranth. Recommended fencing will be limited to areas where plants are at clear risk of being damaged or destroyed by human activity or beach maintenance activities. Subject to availability of funding, USFWS will erect symbolic fence around at-risk seabeach amaranth plants with a 3-meter buffer and signage, although if funding is not available it will be the Borough's responsibility.

- The USFWS will make recommendations to the Borough, NJDFW, or its agents regarding the extent and duration of symbolic fencing needed to protect seabeach amaranth.

- Subject to Corps or other funding, the USFWS will provide seabeach amaranth and Plant Protection Strip signs, as available, to post where needed.

- The USFWS will provide a timely response to Borough notification of planned events, and will provide recommendations to protect listed species.

D. FIREWORKS

Background

Listed species in the vicinity of a fireworks launch site can be directly harmed (eggs or chicks injured or destroyed, plants crushed) by explosions, debris, equipment, or launch personnel. Listed species within a fireworks viewing area, which may be distant from the launch site, may be directly harmed by spectators, pyrotechnics, and off-road vehicle patrols by public safety personnel. In addition, listed birds are indirectly affected by fireworks. Normal breeding, feeding, and sheltering activities can be disrupted by noise and activity at both launch and viewing areas, and increased trash in viewing areas attracts predators. Many of these impacts are worsened because fireworks events are conducted at night, limiting visibility of plants, eggs, chicks, and symbolic fencing.

In recent years, the primary fireworks display location in Belmar has been located between 7th and 8th Avenues, about 0.50 mile from the Protective Zone at the inlet. However, this location is short of the 0.75 mile distance recommended for piping plovers in the USFWS Fireworks Guidelines. All parties have agreed that the fireworks can remain in the current location, except those years/times when an actively breeding piping plover pair is present in the Borough. An active piping plover pair is defined for these purposes as a pair engaged in breeding behavior, or with a nest, or with chicks that are not yet fledged. When a piping plover is present in the Protective Zone, the fireworks will be re-located at least 0.75 mile away, to at least between 11th and 12th Avenues, or rescheduled to not conflict with active piping plover nesting -- unless the NJDFW and the USFWS concur (*e.g.*, based on nesting chronology, pair behavior, crowd control measures, etc.) that fireworks between 7th and 8th Avenues will not represent any hazard to piping plovers. If nesting occurs outside the Protected Zone, the Borough, NJDFW, and USFWS will coordinate to develop a fireworks plan that maintains the 0.75 mile buffer for piping plovers and 0.50 mile buffer for the other nesting species.

Moderate numbers of spectators have viewed these fireworks events from secondary viewing areas in the Protected Zone; the NJDFW and the Borough have provided law enforcement and other personnel at the nesting area to manage these crowds. Fireworks will continue to be managed for piping plovers consistent with the Fireworks Guidelines.

Borough Actions

- The Borough will continue to inform the NJDFW and the USWFS, in writing, of any planned fireworks events and the location proposed at least 30 days in advance. Notification of other fireworks events, sponsored by private facilities, with Borough Permit, will be made upon receipt of the Fireworks permit application.

- The Borough will continue to coordinate with the NJDFW and the USFWS to arrange for a listed species survey and fencing within the primary and any secondary viewing area in the week preceding the event.

- To protect listed species in the Protected Zone, the Borough will take the following protective measures:

    - Keep the launch area at least 0.75 mile from the Protected Zone when active breeding piping plovers are present and at least 0.50 miles when other nesting species are present, as long as bird nesting/foraging areas remain limited to the Protected Zone.

    - Provide adequate law enforcement and other personnel to the Protected Zone during events to enforce listed species protections, including prohibiting entry in fenced areas and use of personal fireworks. The Borough will coordinate with the NJDFW to determine the number of required enforcement personnel.

    - Prohibit driving of municipal, contractor, and vendor vehicles in the vicinity of nesting areas during these nighttime events, unless responding to an emergency. Law enforcement patrol vehicles and any other essential municipal vehicles will remain on the

street behind the dunes, from which personnel can access the beach front on foot.

- Ensure that monitors and enforcement personnel receive accurate, current information about the locations of listed species so they can minimize any disruptions from their own activities.

- Prohibit all pets except service animals on the beach (especially near nesting areas) during fireworks events, and ensure compliance with this prohibition. Service animals near active nesting areas will be required to stay on a leash and will not be permitted in fenced areas.

- Remove any trash or litter from the vicinity of nesting areas immediately following the event, except any trash located within fenced areas, which will be left until daylight and then removed by or under the supervision of the NJDFW monitors. Further, any vehicles needed to remove trash will be operated during daylight hours, under supervision of a NJDFW monitor, and consistent with the Recreational Activities Guidelines.

- If nesting becomes established within the Recreational Zone, the Borough will continue the above protective measures in the Protected Zone and will take the following additional actions:

  - Relocate the primary viewing area and/or the launch site to minimize disturbance to nesting birds. In no case will a launch area be closer than 0.75 mile to an active piping plover nesting area or 0.50 mile to other nesting species, unless the NJDFW and the USFWS concur in writing that the proposed launch site is not likely to adversely affect listed birds.

  - Extend to nesting areas in the Recreational Zone all the protective measures listed above for the Protected Zone, and work with the NJDFW to implement all relevant additional protective measures listed in the Fireworks Guidelines, including enhanced survey efforts, expanded fencing (100-foot instead of 50-foot buffers), and control of beach access and parking lots.

NJDFW Actions

- The NJDFW will provide a timely response to any request from the Borough to review specific fireworks plans and will provide recommendations to protect listed species.

- To protect listed species in the Protected Zone, the NJDFW will take the following protective measures:

  - Provide a monitor to the Protected Zone during fireworks events to assist the Borough in enforcement of listed species protections.

  - Provide a monitor the following day as needed to oversee trash removal from fenced areas, and any trash removal requiring a vehicle.

- If nesting becomes established within the Recreational Zone, the NJDFW will continue the above protective measures in the Protected Zone, and will take the following additional actions:

    - Review proposed relocated primary viewing areas and/or launch sites to determine if fireworks events are likely to adversely affect listed birds.

    - Extend to nesting areas in the Recreational Zone all the protective measures listed above for the Protected Zone, and will also work with the Borough to implement all relevant additional protective measures listed in the Fireworks Guidelines, including enhanced survey efforts, expanded fencing, and control of beach access and parking lots.

USFWS Actions

- The USFWS will provide a timely response to any request from the Borough to review specific fireworks plans and will provide recommendations to avoid impacts to listed species.

- The USFWS will continue to conduct in a timely manner consultation with the U.S. Coast Guard regarding authorization of Borough fireworks events pursuant to Section 7 of the ESA.

- Subject to Corps or other funding, the USFWS will survey the primary viewing area within the Recreational Zone and the Protected Zone within the week preceding the event and will erect symbolic fencing around seabeach amaranth or other listed plants to provide a minimum 3-meter buffer zone around plants.

E. BEACH MANAGEMENT AND MAINTENANCE

Beach maintenance includes activities that the Borough undertakes to physically maintain the Borough's beaches and dunes, including mechanical beach raking, refuse and large debris removal, dune maintenance, beach nourishment, sand scraping, and oversight of beach access structures. These activities can impact habitat quality, disturb nesting birds, and destroy nests, chicks, and plants.

1. Beach Raking

Background

Beach rakes can inadvertently destroy unprotected nests, kill chicks, and remove plants. Beach raking can also diminish the suitability of nesting habitat by removing shell fragments and sparse vegetation. Habitat quality is also diminished by removal of natural wrack, an important foraging area for piping plovers and a key growing zone for seabeach amaranth. Beach raking is regulated by the New Jersey Coastal Zone Management Rules. The Borough will prohibit raking the Protected Zone year round.

Borough Actions

- Except as otherwise regulated or prohibited by the New Jersey Coastal Zone Management Rules, no raking restrictions will apply in the Recreational Zone (except for the Plant Protection Strips and when piping plover chicks are present, discussed in separate bullets below) unless the Borough has been notified that listed species are present. If listed species colonize the Recreational Zone, the Borough will include raking in the Recreational Zone Vehicle Use Policy to be developed with the NJDFW and the USFWS. The policy will be consistent with the Recreational Activities Guidelines if plovers establish nesting in the Recreational Zone and will include protective measures for seabeach amaranth.

- The Borough will prohibit beach raking in the Plant Protection Strips from May 15 to November 30, except during an SOE. This prohibition may be waived if the NJDFW and USFWS determine that certain identified areas do not represent suitable beach plant habitat due to beach erosion or other causes. Any routine (non-SOE) beach raking proposed between December 1 and May 14 will be coordinated with the USFWS.

- If piping plover chicks are present in the Protected Zone, beach raking will automatically be temporarily ceased within a 100-meter buffer, the minimum distance outlined under the Recreational Activities Guidelines, from immediately south of the fishing pier to Second Avenue. The raking restriction will be in effect until the chicks are able to fly, either 35 days after hatching or when sustained flight (15 meters) is observed by NJDFW staff, whichever is sooner. If all the chicks die prior to fledgling, the raking restriction will be lifted as soon as that mortality is confirmed by NJDFW staff. In the event that the plover chicks move further south on the beach outside the protection zone (i.e. highly mobile chicks), the Borough may need to further curtail raking after consultation with the NJDFW and USFWS.

- If notified that listed plants occur anywhere on Belmar beaches, the Borough will symbolically fence the plants with a 3-meter buffer and signage as needed to ensure that such areas are not mechanically raked while listed plants are present. Sand fencing will not be used for this purpose, as it is likely to result in burial of listed plants by accreting sand.

- The Borough will not rake the Protected Zone year round, except during an SOE (*i.e.*, potentially harmful debris must be removed from the beach to protect public health and safety).

- The Borough will notify the NJDFW and the USFWS promptly upon Declaration of an Emergency (notice by email or fax with confirmation of receipt is acceptable). In any Beach Zone, the Borough will implement the protective measures listed in Table 1 when conducting SOE Raking in the vicinity of an active nesting area or seabeach amaranth occurrence. When implemented with these protective measures, the NJDFW and the USFWS will not object to SOE Raking of the Protected Zone or Plant Protection Strips as needed to remove medical waste, hazardous trash, or other unusual debris; SOE Raking may proceed once any required authorizations are obtained from the DLUR.

NJDFW and USFWS Actions

- The NJDFW will monitor nesting activity and regularly inform the Borough through the Borough Business Administrator's office, Police, Beach and Public Works Departments of nest and brood locations so that changes in raking procedures effected by nesting status can be implemented on a timely basis.

- The NJDFW and the USFWS will promptly review requests from the Borough for SOE Raking in the Protected Zone and/or Plant Protection Strips, and will make recommendations to protect listed species.

- The NJDFW and/or the USFWS will provide an on-site monitor during SOE Raking, if determined that one is needed.

- The NJDFW and the USFWS will recommend to the DLUR that normal raking prohibitions in the Protected Zone be waived to permit SOE Raking and other provisions in this BMP that will be carried out with the protective measures listed in Table 1.

2. Large Debris Removal

Background

Large debris washes up on Borough beaches and must be removed periodically. Clean-ups can be carried out by the Borough and/or by outside groups with Borough permission. Removal of large debris requires motorized vehicles and equipment that can impact listed species.

Borough Actions

- No restrictions on clean-ups will apply in the Recreational Zone (except for the Plant Protection Strips, as discussed below) unless the Borough has been notified that listed species are present. If listed species colonize the Recreational Zone, the Borough will include clean-ups in the Recreational Zone Vehicle Use Regulations to be developed with the NJDFW and the USFWS. The Regulations will be consistent with the Recreational Activities Guidelines if plovers establish nesting in the Recreational Zone and include protective measures for seabeach amaranth.

- The Borough will prohibit vehicles in the Plant Protection Strips year round, except during an SOE. This prohibition may be waived if the NJDFW and USFWS determine that the identified areas do not represent suitable beach plant habitat due to beach erosion or other causes.

- During routine (non-SOE) removal of large debris, vehicles and other large equipment may be used adjacent to the Plant Protection Strips, and debris may be manually removed from the Strips by cleanup workers on foot. Debris may be loaded onto vehicles adjacent to the Strips. If extenuating circumstances necessitate driving in the Plant Protection Strips to retrieve large debris, the Borough will coordinate with USFWS ahead of time.

- If notified that listed plants occur anywhere on Belmar beaches, the Borough will symbolically fence the plants with a 3-meter buffer and signage as needed to ensure that such areas are not impacted by large debris removal while listed plants are present. Sand fencing will not be used for this purpose, as it is likely to result in burial of listed plants by accreting sand.

- The Borough will ensure that any Borough or community clean-ups are scheduled in the Protected Zone between September 1 and March 14 (i.e. outside the nesting season).

- Vehicles engaged in routine, Borough-sponsored clean-ups of the Protected Zone between September 1 and November 30 will remain at or below the high water line to protect listed plants and seeds; the Borough will notify the NJDFW and the USFWS at least 10 days prior to such a clean-up.

- The Borough will notify the NJDFW and the USFWS promptly upon Declaration of an Emergency (notice by email or fax with confirmation of receipt is acceptable). In any Beach Zone, the Borough will implement the measures listed in Table 1 when conducting SOE Clean-ups in the vicinity of an active nesting area or seabeach amaranth occurrence. When implemented with these protective measures, the NJDFW and the USFWS will not object to SOE Clean-ups to remove hazardous trash or other unusual debris to protect public health and safety; SOE Clean-ups may proceed once any required authorizations are obtained from the DLUR.

NJDFW and USFWS Actions

- The NJDFW will assist the Borough in coordinating with the Clean Ocean Action to schedule the annual NJDEP-sponsored clean-up in the Protected Zone between September 1 and March 14.

- The NJDFW and the USFWS will provide timely review of notifications of Borough-sponsored clean-ups (both routine and SOE), and will provide recommendations to protect listed species.

- The NJDFW and/or the USFWS will provide a monitor to oversee SOE Clean-ups in the Protected Zone between March 15 and August 31.

Table 2. Seasonal Protections for Listed Species When Motorized Vehicles or Equipment are Required to Respond to a State of Emergency (SOE)

<table>
<tr><th></th><th>Protections for Listed Birds</th><th>Protections for Listed Plants</th><th>Protections for All Listed Species</th></tr>
<tr><td>December 1 – March 14</td><td></td><td rowspan="2">▪ Vehicles will avoid driving in Plant Protection Strips to the extent possible.</td><td></td></tr>
<tr><td>March 15 – May 14</td><td rowspan="5">▪ SOE response will be supervised by the NJDFW monitors.
▪ Vehicle use will take place during daylight hours.
▪ Vehicles will not exceed 5 miles per hour when and where unfledged plover chicks are present.
▪ Vehicles will not enter fenced areas.
▪ Vehicles will temporarily halt or change route as requested by the NJDFW monitors to avoid harassment of listed birds.</td><td rowspan="4">▪ Vehicles will avoid crushing or removing seabeach amaranth and State-listed plants.
▪ Vehicles will avoid driving in Plant Protection Strips.</td><td rowspan="4">▪ Vehicles will minimize removal of wrack material.
▪ SOE response will proceed in accordance with any other recommendations of the NJDFW or the USFWS to protect listed species.</td></tr>
<tr><td>May 15 – May 31</td></tr>
<tr><td>June</td></tr>
<tr><td>July</td></tr>
<tr><td>August</td><td rowspan="4">▪ Vehicles will maintain a 400-foot buffer around any red knots present.</td></tr>
<tr><td>September</td><td rowspan="3"></td><td rowspan="3"></td></tr>
<tr><td>October</td></tr>
<tr><td>November</td></tr>
</table>

EMERGENCY CONTACTS:

New Jersey Division of Fish and Wildlife - Endangered and Nongame Species Program
Christina Davis 609-628-1919 (office) or 609-960-6614 (cell) or christina.davis@dep.nj.gov

U.S. Fish and Wildlife Service – New Jersey Field Office
609-646-9310 or Fax 609-646-0352

3. Refuse Containers

Background

Regular servicing of trash cans and recycling containers increases vehicle traffic on the beach with inherent risks to listed species. However, minimizing trash on the beach benefits listed birds by limiting food scraps that attract predators.

Containers are placed along the Borough beachfront and at the street end of some beach access paths.

Borough Actions

- The Borough will continue existing trash collection practices within the Recreational Zone unless notified that listed species are present. If listed species colonize the Recreational Zone, the Borough will include refuse removal in the Recreational Zone Vehicle Regulations to be developed with the NJDFW and the USFWS. The policy will be consistent with the Recreational Activities Guidelines if plovers establish nesting in the Recreational Zone and include protective measures for seabeach amaranth.

- In the Recreational Zone, refuse containers will not be placed within the Plant Protection Strips and driving will not occur within the Plant Protection Strips.

- In the Protected Zone refuse containers are not placed on the beach front. Refuse containers placed at the access points (at the back of the beach away from the nesting area) will be serviced without beach driving during the breeding season (March 15-August 31).

- The Borough will ensure that all refuse containers at the back of the Protected Zone are covered with predator-resistant lids.

4. Dune Management and Invasive Plant Species Control

Background

Steep, stabilized dunes do not provide suitable habitat for the beach-dependent listed species included in this BMP. Limiting the width of the dune zone is also important to ensure sufficient low, unstabilized, sparsely vegetated back beach habitat, which is essential to listed species. A more natural dune system can also provide habitat for diverse native vegetation and wildlife. Dune creation and maintenance are regulated by the New Jersey Coastal Zone Management Rules (Section 7:7-10.4).

Specific dune guidelines to minimize adverse effects to piping plovers and other beach-dependent species in New Jersey are in the process of being developed and will be added to this BMP when they are available. In the meantime, general recommendations regarding sand fencing and vegetation planting practices can be found in Appendix H. These general

recommendations, in conjunction with coordination with USFWS and NJDFW, should be followed until more detailed and site-specific guidance is available.

Invasive plant species [*e.g.* Asiatic sand sedge (*Carex kobomugi*), Japanese knotweed (*Polygonum cuspidatum*)] may out-compete native coastal plants, reducing biodiversity and degrading habitat for listed species.

The management goal in the Protected Zone is no dune, or a low-lying, sparsely vegetated, shifting (unstabilized) dune if one forms naturally and is deemed compatible with habitat for listed species. The dune management goal in the Recreational Zone is a narrow band along the landward edge of the Plant Protection Strips (*i.e.*, immediately adjacent to the boardwalk) in which to promote attractive, diverse, low, sparse native vegetation that may accelerate the formation of low, shifting dunes; and may provide habitat to native pollinators and other small wildlife species; but that will not outcompete listed plant species such as seabeach amaranth.

Borough Actions

- The Borough will adopt recommendations of the NJDFW and the USFWS to manage dunes and control invasive plant species in the Protected Zone in ways that enhance suitability of habitat for listed species, and dunes that provide for adequate storm protection. Dunes will be managed to promote a diverse assemblage of native vegetation and in accordance with N.J.A.C. 7:7-10.4. Invasive species control may include, but is not limited to, herbicide application or physical removal. Note that routine dune management activities do not include beach raking or scraping.

- The Borough will provide plans for review by the NJDFW and the USFWS at least 30 days before carrying out routine dune management or invasive plant species control activities at any time of year in the Protected Zone, or in the vicinity of any nesting area or seabeach amaranth occurrence that may be documented in the Recreational Zone. The Borough will incorporate any recommendations of the NJDFW or the USFWS to protect listed species and their habitats.

- The Borough will not construct/install sand fence along dunes in the Protected Zone except during an SOE, and then only in consultation with the NJDFW and the USFWS.

- The Borough will not construct/install any new sand fence in the Plant Protection Strips, except during an SOE and then in consultation with USFWS.

- For routine dune management or invasive plant species control in the vicinity of listed nesting birds, the Borough will schedule work between September 1 and March 14. Work in the vicinity of a seabeach amaranth occurrence will be carried out between December 1 and May 14. Both seasonal restrictions will apply where seabeach amaranth coincides with listed birds.

- The Borough will coordinate any SOE Post-storm Beach or Dune Restoration with the NJDFW and the USFWS. The need for such activities will be signaled by a Declared Emergency, and eligibility for DLUR permits under Section 7:7-10.3 of the New Jersey

Coastal Zone Management Rules. The Borough will notify the NJDFW and the USFWS promptly upon Declaration of an Emergency (notice by email or fax with confirmation of receipt is acceptable).

- In any Beach Zone, the Borough will implement the protective measures listed in Table 1 when conducting SOE Restoration activities in the vicinity of an active nesting area or seabeach amaranth occurrence. When implemented with these protective measures, the NJDFW and the USFWS will not object to SOE Restoration activities; SOE Restoration may proceed once any required authorizations are obtained from the DLUR. The parties anticipate that SOE Restoration activities will have low potential to impact listed species, as suitable nesting/growing habitat is likely to be damaged or destroyed by the erosional or storm event(s) that caused the SOE.

NJDFW and USFWS Actions

- The NJDFW and the USFWS will provide technical assistance to the Borough to develop dune management strategies that enhance suitability of habitat for listed species while meeting storm protection needs.

- The NJDFW and USFWS will provide technical assistance to the Borough for controlling invasive plants to enhance suitability of habitat for listed species. The NJDFW and the USFWS recommendations will promote a diverse assemblage of native dune vegetation, and will be consistent with N.J.A.C. 7:7-10.4.

- The NJDFW and the USFWS will provide a timely response to any request from the Borough to review specific routine dune management activities, and will provide recommendations to protect listed species and their habitats.

- The NJDFW and the USFWS will provide timely recommendations upon Borough notification of SOE Post-storm Beach or Dune Restoration activities.

- The NJDFW and the USFWS will provide timely recommendations upon Borough notification of invasive plant species control activities.

- The NJDFW and/or the USFWS will provide a monitor to oversee SOE Beach or Dune Restoration activities, as necessary.

5. Beach Nourishment

Background

The Corps is currently in the construction phase of a 50-year beach nourishment program that includes all of the Borough. Initial nourishment of Borough beaches under the Corps program was completed in1999 and the most recent renourishment occurred between December 2012 and July 2013, following Hurricane Sandy. Consistent with the Corps' 6-year renourishment

schedule, the earliest scheduled renourishment would occur in 2018 – pending need and available funding.

Pursuant to Section 7 of the ESA, the Corps and the USFWS have completed formal consultation regarding the Corps' nourishment program. The USFWS issued a Programmatic Biological Opinion (PBO) dated September 2002 regarding effects of the Corps' program on federally listed species. The PBO includes numerous Conservation Measures that the Corps has agreed to implement to protect federally listed species, as well as binding Terms and Conditions to minimize incidental take of piping plovers. Under the provisions of the PBO, the Corps and the USFWS will conduct streamlined consultation prior to each scheduled renourishment.

In many areas of the Atlantic coast, beach nourishment adversely affects listed species by stabilizing the naturally dynamic beach ecosystem. The listed species addressed in this BMP are adapted to dynamic conditions and thrive in areas of recent disturbance, such as newly formed inlets or overwash areas. Along with hard structures (*e.g.*, groins, jetties, sea walls), beach nourishment can contribute to a stabilized beach strand, which typically provides suboptimal habitat for listed species. However, in some areas, hard stabilization structures are so prevalent that, without a nourishment program, natural erosional processes would eliminate essentially all beach habitat. The NJDFW and the USFWS recognize that the Corps' nourishment program created and maintains the beach habitat for listed species within the Borough, and that the beach nourishment contributes minimal further stabilization to the Borough's already highly hardened coastline.

Beach nourishment may create potentially suitable habitat for piping plovers and seabeach amaranth in areas where these species are currently absent or present in only very low numbers. Although the Corps nourishment projects will create sandy beach habitat that may attract piping plovers, the habitat created can be expected to be of lesser quality than habitat that is formed through natural coastal processes such as overwash. Habitat creation alone will not create a beneficial effect for either species if the habitat is suboptimal and does not provide foraging opportunities for plover chicks or if disturbance from municipal and recreational users cannot be managed to avoid the loss of nests or chicks, or loss of plants.

In the future, the Borough and/or the NJDEP may decide to sponsor beach nourishment to supplement the Corps' program. In addition, the Borough and/or the NJDEP may conduct beach nourishment as part of an SOE Post-Storm Beach or Dune Restoration, and post-storm nourishment can sometimes be funded by other agencies such as the Federal Emergency Management Agency (FEMA). Whether routine or SOE, any beach nourishment outside of the Corps program would require Federal and State permits from the Corps and the DLUR, respectively. Nourishment or operation and maintenance activities will be scheduled and sequenced to avoid or minimize construction activities during the piping plover nesting season within known piping plover nesting areas, and to avoid any delineated locations of seabeach amaranth to the greatest practicable extent.

SOE Beach Nourishment may be necessary when conditions pose a clear danger to human life or health (*e.g.* ocean front beach erosion has occurred that makes public access points onto the beach dangerous or impossible to use) or pose a clear danger of damage to public or private

structures lying landward of the ocean-front seawall or primary dune line, such as private homes, public buildings, streets, water lines and sewer lines. Placement of clean fill material is among the activities listed at N.J.A.C. 7:7-10.3 (b); therefore, SOE Beach Nourishment qualifies as "SOE Post-storm Beach or Dune Restoration" as defined in this plan.

Borough Actions

- The Borough will work with the USFWS, NJDEP, and the Corps to implement the provisions of the 2002 PBO, and of each streamlined consultation, during each renourishment of the Borough's beaches under the Corps' nourishment program. Key provisions of the PBO include fencing, avoidance, and possibly salvage and replacement of seabeach amaranth plants; and a seasonal restriction (March 15 to fledging of the last chick) on construction within 1,000 meters of piping plover nesting areas, as defined in this BMP.

- The Borough will work with the USFWS and the Corps to ensure that any routine nourishment activities sponsored by the NJDEP and/or the Borough (requiring Federal permits) include Conservation Measures at least as protective as the provisions of the PBO that governs implementation of the Corps' beach nourishment program. Protection would be achieved mainly through seasonal restrictions on construction within 1,000 meters of plover nesting areas, and fencing, avoidance, and possibly salvage and replacement of seabeach amaranth plants.

- The Borough will coordinate any SOE Post-storm Beach or Dune Restoration (including SOE Beach Nourishment) with the NJDFW and the USFWS. The need for such activities will be signaled by a Declared Emergency, and eligibility for DLUR permits under Section 7:7-10.3 of the New Jersey Coastal Zone Management Rules. The Borough will notify the NJDFW and the USFWS promptly upon Declaration of an Emergency (notice by email or fax with confirmation of receipt is acceptable).

- In any Beach Zone, the Borough will implement the protective measures listed in Table 1 when conducting SOE Restoration activities in the vicinity of listed species. When implemented with these protective measures, the NJDFW and the USFWS will not object to SOE Restoration activities; SOE Restoration may proceed once any required authorizations are obtained from the DLUR and the Corps. The parties anticipate that SOE Restoration activities (including SOE Beach Nourishment) will have low potential to impact listed species, as suitable nesting/growing habitat is likely to be damaged or destroyed by the erosional or storm event(s) that caused the SOE.

NJDFW Actions

- The NJDFW will provide current information on the status and locations of listed birds before and during any renourishment (whether sponsored by the Corps, the NJDEP, the Borough, and/or other agencies) to aid in the implementation of relevant Conservation Measures and Terms and Conditions.

- In the course of planning for beach nourishment projects, the NJDFW will provide: (1) current and historical nesting data and locations, and (2) recommendations for habitat enhancements that could be incorporated into the project.

- The NJDFW will provide a timely response to any request from the Borough to review specific beach nourishment plans.

- The NJDFW will provide timely recommendations upon notification of SOE Post-storm Beach or Dune Restoration activities that include SOE Beach Nourishment.

USFWS Actions

- The USFWS will provide updated information of the locations of seabeach amaranth before and during any renourishment (whether sponsored by the Corps, the NJDEP, the Borough, and/or other agencies) to aid in the implementation of relevant Conservation Measures and Terms and Conditions.

- In the course of planning for beach nourishment projects, the USFWS will provide: (1) current and historical locations of seabeach amaranth, and (2) recommendations for habitat enhancements that could be incorporated into the project.

- The USFWS will work with the Corps to promptly complete streamlined consultation for each renourishment of the Borough's beaches under the Corps' program.

- The USFWS will work with the Corps, the applicant, and the Borough to promptly complete consultation regarding Corps permits to authorize routine or SOE Beach Nourishment sponsored by the NJDEP and/or the Borough.

- Regardless of the project sponsor, the USFWS will provide the Borough with copies of relevant documents resulting from the consultation process regarding beach nourishment, including key sections of Biological Opinions.

- The USFWS will provide timely recommendations upon notification of SOE Post-storm Beach or Dune Restoration activities that include SOE Beach Nourishment.

6. Sand Scraping

Background

Use of motorized equipment to conduct sand scraping (mechanical redistribution of sand; also called sand transfers or sand mining) can directly harm listed species by crushing or burying eggs, chicks, plants, or seeds; can harass nesting or foraging birds through disturbance; and can adversely impact habitats for listed species by creating ruts, by altering beach profiles (widths, slopes, etc.), and by removing shells, wrack, and natural debris. Sand scraping is regulated by the New Jersey Coastal Zone Management Rules. The Borough will prohibit sand scraping in the Protected Zone year round.

Borough Actions

- Except as otherwise regulated or prohibited by the New Jersey Coastal Zone Management Rules, and except for the Plant Protection Strips (discussed below), no restrictions on sand scraping will apply in the Recreational Zone unless the Borough has been notified that listed species are present. If listed species colonize the Recreational Zone, the Borough will develop appropriate policies for sand scraping with NJDFW and the USFWS. The policy will be consistent with the Recreational Activities Guidelines if listed species are present in the Recreational Zone.

- The Borough will prohibit sand scraping in the Plant Protection Strips year round, except during an SOE. This prohibition may be waived if the NJDFW and USFWS determine that the identified areas do not represent suitable beach plant habitat due to beach erosion or other causes.

- If notified that listed plants occur anywhere on Belmar beaches, the Borough will symbolically fence the plants with a 3-meter buffer and signage as needed to ensure that such areas are not scraped while listed plants are present. Sand fencing will not be used for this purpose, as it is likely to result in burial of listed plants by accreting sand.

- The Borough will not conduct sand scraping in the Protected Zone at any time of the year except as a necessary part of SOE Post-storm Beach or Dune Restoration.

- The Borough will not construct Winter Sand Berms in the Protected Zone at any time of the year. The Borough may construct Winter Sand Berms in the Recreational Zone to the extent that they are permitted under the New Jersey Coastal Zone Management Rules; however, the berms must be constructed seaward of the Plant Protection Strips so that the strips are not buried by the berm.

- Mechanical redistribution of sand is among the activities listed at N.J.A.C. 7:7-10.3(b); therefore, sand scraping under SOE conditions qualifies as "SOE Post-storm Beach or Dune Restoration" as defined in this BMP.

- The Borough will coordinate any SOE Post-storm Beach or Dune Restoration with the NJDFW and the USFWS. The need for such activities will be signaled by a Declared Emergency, and eligibility for DLUR permits under Section 7:7-10.3 of the New Jersey Coastal Zone Management Rules. The Borough will notify the NJDFW and the USFWS promptly upon Declaration of an Emergency (notice by email or fax with confirmation of receipt is acceptable).

- In any Beach Zone, the Borough will implement the protective measures listed in Table 1 when conducting SOE Restoration activities in the vicinity of an active nesting area or seabeach amaranth occurrence. When implemented with these protective measures, the NJDFW and the USFWS will not object to SOE Restoration activities; SOE Restoration may proceed once any required authorizations are obtained from the DLUR and the Corps. The parties anticipate that SOE Restoration activities will have low potential to impact listed

species, as suitable nesting/growing habitat is likely to be damaged or destroyed by the erosional or storm event(s) that caused the SOE.

7. Beach Access Structures

Background

Public access to New Jersey's beaches is a central goal of the NJDEP's Coastal Management Program, as reflected in the State Coastal Zone Management Rules. Public access is also a key requirement of Federal and State rules governing beach nourishment carried out with public funds. However, an excessive number of beach access structures can bring more recreational users into potential conflict with listed species. Such structures can also lead to unauthorized impacts to dunes, as recreational beach users create new, unauthorized walkways through the dunes that may increase disturbance to nesting birds or alter nesting and growing habitat.

Borough Actions

- The Borough may work with the NJDFW and the USFWS to develop written materials, such as signage, regarding protections for listed species and dunes.

- The Borough will not propose any new beach access points/structures within the Protected Zone as the current number and locations of access points is sufficient and meets current State requirements. If in the future the Borough wishes to relocate or reconfigure either of the existing access points, the Borough will work with the NJDFW and the USFWS and the planning and construction to minimize adverse impacts to listed species.

- The Borough will work with the NJDFW and the USFWS to place appropriate signs regarding protections for listed species and dunes at or near public access points (see Section F).

NJDFW and USFWS Actions

- The NJDFW and the USFWS will provide recommendations regarding any proposed relocated public beach access structures, if it is determined such changes are necessary.

- The NJDFW and the USFWS will provide appropriate signs to post at or near public beach access points (see Section F).

F. EDUCATION AND OUTREACH

Background

This component of the BMP encompasses all of the management issues discussed above for the purposes of reducing predation, human disturbance, and the detrimental impacts of beach maintenance. Education and outreach include on-site, off-site, and social media distribution of educational materials, educational displays, lectures, beach walks, interpretive signs, and other

elements that provide information on the biology of listed species, the impact of various human activities and predators, and recommended actions to help protect and restore populations of listed species.

Borough Actions

- The Borough will work with the NJDFW and the USFWS to post appropriate signs at beach entry points and on the beach regarding protections for listed species and dunes, refuse policies, the Borough's pet ordinance, and activities prohibited or discouraged on the beach.

- Through local publications, its website, social media, and/or other formats, the Borough will inform residents, vacation homeowners, and renters about protections for listed species and dunes, refuse policies, the Borough's pet ordinance, and activities prohibited or discouraged on the beach. The Borough will also publish periodic updates on the nesting success, population status, species biology, and management activities for listed species (information provided by the agencies).

- Through local publications, its website, social media, and/or other formats, the Borough will inform residents, vacation homeowners, and renters about the importance of keeping cats indoors. The information will inform cat owners that allowing their pets to roam freely outdoors is prohibited. The information will also inform that the feeding of feral cats is prohibited.

- The Borough will post signs within the Borough informing that the feeding of wildlife, with the exception of backyard bird feeders, is prohibited.

- To promote compliance with the aforementioned prohibition, the Borough will discourage kite-flying and drone flying near nesting areas through signs and educational materials.

NJDFW and USFWS Actions

- The NJDFW and the USFWS will assist the Borough in developing educational outreach materials by supplying existing materials and necessary information, and providing technical review as requested.

- The NJDFW and the USFWS will provide information for the Borough's website and/or other publications. Upon request of the Borough, the agencies will author articles within limits of available staff time.

- The USFWS will provide copies of the "Seabeach Amaranth" fact sheet developed by the ONLM (as needed), and the USFWS's "Beach Management Planning" and "Piping Plover" factsheets upon request and as available. NJDFW will provide brochures on beach-nesting birds upon request and as available.

- The NJDFW will conduct beach walks to show beach nesting bird areas and nesting activity to Belmar Officials as requested by the Borough and scheduled at least once per season.

- Upon request of the Borough, the NJDFW and/or the USFWS will conduct periodic educational talks and/or beach walks for the Borough employees, contractors, residents, or visitors within limits of available staff time.

G. OTHER PROVISIONS

- The NJDFW and the USFWS will regularly inform the Borough regarding changes in listed species locations, distribution, populations, habitat, and/or nesting activity that may affect any of the provisions of this BMP or that would be of general interest to the Borough.

- The NJDFW will provide regular notification regarding nesting activity including, but not limited to weekly emails during the nesting season sent to the Borough Business Administrator, Chief of Police, Director of Public Works and the Beach Supervisor. The emails will provide the current location of nests and chicks, the NJDFW management activities, and other important information.

- The NJDFW and the USFWS will provide the Borough with a brief summary of endangered species recovery status and management, with recommendations, by the end of each calendar year.

- The NJDFW and the USFWS will provide maps of species locations within the Borough, upon request.

- The NJDFW and the USFWS will work with the Borough to support implementation of this BMP.

APPENDIX A

U.S. Fish and Wildlife Service Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act

GUIDELINES FOR MANAGING RECREATIONAL ACTIVITIES IN PIPING PLOVER BREEDING HABITAT ON THE U.S. ATLANTIC COAST TO AVOID TAKE UNDER SECTION 9 OF THE ENDANGERED SPECIES ACT

Northeast Region, U.S. Fish and Wildlife Service
April 15, 1994

The following information is provided as guidance to beach managers and property owners seeking to avoid potential violations of Section 9 of the Endangered Species Act (16 U.S.C. 1538) and its implementing regulations (50 CFR Part 17) that could occur as the result of recreational activities on beaches used by breeding piping plovers along the Atlantic Coast. These guidelines were developed by the Northeast Region, U.S. Fish and Wildlife Service (Service), with assistance from the U.S. Atlantic Coast Piping Plover Recovery Team. The guidelines are advisory, and failure to implement them does not, of itself, constitute a violation of the law. Rather, they represent the Service's best professional advice to beach managers and landowners regarding the management options that will prevent direct mortality, harm, or harassment of piping plovers and their eggs due to recreational activities.

Some land managers have endangered species protection obligations under Section 7 of the Endangered Species Act (see section I below) or under Executive Orders 11644 and 11989[1] that go beyond adherence to these guidelines. Nothing in this document should be construed as lack of endorsement of additional piping plover protection measures implemented by these land managers or those who are voluntarily undertaking stronger plover protection measures.

This document contains four sections: (I) a brief synopsis of the legal requirements that afford protection to nesting piping plovers; (II) a brief summary of the life history of piping plovers and potential threats due to recreational activities during the breeding cycle; (III) guidelines for protecting piping plovers from recreational activities on Atlantic Coast beaches; and (IV) literature cited.

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[1] Executive Order 11644, Use of Off-Road Vehicles on the Public Lands and Executive Order 11989, Off-Road Vehicles on Public Lands pertain to lands under custody of the Secretaries of Agriculture, Defense, and Interior (except for Indian lands) and certain lands under the custody of the Tennessee Valley Authority.

I. LEGAL CONSIDERATIONS

Section 9 of the Endangered Species Act (ESA) prohibits any person subject to the jurisdiction of the United States from harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting listed wildlife species. It is also unlawful to attempt such acts, solicit another to commit such acts, or cause such acts to be committed. A "person" is defined in Section 3 to mean "an individual, corporation, partnership, trust, association, or any other private entity; or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State, municipality, or political subdivision of a State, or of any foreign government; any State, municipality, or political subdivision of a State; or any other entity subject to the jurisdiction of the United States." Regulations implementing the ESA (50 CFR 17.3) further define "harm" to include significant habitat modification or degradation that results in the killing or injury of wildlife by significantly impairing essential behavioral patterns including breeding, feeding, or sheltering. "Harass" means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Penalties for violations of Section 9 are provided in Section 11 of the ESA; for threatened species, these penalties include fines of up to $25,000, imprisonment for not more than six months, or both.

Section 10 of the ESA and related regulations provide for permits that may be granted to authorize acts prohibited under Section 9, for scientific purposes or to enhance the propagation or survival of a listed species. States that have Cooperative Agreements under Section 6 of the ESA, may provide written authorization for take that occurs in the course of implementing conservation programs. For example, State agencies have authorized certain biologists to construct predator exclosures for piping plovers. It is also legal for employees or designated agents of certain Federal or State agencies to take listed species without a permit, if the action is necessary to aid sick, injured, or orphaned animals or to salvage or dispose of a dead specimen.

Section 10 also allows permits to be issued for take that is "incidental to, and not the purpose of, carrying out an otherwise lawful activity" if the Service determines that certain conditions have been met. An applicant for an incidental take permit must prepare a conservation plan that specifies the impacts of the take, steps the applicant will take to minimize and mitigate the impacts, funding that will be available to implement these steps, alternative actions to the take that the applicant considered, and the reasons why such alternatives are not being utilized.

Section 7 of the ESA may be pertinent to beach managers and landowners in situations that have a Federal nexus. Section 7 requires Federal agencies to consult with the Service (or National Marine Fisheries Service for marine species) prior to authorizing, funding, or carrying out activities that may affect listed species. Section 7 also requires that these agencies use their authorities to further the conservation of listed species. Section 7 obligations have caused Federal land management agencies to implement piping plover protection measures that go beyond those required to avoid take, for example by conducting research on threats to piping plovers. Other examples of Federal activities that may affect piping plovers along the Atlantic Coast, thereby triggering Section 7 consultation, include permits for beach nourishment or disposal of dredged material (U.S. Army Corps of Engineers) and funding of beach restoration projects (Federal Emergency Management Authority).

Piping plovers, as well as other migratory birds such as least terns, common terns, American oystercatchers, laughing gulls, herring gulls, and great black-blacked gulls, their nests, and eggs are also protected under the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712). Prohibited acts include pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting, or attempting such conduct. Violators may be fined up to $5000 and/or imprisoned for up to six months.

Almost all States within the breeding range of the Atlantic Coast piping plover population list the species as State threatened or endangered (Northeast Nongame Technical Committee 1993). Various laws and regulations may protect State-listed species from take, but the Service has not ascertained the adequacy of the guidelines presented in this document to meet the requirements of any State law.

II. LIFE HISTORY AND THREATS FROM HUMAN DISTURBANCE

Piping plovers are small, sand-colored shorebirds that nest on sandy, coastal beaches from South Carolina to Newfoundland. Since 1986, the Atlantic Coast population has been protected as a threatened species under provisions of the U.S. Endangered Species Act of 1973 (U.S. Fish and Wildlife Service 1985). The U.S. portion of the population was estimated at 875 pairs in 1993 (U.S. Fish and Wildlife Service 1993). Many characteristics of piping plovers contribute to their susceptibility to take due to human beach activities.

LIFE HISTORY

Piping plovers begin returning to their Atlantic Coast nesting beaches in mid-March (Coutu et al. 1990, Cross 1990, Goldin 1990, MacIvor 1990, Hake 1993). Males establish and defend territories and court females (Cairns 1982). Eggs may be present on the beach from mid-April through late July. Clutch size is generally four eggs, and the incubation period[2] usually lasts for 27-28 days. Piping plovers fledge only a single brood per season, but may renest several times if previous nests are lost. Chicks are precocial[3] (Wilcox 1959, Cairns 1982). They may move hundreds of yards from the nest site during their first week of life (see Table 1, Summary of Chick Mobility Data). Chicks remain together with one or both parents until they fledge (are able to fly) at 25 to 35 days of age. Depending on date of hatching, flightless chicks may be present from mid-May until late August, although most fledge by the end of July (Patterson 1988, Goldin 1990, MacIvor 1990, Howard et al. 1993).

Piping plover nests are situated above the high tide line on coastal beaches, sand flats at the ends of sandspits and barrier islands, gently sloping foredunes, blowout areas behind primary dunes, and washover areas cut into or between dunes. They may also nest on areas where suitable dredge material has been deposited. Nest sites are shallow scraped depressions in substrates ranging from fine grained sand to mixtures of sand and pebbles, shells or cobble (Bent 1929, Burger 1987a, Cairns 1982, Patterson 1988, Flemming et al. 1990, MacIvor 1990, Strauss 1990).

Nests are usually found in areas with little or no vegetation although, on occasion, piping plovers will nest under stands of American beachgrass (Ammophila breviligulata) or other vegetation (Patterson 1988, Flemming et al. 1990, MacIvor 1990). Plover nests may be very difficult to detect, especially during the 6-7 day egg-laying phase when the birds generally do not incubate (Goldin 1994).

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[2] "Incubation" refers to adult birds sitting on eggs, to maintain them at a favorable temperature for embryo development.

[3] "Precocial" birds are mobile and capable of foraging for themselves within several hours of hatching.

Plover foods consist of invertebrates such as marine worms, fly larvae, beetles, crustaceans or mollusks (Bent 1929, Cairns 1977, Nicholls 1989). Feeding areas include intertidal portions of ocean beaches, washover areas, mudflats, sandflats, wrack lines[4], and shorelines of coastal ponds, lagoons or salt marshes (Gibbs 1986, Coutu et al. 1990, Hoopes et al. 1992, Loegering 1992, Goldin 1993). Studies have shown that the relative importance of various feeding habitat types may vary by site (Gibbs 1986, Coutu et al. 1990, McConnaughey et al. 1990, Loegering 1992, Goldin 1993, Hoopes 1993) and by stage in the breeding cycle (Cross 1990). Adults and chicks on a given site may use different feeding habitats in varying proportion (Goldin et al. 1990). Feeding activities of chicks may be particularly important to their survival. Cairns (1977) found that piping plover chicks typically tripled their weight during the first two weeks post-hatching; chicks that failed to achieve at least 60% of this weight gain by day 12 were unlikely to survive. During courtship, nesting, and brood rearing, feeding territories are generally contiguous to nesting territories (Cairns 1977), although instances where brood-rearing areas are widely separated from nesting territories are not uncommon (see Table 1). Feeding activities of both adults and chicks may occur during all hours of the day and night (Burger 1993) and at all stages in the tidal cycle (Goldin 1993, Hoopes 1993).

THREATS FROM NONMOTORIZED BEACH ACTIVITIES

Sandy beaches that provide nesting habitat for piping plovers are also attractive recreational habitats for people and their pets. Nonmotorized recreational activities can be a source of both direct mortality and harassment of piping plovers. Pedestrians on beaches may crush eggs (Burger 1987b, Hill 1988, Shaffer and Laporte 1992, Cape Cod National Seashore 1993, Collazo et al. 1994). Unleashed dogs may chase plovers (McConnaughey et al. 1990), destroy nests (Hoopes et al. 1992), and kill chicks (Cairns and McLaren 1980).

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[4] Wrack is organic material including seaweed, seashells, driftwood and other materials deposited on beaches by tidal action.

Pedestrians may flush incubating plovers from nests (see Table 2, Summary of Data on Distances at Which Plovers React to Disturbance), exposing eggs to avian predators or causing excessive cooling or heating of eggs. Repeated exposure of shorebird eggs on hot days may cause overheating, killing the embryos (Bergstrom 1991). Excessive cooling may kill embryos or retard their development, delaying hatching dates (Welty 1982). Pedestrians can also displace unfledged chicks (Strauss 1990, Burger 1991, Hoopes et al. 1992, Loegering 1992, Goldin 1993). Fireworks are highly disturbing to piping plovers (Howard et al. 1993). Plovers are particularly intolerant of kites, compared with pedestrians, dogs, and vehicles; biologists believe this may be because plovers perceive kites as potential avian predators (Hoopes et al. 1992).

THREATS FROM MOTOR VEHICLES

Unrestricted use of motorized vehicles on beaches is a serious threat to piping plovers and their habitats. Vehicles can crush eggs (Wilcox 1959; Tull 1984; Burger 1987b; Patterson et al. 1991; United States of America v. Breezy Point Cooperative, Inc., U.S. District Court, Eastern District of New York, Civil Action No. CV-90-2542, 1991; Shaffer and Laporte 1992), adults, and chicks. In Massachusetts and New York, biologists documented 14 incidents in which 18 chicks and 2 adults were killed by vehicles between 1989 and 1993 (Melvin et al. 1994). Goldin (1993) compiled records of 34 chick mortalities (30 on the Atlantic Coast and 4 on the Northern Great Plains) due to vehicles. Many biologists that monitor and manage piping plovers believe that many more chicks are killed by vehicles than are found and reported (Melvin et al. 1994). Beaches used by vehicles during nesting and brood-rearing periods generally have fewer breeding plovers than available nesting and feeding habitat can support. In contrast, plover abundance and productivity has increased on beaches where vehicle restrictions during chick- rearing periods have been combined with protection of nests from predators (Goldin 1993; S. Melvin, pers. comm., 1993).

Typical behaviors of piping plover chicks increase their vulnerability to vehicles. Chicks frequently move between the upper berm or foredune and feeding habitats in the wrack line and intertidal zone. These movements place chicks in the paths of vehicles driving along the berm or through the intertidal zone. Chicks stand in, walk, and run along tire ruts, and sometimes have difficulty crossing deep ruts or climbing out of them (Eddings et al. 1990, Strauss 1990, Howard et al. 1993). Chicks sometimes stand motionless or crouch as vehicles pass by, or do not move quickly enough to get out of the way (Tull 1984, Hoopes et al. 1992, Goldin 1993). Wire fencing

placed around nests to deter predators (Rimmer and Deblinger 1990, Melvin et al. 1992) is ineffective in protecting chicks from vehicles because chicks typically leave the nest within a day after hatching and move extensively along the beach to feed (see Table 1).

Vehicles may also significantly degrade piping plover habitat or disrupt normal behavior patterns. They may harm or harass plovers by crushing wrack into the sand and making it unavailable as cover or a foraging substrate, by creating ruts that may trap or impede movements of chicks, and by preventing plovers from using habitat that is otherwise suitable (MacIvor 1990, Strauss 1990, Hoopes et al. 1992, Goldin 1993).

III. GUIDELINES FOR PROTECTING PIPING PLOVERS FROM RECREATIONAL DISTURBANCE

The Service recommends the following protection measures to prevent direct mortality or harassment of piping plovers, their eggs, and chicks.

MANAGEMENT OF NONMOTORIZED RECREATIONAL USES

On beaches where pedestrians, joggers, sun-bathers, picnickers, fishermen, boaters, horseback riders, or other recreational users are present in numbers that could harm or disturb incubating plovers, their eggs, or chicks, areas of at least 50 meter-radius around nests above the high tide line should be delineated with warning signs and symbolic fencing[5]. Only persons engaged in rare species monitoring, management, or research activities should enter posted areas. These areas should remain fenced as long as viable eggs or unfledged chicks are present. Fencing is intended to prevent accidental crushing of nests and repeated flushing of incubating adults, and to provide an area where chicks can rest and seek shelter when large numbers of people are on the beach.

Available data indicate that a 50 meter buffer distance around nests will be adequate to prevent harassment of the majority of incubating piping plovers. However, fencing around nests should be expanded in cases where the standard 50 meter-radius is inadequate to protect incubating adults or unfledged chicks from harm or disturbance. Data from various sites distributed across the

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[5] "Symbolic fencing" refers to one or two strands of light-weight string, tied between posts to delineate areas where pedestrians and vehicles should not enter.

plover's Atlantic Coast range indicates that larger buffers may be needed in some locations (see Table 2). This may include situations where plovers are especially intolerant of human presence, or where a 50 meter-radius area provides insufficient escape cover or alternative foraging opportunities for plover chicks.[6]

In cases where the nest is located less than 50 meters above the high tide line, fencing should be situated at the high tide line, and a qualified biologist should monitor responses of the birds to passersby, documenting his/her observations in clearly recorded field notes. Providing that birds are not exhibiting signs of disturbance, this smaller buffer may be maintained in such cases.

On portions of beaches that receive heavy human use, areas where territorial plovers are observed should be symbolically fenced to prevent disruption of territorial displays and courtship. Since nests can be difficult to locate, especially during egg-laying, this will also prevent accidental crushing of undetected nests. If nests are discovered outside fenced areas, fencing should be extended to create a sufficient buffer to prevent disturbance to incubating adults, eggs, or unfledged chicks.

Pets should be leashed and under control of their owners at all times from April 1 to August 31 on beaches where piping plovers are present or have traditionally nested. Pets should be prohibited on these beaches from April 1 through August 31 if, based on observations and experience, pet owners fail to keep pets leashed and under control.

Kite flying should be prohibited within 200 meters of nesting or territorial adult or unfledged juvenile piping plovers between April 1 and August 31. Fireworks should be prohibited on beaches where plovers nest from April 1 until all chicks are fledged. (See the Service's February 4, 1997 Guidelines for Managing Fireworks in the Vicinity of Piping Plovers and Seabeach Amaranth on the U.S. Atlantic Coast.)

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[6] For example, on the basis of data from an intensive three year study that showed that plovers on Assateague Island in Maryland flush from nests at greater distances than those elsewhere (Loegering 1992), the Assateague Island National Seashore established 200 meter buffers zones around most nest sites and primary foraging areas (Assateague Island National Seashore 1993). Following a precipitous drop in numbers of nesting plover pairs in Delaware in the late 1980's, that State adopted a Piping Plover Management Plan that provided 100 yard buffers around nests on State park lands and included intertidal areas (Delaware Department of Natural Resources and Environmental Control 1990).

MOTOR VEHICLE MANAGEMENT

The Service recommends the following minimum protection measures to prevent direct mortality or harassment of piping plovers, their eggs, and chicks on beaches where vehicles are permitted. Since restrictions to protect unfledged chicks often impede vehicle access along a barrier spit, a number of management options affecting the timing and size of vehicle closures are presented here. Some of these options are contingent on implementation of intensive plover monitoring and management plans by qualified biologists. It is recommended that landowners seek concurrence with such monitoring plans from either the Service or the State wildlife agency.

Protection of Nests

All suitable piping plover nesting habitat should be identified by a qualified biologist and delineated with posts and warning signs or symbolic fencing on or before April 1 each year. All vehicular access into or through posted nesting habitat should be prohibited. However, prior to hatching, vehicles may pass by such areas along designated vehicle corridors established along the outside edge of plover nesting habitat. Vehicles may also park outside delineated nesting habitat, if beach width and configuration and tidal conditions allow. Vehicle corridors or parking areas should be moved, constricted, or temporarily closed if territorial, courting, or nesting plovers are disturbed by passing or parked vehicles, or if disturbance is anticipated because of unusual tides or expected increases in vehicle use during weekends, holidays, or special events.

If data from several years of plover monitoring suggests that significantly more habitat is available than the local plover population can occupy, some suitable habitat may be left unposted if the following conditions are met:

1. The Service OR a State wildlife agency that is party to an agreement under Section 6 of the ESA provides written concurrence with a plan that:

A. Estimates the number of pairs likely to nest on the site based on the past monitoring and regional population trends.

AND

B. Delineates the habitat that will be posted or fenced prior to April 1 to assure a high probability that territorial plovers will select protected areas in which to court and nest. Sites where nesting or courting plovers were observed during the last three seasons as well as other habitat deemed most likely to be pioneered by plovers should be included in the posted and/or fenced area.

AND

C. Provides for monitoring of piping plovers on the beach by a qualified biologist(s). Generally, the frequency of monitoring should be not less than twice per week prior to May 1 and not less than three times per week thereafter. Monitoring should occur daily whenever moderate to large numbers of vehicles are on the beach. Monitors should document locations of territorial or courting plovers, nest locations, and observations of any reactions of incubating birds to pedestrian or vehicular disturbance.

AND

2. All unposted sites are posted immediately upon detection of territorial plovers.

Protection of Chicks

Sections of beaches where unfledged piping plover chicks are present should be temporarily closed to all vehicles not deemed essential. (See the provisions for essential vehicles below.) Areas where vehicles are prohibited should include all dune, beach, and intertidal habitat within the chicks' foraging range, to be determined by either of the following methods:

1. The vehicle free area should extend 1000 meters on each side of a line drawn through the nest site and perpendicular to the long axis of the beach. The resulting 2000 meter-wide area of protected habitat for plover chicks should extend from the ocean-side low water line to the bay-side low water line or to the farthest extent of dune habitat if no bay-side intertidal habitat exists. However, vehicles may be allowed to pass through portions of the protected area that are considered inaccessible to plover chicks because of steep topography, dense vegetation, or other naturally-occurring obstacles.

OR

2. The Service OR a State wildlife agency that is party to an agreement under Section 6 of the ESA provides written concurrence with a plan that:

A. Provides for monitoring of all broods during the chick-rearing phase of the breeding season and specifies the frequency of monitoring.

AND

B. Specifies the minimum size of vehicle-free areas to be established in the vicinity of unfledged broods based on the mobility of broods observed on the site in past years and on the frequency of monitoring. Unless substantial data from past years show that broods on a site stay very close to their nest locations, vehicle-free areas should extend at least 200 meters on each side of the nest site during the first week following hatching. The size and location of the protected area should be adjusted in response to the observed mobility of the brood, but in no case should it be reduced to less than 100 meters on each side of the brood. In some cases, highly mobile broods may require protected areas up to 1000 meters, even where they are intensively monitored. Protected areas should extend from the ocean-side low water line to the bay-side low water line or to the farthest extent of dune habitat if no bay-side intertidal habitat exists. However, vehicles may be allowed to pass through portions of the protected area that are considered inaccessible to plover chicks because of steep topography, dense vegetation, or other naturally-occurring obstacles. In a few cases, where several years of data documents that piping plovers on a particular site feed in only certain habitat types, the Service or the State wildlife management agency may provide written concurrence that vehicles pose no danger to plovers in other specified habitats on that site.

Timing of Vehicle Restrictions in Chick Habitat

Restrictions on use of vehicles in areas where unfledged plover chicks are present should begin on or before the date that hatching begins and continue until chicks have fledged. For purposes of vehicle management, plover chicks are considered fledged at 35 days of age or when observed in sustained flight for at least 15 meters, whichever occurs first.

When piping plover nests are found before the last egg is laid, restrictions on vehicles should begin on the 26th day after the last egg is laid. This assumes an average incubation period of 27 days, and provides a 1 day margin of error.

When plover nests are found after the last egg has been laid, making it impossible to predict hatch date, restrictions on vehicles should begin on a date determined by one of the following scenarios:

1) With intensive monitoring: If the nest is monitored at least twice per day, at dawn and dusk (before 0600 hrs and after 1900 hrs) by a qualified biologist, vehicle use may continue until hatching begins. Nests should be monitored at dawn and dusk to minimize the time that hatching may go undetected if it occurs after dark. Whenever possible, nests should be monitored from a distance with spotting scope or binoculars to minimize disturbance to incubating plovers.

OR

2) Without intensive monitoring: Restrictions should begin on May 15 (the earliest probable hatch date). If the nest is discovered after May 15, then restrictions should start immediately.

If hatching occurs earlier than expected, or chicks are discovered from an unreported nest, restrictions on vehicles should begin immediately.

If ruts are present that are deep enough to restrict movements of plover chicks, then restrictions on vehicles should begin at least 5 days prior to the anticipated hatching date of plover nests. If a plover nest is found with a complete clutch, precluding estimation of hatching date, and deep ruts have been created that could reasonably be expected to impede chick movements, then restrictions on vehicles should begin immediately.

Essential Vehicles

Because it is impossible to completely eliminate the possibility that a vehicle will accidently crush an unfledged plover chicks, use of vehicles in the vicinity of broods should be avoided whenever possible. However, the Service recognizes that life-threatening situations on the beach may require emergency vehicle response. Furthermore, some "essential vehicles" may be required to provide for safety of pedestrian recreationists, law enforcement, maintenance of public property, or access to private dwellings not otherwise accessible. On large beaches, maintaining the frequency of plover monitoring required to minimize the size and duration of vehicle closures may necessitate the use of vehicles by plover monitors.

Essential vehicles should only travel on sections of beaches where unfledged plover chicks are present if such travel is absolutely necessary and no other reasonable travel routes are available. All steps should be taken to minimize number of trips by essential vehicles through chick habitat areas. Homeowners should consider other means of access, eg. by foot, water, or shuttle services, during periods when chicks are present.

The following procedures should be followed to minimize the probability that chicks will be crushed by essential (non-emergency) vehicles:

1. Essential vehicles should travel through chick habitat areas only during daylight hours, and should be guided by a qualified monitor who has first determined the location of all unfledged plover chicks.

2. Speed of vehicles should not exceed five miles per hour.

3. Use of open 4-wheel motorized all-terrain vehicles (ATVs) or non-motorized all- terrain bicycles is recommended whenever possible for monitoring and law enforcement because of the improved visibility afforded operators.

4. A log should be maintained by the beach manager of the date, time, vehicle number and operator, and purpose of each trip through areas where unfledged chicks are present. Personnel monitoring plovers should maintain and regularly update a log of the numbers and locations of unfledged plover chicks on each beach. Drivers of essential vehicles should review the log each day to determine the most recent number and location of unfledged chicks.

Essential vehicles should avoid driving on the wrack line, and travel should be infrequent enough to avoid creating deep ruts that could impede chick movements. If essential vehicles are creating ruts that could impede chick movements, use of essential vehicles should be further reduced and, if necessary, restricted to emergency vehicles only.

SITE-SPECIFIC MANAGEMENT GUIDANCE

The guidelines provided in this document are based on an extensive review of the scientific literature and are intended to cover the vast majority of situations likely to be encountered on piping plover nesting sites along the U.S. Atlantic Coast. However, the Service recognizes that site-specific conditions may lead to anomalous situations in which departures from this guidance may be safely implemented. The Service recommends that landowners who believe such situations exist on their lands contact either the Service or the State wildlife agency and, if appropriate, arrange for an on-site review. Written documentation of agreements regarding departures from this guidance is recommended.

In some unusual circumstances, Service or State biologists may recognize situations where this guidance provides insufficient protection for piping plovers or their nests. In such a case, the Service or the State wildlife agency may provide written notice to the landowner describing additional measures recommended to prevent take of piping plovers on that site.

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Table 1. Summary of Chick Mobility Data

Source	Location	Data
Patterson 1988 (p.40)	Maryland and Virginia	18 of 38 broods moved to feeding areas more than 100 meters from their nests; 5 broods moved more than 600 meters (distance measured parallel to wrackline).
Cross 1989 (p.23)	Virginia	At three sites, observers relocated broods at mean distances from their nests of 153 m +/- 97m (44 observations, 14 broods), 32 m +/-7 m (8 observations, 3 broods), and 492 m +/-281 m (12 observations, 4 broods).
Coutu et al. 1990 (p.12)	North Carolina	Observations of 11 broods averaged 212 m from their nests; 3 broods moved 400-725 m from nest sites.
Strauss 1990 (p.33)	Massachusetts	10 chicks moved more than 200 m during first 5 days post-hatch while 19 chicks moved less than 200 meters during same interval.
Loegering 1992 (p.72)	Maryland	Distances broods moved from nests during first 5 days post-hatch averaged 195 m in Bay (n=10), 141 m in Interior habitat (n=36), and 131 m in Ocean habitat (n=41). By 21 days, movement in each habitat had, respectively, increased to 850 m (n=1), 464 m (n=10), (n=69). One brood moved more than 1000 m from its nest.
Melvin et al. 1994	Massachusetts and New York	In 14 incidents in which 18 chicks were killed by vehicles, chicks were run over $\leq$ 10 m to $\leq$ 900 m from their nests. In 7 of these instances, mortality occurred $\geq$ 200 m from the nest.

Table 2. Summary of Data on Distances at which Piping Plovers React to Disturbance

Source	Location	Data
Flushing of Incubating Birds by Pedestrians		
Flemming et al. 1988 (p.326)	Nova Scotia	Adults usually flushed from the nests at distances <40 m; however, great variation existed and reaction distances as great as 210 m were observed.
Cross 1990 (p.47)	Virginia	Mean flushing distances in each of two years were 47 m (n=181, range = 5 m to 300 m) and 25 m (n=214, range = 2 m to100 m).
Loegering 1992 (p.61)	Maryland	Flushing distances averaged 78 m (n=43); range was 20 m to 174 m. Recommended use of 225 m disturbance buffers on his site.
Cross and Terwilliger 1993	Virginia	Mean flushing distance for all years on all sites (Virginia plover sites, 1986-91) was 63 m (n=201, SD=31, range = 7 m to 200 m). Differences among years were not significant, but differences among sites were.
Hoopes 1993 (p.72)	Massachusetts	Mean flushing distance for incubating plovers was 24 m (n=31).
Disturbance to Non-incubating Birds		
Hoopes 1993 (p.89)	Massachusetts	Mean response distance (all ages, all behaviors) was 23 m for pedestrian disturbances (range = 10 m to 60 m), 40 m for vehicles (range = 30 m to 70 m), 46 m for dogs/pets (range = 20 m to 100 m), and 85 m for kites (range = 60 m to 120 m).
Goldin 1993b (p.74)	New York	Average flushing distance for adult and juvenile plovers was 18.7 m for pedestrian disturbances (n=585), 19.5 m for joggers (n=183), and 20.4 m for vehicles (n=111). Pedestrians caused chicks to flush at an average distance of 20.7 m (n=175), joggers at 32.3 m (n=37), and vehicles at 19.3 m (n=7). Tolerance of individual birds varied; one chick moved 260 m in direct response to 20 disturbances in 1 hour.

APPENDIX B

U.S. Fish and Wildlife Service Guidelines for Managing Fireworks in the Vicinity of Piping Plovers and Seabeach Amaranth on the U.S. Atlantic Coast

GUIDELINES FOR MANAGING FIREWORKS IN THE VICINITY OF PIPING PLOVERS AND SEABEACH AMARANTH ON THE U.S. ATLANTIC COAST

February 4, 1997

The following is provided as guidance to Federal agencies, landowners, commercial fireworks companies, and fireworks event sponsors seeking to avoid adverse effects on piping plovers and seabeach amaranth. They are intended to advise Federal agencies that conduct, fund, or authorize fireworks activities regarding the measures needed to avoid adverse effects on listed species, thereby averting the need for formal consultation under Section 7 of the Endangered Species Act (ESA). These practices also constitute the U.S. Fish and Wildlife Service's (Services's) best professional advice to non-Federal entities on avoiding take of piping plovers under Section 9 of the ESA.

These guidelines supplement information about protection of piping plovers from a variety of recreational activities, provided in the Service's April 15, 1994 *Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act*.

Seabeach amaranth, a threatened plant species protected under the Endangered Species Act (ESA), occurred historically along coastal beaches from southern Massachusetts to South Carolina. At the present time it is found only on Long Island, New York; North Carolina; and South Carolina. Section 7 of the ESA requires Federal agencies to consult with the Service prior to authorizing, funding, or carrying out activities that directly or indirectly affect listed plants; this requirement is applicable to permits related to fireworks events that are issued by the U.S. Coast Guard.

Potential Impacts Related to Fireworks Displays

Direct Impacts

Fireworks are highly disturbing to piping plovers. Fireworks early in the breeding season may cause plovers conducting courtship activities to abandon their territories. Direct injury can be caused by the explosions or debris, and piping plovers and terns (which often nest adjacent to or near plovers) will often abandon their nests and broods during fireworks displays, exposing eggs and chicks to weather and predators. If a flightless chick were to become permanently separated from its parents during the confusion, mortality would be almost certain.

Several situations where fireworks caused severe adverse effects on least terns, colonial nesting birds often found in the vicinity of piping plovers, serve as indicators of the effects that pyrotechnics can exert on beach-nesting birds. An August 1993 fireworks display in New Jersey caused permanent abandonment of a least tern colony located more than 250 m away, and a 1994 New Jersey fireworks display caused temporary abandonment and displays of distress by terns

within a colony located more than 3/4 mile away. Incidents in New York where piping plovers were disturbed by fireworks also caused prolonged disturbance to least terns and black skimmers nesting nearby.

Seabeach amaranth can be directly affected by launch activities if they occur in areas where the plants may be crushed or damaged by launch personnel or equipment.

Indirect Impacts

In addition to adverse effects from the noise and lights of the pyrotechnics, commercial fireworks displays often draw large crowds that may pose threats to nearby plovers. These crowds may be situated at some distance from the actual launch site, for example, across an inlet. Potential indirect impacts that may adversely affect piping plovers include: spectators walking through and/or throwing objects (including pyrotechnics) into plover nesting and broodrearing areas; additional off-road vehicle patrols by public safety personnel; increased boat landings by spectators on relatively remote stretches of beach; low-flying aircraft, including helicopter patrols and personal spectator aircraft; additional trash (which attracts predators). Signs and symbolic fences that are adequate for the purpose of alerting daytime beach users to locations of plover breeding areas are often insufficient to prevent accidental entry by fireworks spectators wandering in the dark.

Potential indirect adverse effects on seabeach amaranth include trampling or crushing of unprotected plants by pedestrian or vehicular traffic on the beach.

Measures for Avoiding and Monitoring Direct and Indirect Impacts of Fireworks Events

Direct Impacts

Fireworks displays including launch areas and debris fallout areas should be located to avoid disturbance of breeding piping plovers. In general, the Service recommends that the launch site be located a minimum of 3/4 mile from the nearest plover nesting and/or foraging area. Access routes for personnel deploying the fireworks and other public safety personnel (including fire prevention/suppression and law enforcement officers) should conform with the vehicle management recommendations contained in the Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act. Launch sites should also be located to prevent trampling any seabeach amaranth plants.

Indirect Impacts

Event sponsors should plan and implement measures to assure that spectators will not walk through and/or throw objects into plover nesting and brood-rearing areas. Sufficient law enforcement and other personnel must also be on-site during these events to enforce plover protection measures and prevent use of illegal fireworks in the vicinity of the birds.

1. Plover habitats in the vicinity of where spectators may congregate should be intensively surveyed by qualified biologists[1] for at least four days prior to the event to locate nests, adult plovers, chicks, and/or post-fledged juveniles. For events prior to July 1, surveyors should also search for territorial and/or courting adults that have not yet established nests or may be preparing to re-nest. In New York, potential habitat for seabeach amaranth should be surveyed to locate any seabeach amaranth plants.

2. Plover habitats should be symbolically fenced in accordance with the Service's Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act (see Section on Management of Nonmotorized Recreational Uses). Seabeach amaranth plants should be symbolically fenced to provide a minimum 3 meter buffer zone around individual plants or groups of plants.

3. Additional protection measures recommended to avoid impacts that may occur when the large crowds are drawn to the beach at night include[2]:

   a. Close parking lots and beach access points in the vicinity of breeding plovers.

   b. Increase the size of symbolically fenced areas around plover nesting areas to provide extra buffers between birds and pedestrians that may be on the beach. The size of buffers should be appropriate for the size of the anticipated crowd; for large crowds, buffers should be expanded from the standard 50 meters to a total of 100 meters from established nests.

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[1] State wildlife agencies and private environmental groups often conduct plover monitoring activities and can be consulted for available information about plover breeding locations. However, intensity of surveys needed to avoid adverse effects from fireworks events will often exceed those routinely conducted by these wildlife agencies/organizations. Arrangements and commitments for added surveys for these events are the responsibility of the permitting agencies and/or event sponsors. It is recommended that these arrangements be made well in advance of the potential event, due to limited availability of qualified personnel.

[2] For extremely large fireworks events, additional protection measures may be needed, including: issuing air traffic advisory for all aircraft to remain >1000' above sensitive areas; issuing mariners advisory telling boaters not to land in sensitive areas; boat patrols; extensive advanced publicity advising spectators where they should go to watch the fireworks and about closed areas; training about protection needs of rare plants and/or animals for law enforcement personnel.

c. Increase the visibility of fencing using reflectorized tape or by substituting snowfences, plastic orange highway construction fences, or wire mesh fences for string fencing, as string fences are very difficult to see at night. Snowfences and highway construction fences should be removed the next day if there is any chance that they will impede chick movements. d. Fence and post foraging territories of unfledged chicks, as delineated by a qualified biologist, especially in areas where large crowds are anticipated and/or if the day of the event is especially hot (since heat often deters chick foraging during the daytime, increasing the birds' reliance on evening feeding).

e. Provide adequate numbers (consistent with anticipated numbers of spectators) of monitors and law enforcement personnel in the vicinity of plover breeding areas or seabeach amaranth locations to patrol fenced areas from the time when spectators begin congregating on the beach until the crowd disperses after the event. Assure that monitors and enforcement personnel receive accurate current information about the locations of threatened birds and plants so that they can minimize any disruptions from their own activities.

f. Prohibit all pets on the beach during the event and ensure compliance with this prohibition.

4. Remove any trash or litter from the beach immediately following the event. However, any trash located within fenced areas should be left until daylight and then removed by or under the supervision of plover monitors. Further, vehicles should not be used at night to remove trash within 100 meters of unfledged plover chicks.

5. In order to gauge the effectiveness of the measures 3 and 4, the following data should be collected:

   a. Locations and status of all adult plovers, nests, and chicks within 1/4 mile of spectator viewing areas should be determined by a qualified biologist on the day of the event and again on the following day.

   b. Counts of human and dog tracks that intersect the perimeter of symbolically fenced areas before and after the event.

   c. Counts of any persons actually observed inside symbolically fenced areas during the event.

   d. Counts of any instances of illegal pyrotechnics used on the beach during the event.

   e. Counts of trash/litter items inside symbolically fenced areas before and after the event. For very large areas or areas that have substantial amounts of trash before the event, trash counts may be conducted in sample plots.

f. Count of breaks in symbolic fences.

6. Except when responding to an actual emergency situation, all law enforcement, fire department, public works, fireworks deployment, and other vehicles in the vicinity of breeding plovers should only be operated in conformance with the Service's *Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act* (see discussion of Essential Vehicles).

APPENDIX C

Excerpts from the New Jersey Coastal Zone Management Rules

N.J.A.C. 7:7
COASTAL ZONE MANAGEMENT RULES
Statutory authority:
N.J.S.A. 13:19-1 et seq.; 12:3-1 et seq., 12:5-3; 13:9A-1 et seq.
Date last amended:
September 5, 2018

Referenced Sections:

7:7 Subchapter 1. GENERAL PROVISIONS
7:7-1.1 Purpose
7:7-1.2 Scope

7:7 Subchapter 9. SPECIAL AREAS
7:7-9.16 Dunes
7:7-9.17 Overwash areas
7:7-9.22 Beaches
7:7-9.36 Endangered or threatened wildlife or plant species habitats
7:7-9.37 Critical wildlife habitats
7:7-9.38 Public open space

7:7 Subchapter 10. STANDARDS FOR BEACH AND DUNE ACTIVITIES
7:7-10.1 Purpose and scope
7:7-10.2 Standards applicable to routine beach maintenance
7:7-10.3 Standards applicable to emergency post-storm beach restoration
7:7-10.4 Standards applicable to dune creation and maintenance
7:7-10.5 Standards applicable to the construction of boardwalks

7:7 Subchapter 11. STANDARDS FOR CONDUCTING AND REPORTING THE RESULTS OF AN ENDANGERED OR THREATENED WILDLIFE OR PLANT SPECIES HABITAT IMPACT ASSESSMENT AND/OR ENDANGERED OR THREATENED WILDLIFE SPECIES HABITAT EVALUATION
7:7-11.1 Purpose and scope
7:7-11.2 Standards for conducting endangered or threatened wildlife or plant species habitat impact assessments
7:7-11.3 Standards for conducting endangered or threatened wildlife species habitat evaluation
7:7-11.4 Standards for reporting the results of impact assessments and habitat evaluations

SUBCHAPTER 1. GENERAL PROVISIONS

7:7-1.1 Purpose

(a) This chapter establishes the rules of the Department regarding the use and development of coastal resources. The rules are used in reviewing applications for coastal permits under the Coastal Area Facility Review Act, N.J.S.A. 13:19-1 et seq. (CAFRA permits), the Wetlands Act of 1970, N.J.S.A 13:9A-1 et seq. (coastal wetlands permits), and the Waterfront Development Law, N.J.S.A 12:5-3 (waterfront development permits) The rules are also used in the review of water quality certificates subject to Section 401 of the Federal Clean Water Act, 33 U.S.C § 1341, and Federal consistency determinations under Section 307 of the Federal Coastal Zone Management Act, 16 U.S.C. § 1456. The rules also provide a basis for recommendations by the Program to the Tidelands Resource Council on applications for riparian grants, leases, and licenses.

(b) The Department interprets the "public health, safety, and welfare" clause in CAFRA (N.J.S.A. 13: 19-10.f) and the Wetlands Act of 1970 (N.J.S.A 13:9A-4.d) as providing for full consideration of the national interest in the wise use of coastal resources as required under the Federal Coastal Zone Management Act (16 U.S.C. §§ 1451 et seq.).

(c) Both the New Jersey Coastal Management Program and the Coastal Zone Management Rules are founded on the eight broad coastal goals described at (c) 1 through 8 below. The coastal goals express results that the New Jersey Coastal Management Program strives to attain. Each goal is supplemented by related policies that set forth the means to realize that goal. The Coastal Zone Management Rules, including the coastal goals and policies set forth below, are enforceable policies of the New Jersey Coastal Management Program as approved under the Federal Coastal Zone Management Act (16 U.S.C. §§ 1451 et seq.). The New Jersey Coastal Management Program goals and supplemental policies are:

1. Healthy coastal ecosystems.

i. Protect, enhance and restore coastal habitats and their living resources to promote biodiversity, water quality, aesthetics, recreation and healthy coastal ecosystems; and

ii. Manage coastal activities to protect natural resources and the environment;

2. Effective management of ocean and estuarine resources.

i. Develop and implement management measures to attain sustainable recreational and commercial fisheries;

ii. Manage commercial uses to reduce conflict between users and encourage water-dependent uses; and

iii. Administer the safe and environmentally sound use of coastal waters and beaches to protect natural, cultural and aesthetic resources, promote safe navigation, and provide recreational opportunities;

3. Meaningful public access to and use of tidal waterways and their shores.

i. Preserve public trust rights to tidal waterways and their shores;

ii. Preserve and enhance views of the coastal landscape to enrich aesthetic and cultural values and vital communities;

iii. Conserve and increase safe, environmentally sound, and meaningful public access from both the land and water to the tidal waterways and their shores for recreation and aesthetic experiences;

iv. Enhance public access by promoting adequate affordable public facilities and services;

v. Balance diverse uses of tidal waterways and their shores; and

vi. Protect, enhance and promote waterfront parks;

4. Sustained and revitalized water-dependent uses.

i. Encourage, sustain and enhance active port and other water-dependent facilities, and maritime uses;

ii. Encourage the redevelopment of inactive and under-utilized waterfront facilities for port, water-dependent and maritime uses;

iii. Conserve waterfront sites for water-dependent activities; and

iv. Manage dredging in an environmentally sound manner, promote environmentally sound and economically feasible dredged material management practices and preserve historic dredged material placement sites;

5. Coastal open space.

i. Preserve, enhance and restore open space including natural, scenic, historic and ecologically important landscapes that:

(1) Provide opportunities for passive and active recreation;

(2) Protect valuable wildlife and plant habitats and ecosystem health, foster aesthetic and cultural values;

(3) Minimize natural hazards; and

(4) Abate impacts from nonpoint sources of pollution;

ii. Promote and enhance public access to and use of open space where appropriate; and

iii. Promote strategies for the creation of open space;

6. Safe, healthy and well-planned coastal communities and regions.

i. Manage coastal activities and foster well-planned communities and regions that:

(1) Encourage mixed-use redevelopment of distressed waterfront communities including underutilized, abandoned and contaminated sites;

(2) Promote concentrated patterns of development;

(3) Ensure the availability of suitable waterfront areas for water dependent activities;

(4) Sustain coastal economies;

(5) Create vibrant coastal communities and waterfronts;

(6) Conserve water supply;

(7) Protect the natural environment;

(8) Minimize the threat of natural hazards to life and property;

(9) Provide meaningful public access to tidal waterways and their shores; and

(10) Preserve and restore significant historic and cultural resources and aesthetic coastal features;

ii. Maintain, enhance and encourage maritime uses;

iii. Preserve and enhance beach and dune systems and wetlands, and manage natural features to protect the public from natural hazards;

iv. Promote public health, safety and welfare;

v. Promote and implement strategies for the development of hazard mitigation plans; and

vi. Promote and implement strategies that eliminate or reduce risks to human health and the ecosystem from coastal activities;

7. Coordinated coastal decision-making, comprehensive planning and research.

i. Promote the attainment of the New Jersey Coastal Management Program goals by encouraging other government agencies to employ the policies which supplement the goals;

ii. Encourage incorporation of the coastal goals and supplemental policies into State, regional

and municipal land use management, funding and acquisition programs within the coastal zone;

iii. Coordinate cooperative government sponsored and academic coastal research and information dissemination to foster informed decision-making;

iv. Ensure opportunities for public participation in coastal decision-making;

v. Encourage the preparation of comprehensive plans, including:

(1) Land acquisition plans that further the goals and supplemental policies of New Jersey's Coastal Management Program; and

(2) Special area management plans that protect significant natural resources and provide the opportunity for sound coastal dependent economic development; and

8. Coordinated public education and outreach.

i. Coordinate education and outreach activities on coastal issues; and

ii. Encourage coastal related education and participation opportunities for the public.

(d) The coastal land and water areas of New Jersey are diverse. The Coastal Zone Management rules address a wide range of land and water types (locations), current and potential land and water uses, and natural, cultural, social and economic resources in the coastal zone. In developing these rules, balances were struck among various conflicting, competing, and contradictory local, State, and national interests in coastal resources and in uses of coastal locations. This balancing and conflict-reducing approach reflects that coastal management involves consideration of a broad range of concerns in contrast to other resource management programs which are more limited in scope.

(e) The location rules (N.J.A.C 7:7-9 through 14), use rules (N.J.A.C 7:7-15), and resource rules (N.J.A.C 7:7-16) stem from the coastal goals at (c) above. The Department does not expect each proposed use of coastal resources to involve all location rules, use rules, and resource rules. Decision-making on proposed actions involves examining, weighing, and evaluating complex interests using the framework provided by this chapter. The Coastal Zone Management Rules provide a mechanism for integrating professional judgment by Department officials, as well as recommendations and comments by applicants, public agencies, specific interest groups, corporations, and citizens into the coastal decision-making process. In this process, interpretations of terms, such as "prudent," "feasible," "minimal," "practicable," and "maximum extent," as used in a rule or a combination of rules, may vary depending upon the context of the proposed use, location, and design.

7:7-1.2 Scope

(a) This chapter shall apply to actions and decisions by the Department, as described at (d) through (h) below, on uses and development of coastal resources within or affecting the coastal zone, which is described at (b) below.

(b) This chapter shall apply geographically to the New Jersey coastal zone, which comprises:

1. The CAFRA area;

2. Coastal waters, which are any tidal waters of the State and all lands lying thereunder. Coastal waters of the State of New Jersey extend from the mean high water line out to the three-geographical-mile limit of the New Jersey territorial sea, and elsewhere to the interstate boundaries of the States of New York, and Delaware and the Commonwealth of Pennsylvania,

except as provided at (c) below;

3. All lands outside of the CAFRA area extending from the mean high water line of a tidal water body to the first paved public road, railroad, or surveyable property line existing on September 26, 1980, generally parallel to the waterway, provided that the landward boundary of the upland area shall be no less than 100 feet and no more than 500 feet from the mean high water line;

4. All areas containing tidal wetlands; and

5. The Hackensack Meadowlands District as defined by N.J.S.A. 13:17-4.

(c) In accordance with the decree of the United States Supreme Court in State of New Jersey v. State of Delaware, 552 U.S. 597, 623-24 (2008), the State of New Jersey may, under its laws, grant and thereafter exercise governing authority over ordinary and usual riparian rights for the construction, maintenance, and use of wharves and other riparian improvements appurtenant to the eastern shore of the Delaware River within the 12-mile circle and extending outshore of the mean low water mark. The 12-mile circle is the circle the radius of which is 12 miles, and the center of which is the building used prior to 1881 as the courthouse at New Castle, Delaware, the arcs of which are as set forth in the decree of the United States Supreme Court in New Jersey v. Delaware, 295 U.S. 694 (1935).

1. The State of Delaware may, under its laws and subject to New Jersey's authority over riparian rights as stated at (c) above, exercise governing authority over the construction, maintenance, and use of those same wharves and other improvements appurtenant to the eastern shore of the Delaware River within the 12-mile circle and extending outshore of the low-water mark, to the extent that they exceed ordinary and usual riparian uses.

(d) This chapter shall apply to all coastal permits.

(e) This chapter shall apply to decisions on the consistency or compatibility of proposed actions by Federal, State, and local agencies within or affecting the coastal zone, including, but not limited to Federal consistency determinations, determinations of consistency or compatibility under the Federal Coastal Zone Management Act, comments on Draft and Final Environmental Impact Statements prepared under the National Environmental Policy Act, 42 U.S.C. §§ 4321 et seq., and comments on other public and private plans, programs, projects, and policies. This chapter shall also apply to decisions on proposed activities that require a water quality certificate. Requests for water quality certificates shall also be reviewed in accordance with all applicable statutes and regulations administered by the Department including the Surface Water Quality Standards, N.J.A.C. 7:9B.

1. An activity requiring a Federal consistency determination may also require a coastal permit. In this instance, the coastal permit is the Federal consistency determination.

2. An activity requiring a water quality certificate may also require a coastal permit. In this instance, the coastal permit will include the water quality certificate.

3. A water quality certificate not issued in conjunction with a coastal permit shall be valid for five years from the date of issuance or for the duration of the underlying Federal permit (without renewals), whichever period is shorter.

4. A Federal consistency determination or a water quality certificate issued in conjunction with an authorization under a coastal general permit-by-certification or a general permit shall be valid for the duration of that authorization.

5. A Federal consistency determination issued in conjunction with an individual coastal permit shall be valid for the duration of that individual permit.

(f) This chapter shall apply to State aid financial assistance decisions by the Department under the Shore Protection Program and Green Acres Program within the coastal zone, to the extent permissible under existing statutes and regulations.

(g) This chapter shall apply, to the extent statutorily permissible, to Department management actions, including permit decisions, approvals, certifications, conveyances, and compliance activities, in or affecting the coastal zone.

(h) This chapter shall provide the basic policy direction for planning actions undertaken by the Department in the coastal zone as the lead state agency for Coastal Management under Section 306 of the Federal Coastal Zone Management Act.

SUBCHAPTER 9. SPECIAL AREAS

7:7-9.1 Purpose and scope

(a) Special areas are areas that are so naturally valuable, important for human use, hazardous, sensitive to impact, or particular in their planning requirements, as to merit focused attention and special management rules. This subchapter divides special areas into four categories:

1. Special water areas, N.J.A.C. 7:7-9.2 through 9.15, extend landward to the spring high water line or the level of normal flow in non-tidal waters;

2. Special water's edge areas, N.J.A.C.:7-9.16 through 9.30, are divided into three subcategories depending on their location. Special water's edge areas in (a)2i and ii below are found only next to tidal waters, while coastwide special water's edge areas are found adjacent to tidal as well as non-tidal waters;

i. Oceanfront, and Raritan and Delaware Bayfronts, N.J.A.C. 7:7-9.16 through 9.19;

ii. Barrier and bay islands, N.J.A.C. 7:7-9.20 and 9.21; and

iii. Coastwide special water's edge areas, N.J.A.C. 7:7-9.22 through 9.30;

3. Special land areas, N.J.A.C. 7:7-9.31 through 9.33, generally are landward of the special water's edge areas; and

4. Coastwide special areas, N.J.A.C. 7:7-9.34 through 9.47, may include special water areas, special water's edge areas, or special land areas.

(b) All land or water areas, except certain special water's edge areas, are subject to either the general land area rules at N.J.A.C. 7:7-13 or the general water area rules at N.J.A.C. 7:7-12. In addition, certain land or water areas are subject to one or more special area rules. All special water's edge areas are subject to one or more special area rules. In some cases, a portion of a site is subject to both general area rules and special area rules. Where the applicable general area rules and special area rules conflict, the special area rules shall govern.

7:7-9.16 Dunes

(a) A dune is a wind or wave deposited or man-made formation of sand (mound or ridge), that lies generally parallel to, and landward of, the beach and the foot of the most inland dune slope. "Dune" includes the foredune, secondary or tertiary dune ridges and mounds, and all

landward dune ridges and mounds, as well as man-made dunes, where they exist

1. Formation of sand immediately adjacent to beaches that are stabilized by retaining structures, and/or snow fences, planted vegetation, and other measures are considered to be dunes regardless of the degree of modification of the dune by wind or wave action or disturbance by development.

2. A small mound of loose, windblown sand found in a street or on a part of a structure as a result of storm activity is not considered to be a "dune."

(b) Development is prohibited on dunes, except for development that has no practicable or feasible alternative in an area other than a dune, and that will not cause significant adverse longterm
impacts on the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances, or activities. In addition, the removal of vegetation from any dune, and the excavation, bulldozing, or alteration of dunes is prohibited, unless these activities are a component of a Department-approved beach and dune management plan. Examples of acceptable activities are:

1. Demolition and removal of paving and structures;

2. Limited, designated access ways for pedestrian and authorized motor vehicles between public streets and the beach that provide for minimum feasible interference with the beach and dune system and are oriented so as to provide the minimum feasible threat of breaching or overtopping as a result of a storm surge or wave runup (see N.J.A.C. 7:7-10);

3. Limited stairs, walkways, pathways, and boardwalks to permit access across dunes to beaches, in accordance with N.J.A.C. 7:7-10, provided they cause minimum feasible interference with the beach and dune system;

4. The planting of native vegetation to stabilize dunes in accordance with N.J.A.C. 7:7-10;

5. Sand fencing, either a brush type barricade or picket type, to accumulate sand and aid in dune formation in accordance with N.J.A.C. 7:7-10;

6. Shore protection structures which meet the coastal engineering rule at N.J.A.C. 7:7-15.11; and

7. Linear development which meets the rule on location of linear development (N.J.A.C. 7:7-14.1).

(c) The creation of dunes for the purpose of shore protection is strongly encouraged. According to the National Flood Insurance Program (NFIP) Regulations established by the Federal Emergency Management Agency (FEMA), primary frontal dunes will not be considered as effective barriers to base flood storm surges and associated wave action where the crosssectional
area of the primary frontal dune, as measured perpendicular to the shoreline and above the 100-year stillwater flood elevation and seaward of the dune crest, is equal to or less than 1,100 square feet. This standard represents the minimal dune volume to be considered effective in providing protection from the 100-year storm surge and associated wave action, and should represent a "design dune" goal.

(d) The maintenance of an engineered dune to the dune design template through alteration of the dune is conditionally acceptable provided:

1. It is demonstrated through pre- and post- construction surveys overlaid on the dune design

template, that:

i. The existing dune is not consistent with the design template; and

ii. The proposed alteration of the dune will not result in the reduction of any portion of the dune below the design template;

2. A New Jersey licensed professional engineer certifies that alteration of the dune will not compromise the beach and dune system;

3. The activity:

i. Is conducted in accordance with the State Aid Agreement between the Department and municipality or county; and

ii. Complies with the management plan for the protection of State and Federally listed threatened and endangered species, as approved by the Department's Division of Fish and Wildlife and the USFWS;

4. All existing public accessways are maintained;

5. Any existing vegetation disturbed during the maintenance activities shall, at a minimum, be restored in accordance with the dune construction planting specifications in the Federal consistency determination or Department permit for the engineered dune, as applicable; and

6. Any sand transferred as part of the maintenance of the dune design template shall be moved only within the shore protection project and shall be placed within the existing dune system, or within the engineered beach berm in accordance with the beach rule, N.J.A.C. 7:7-9.22(b).

(e) Rationale: Ocean and bayfront dunes are an irreplaceable physical feature of the natural environment possessing outstanding geological, recreational, scenic and protective value. Protection and preservation in a natural state is vital to this and succeeding generations of citizens of the State and the Nation. The dunes are a dynamic migrating natural phenomenon that helps protect lives and property in adjacent landward areas, and buffers barrier islands and barrier beach spits from the effects of major natural coastal hazards such as hurricanes, storms, flooding and erosion. Natural dune systems also help promote wide sandy beaches and provide important habitats for wildlife species.

Extensive destruction of dunes has taken place in this century along much of the coast. This disruption of the natural processes of the beach and dune system has led to severe erosion of some beach areas; jeopardized the safety of existing structures on and behind the remaining dunes and upland of the beaches; increased the need to manage development in shorefront areas no longer protected by dunes; interfered with the sand balance that is so essential for recreational beaches and the coastal resort economy; necessitated increased public expenditures by citizens of the entire State for shore protection structures and programs; and increased the likelihood of major losses of life and property from flooding and storm surges.

The rule encourages the natural functioning of the dune system and encourages restoration of destroyed dunes, to protect and enhance the coastal beach dune areas, and to devote these precious areas to only those limited land uses which preserve, protect and enhance the natural environment of the dynamic dune system.

The Department strongly supports the creation, enhancement and maintenance of coastal sand dunes as cost-effective shore protection. The value of dunes in protecting the densely developed oceanfront from coastal storm hazards has been well documented by the Department, the Federal Emergency Management Agency, the Army Corps of Engineers, and others. In fact, the New Jersey Hazard Mitigation Plan (Section 406) specifically identifies dune creation and

enhancement as a primary storm hazard mitigation strategy.

In addition to the benefits that dunes provide as a natural form of shore protection, dunes often provide important habitat for numerous species of plants and wildlife. Moreover, dunes are important aesthetic resources that complement and promote tourism along the New Jersey shore. With large quantities of sand being placed on New Jersey beaches as part of the State-Federal shore protection program, opportunities to restore beach and dune habitats and associated biodiversity have increased tremendously. Beach nourishment provides the basis for restoration of coastal landforms (beaches and dunes) and biota, and rediscovery of lost environmental heritage. A large variety of species inhabit coastal dune environments, including plants (beachgrass, beach plum, beach pea, goldenrod, bayberry, juniper, cedar, Virginia creeper) and animals (sparrows, warblers, waxwings, kinglets, tanagers, tiger beetles, burrowing spiders, grasshoppers, butterflies).

The natural and aesthetic values of habitat restoration are an important byproduct of the State's beach and dune restoration efforts. Dunes can evolve as natural dynamic landforms that restore an important component of New Jersey's coastal heritage, while providing significant areas of vegetated habitat for coastal biota. The restoration of the natural and beneficial functions of beaches and dunes has become the cornerstone of New Jersey's shore protection program. These benefits are described in Nordstrom and Mauriello (2001), Restoring and Maintaining Naturally Functioning Landforms and Biota on Intensively Developed Barrier Islands under a No-Retreat Scenario. In addition, dune restoration for the purpose of providing wildlife habitat and scenic amenities is consistent with the goals of CAFRA to preserve and enhance the unique environmental and aesthetic resources of the coastal area.

Typically, beach nourishment projects include the construction of dunes for shore protection and/or storm damage reduction purposes. These engineered dunes are designed to a specific height, width, slope, and length, in accordance with a dune design template. In some instances, the engineered dunes may capture sand and grow beyond their design template. In these cases, maintenance of the dune to its design template may be necessary to minimize the effects that an influx of sand can have on infrastructure, access, and public safety. This excess sand can then be utilized along sections of dune or upper beach berm that are below the design template. Engineered dunes are designed to provide storm damage reduction in addition to the beach berm, and are subject to the influx of wind-blown sand from the beach berm as well as erosion from wave and tidal current activity. Engineered dunes may be supplemented during periodic renourishment cycles to replenish lost material to maintain the overall design template. Maintenance activities between renourishment cycles can potentially reduce the volume of material needed when accreted sand is transferred from areas that have expanded above the design template to areas that have experienced increased erosion. However, maintenance of the engineered dune must not reduce any part of the dune to less than the dune design template.

7:7-9.17 Overwash areas

(a) An overwash area is an area subject to accumulation of sediment, usually sand, that is deposited landward of the beach or dune by the rush of water over the crest of the beach berm, a dune, or a structure. An overwash area may, through stabilization and vegetation, become a dune.

1. The seaward limit of the overwash area is the seaward toe of the former dune, or the landward limit of the beach, in the absence of a dune.

2. The landward limit of the overwash area is the inland limit of sediment transport.

3. Verifiable aerial photography and other appropriate sources may be used to identify the extent of overwash.

(b) Development is prohibited on overwash areas, except for development that has no prudent or feasible alternative in an area other than an overwash area, and that will not cause significant adverse long-term impacts on the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances or activities. Examples of acceptable activities are:

1. Creation of dunes or expansion of existing dunes in accordance with N.J.A.C. 7:7-10;

2. Demolition and removal of paving and structures;

3. Limited, designated access ways for pedestrians and authorized motor vehicles between public streets and the beach that provide for the minimum feasible interference with the beach and dune system and are so oriented as to provide the minimum feasible threat of breaching or overtopping as a result of storm surge or wave runup;

4. Shore protection structures which meet the coastal engineering rule at N.J.A.C. 7:7-15.11(g);

5. Linear development which meets the rule on location of linear development (N.J.A.C. 7:7-14.1);

6. Removal of newly deposited overwash fans from public roads and or developed lots; and

7. Construction of street-end beach accessways along the oceanfront, provided they are oriented at an angle against the predominant northeast storm approach, are limited in width to no more than ten feet, and are defined/stabilized with sand fencing. These standards should be included in all beach and dune management plans for oceanfront locations.

(c) A development may be permitted if, by creating a dune with buffer zone or expanding an existing dune landward, the classification of the site is changed so as to significantly diminish the possibility of future overwash. In determining overwash potential, the protective capacity of newly created dunes will be evaluated in terms of the "design dune" goal discussed in N.J.A.C. 7:7-9.16(c).

(d) A single story, beach/tourism oriented commercial development located within a commercial boardwalk area existing on July 19, 1993, is conditionally acceptable provided that it meets the following conditions:

1. The site is located within an area currently used and zoned for beach related commercial use, and is landward of the boardwalk;

2. The height of the building does not exceed 15 feet measured from either the elevation of the existing ground or the boardwalk (depending on the specific site conditions) to the top of a flat roof or the mid-point of a sloped roof;

3. The facility is open to the general public and supports beach/tourism related activities, that is, retail, amusement and food services. Lodging facilities are excluded; and

4. The facility meets all the requirements of the flood hazard area rule, N.J.A.C. 7:7-9.25.

(e) Any development determined to be acceptable at (b) through (d) above shall comply with the requirements for impervious cover and vegetative cover that apply to the site under N.J.A.C. 7:7-13.

(f) Rationale: Overwash areas indicate weakness in natural and man-made shore protection. Hazard has been demonstrated, often with extensive property damage. Overwash areas are, therefore, unsuitable locations for further development, and public funds should not be used to rebuild damaged shore protection structures. However, in certain oceanfront communities where an existing municipal boardwalk (including all adjacent resort-oriented commercial establishments) is already densely developed and is the dominant tourism attraction of the community, low intensity, infill development may be permitted. At these specific locations, the gain in public use and enjoyment of the beach, ocean and boardwalk facilities outweighs the limited additional and loss in property damages. Elsewhere the return of these areas to a natural state and the formation of dunes is desirable.

Overwash is a natural shoreline movement process associated with storm and rising sea level and is one of the processes by which barrier islands migrate inland under natural conditions. In New Jersey, migration caused by overwash is usually prevented due to shore protection structures, the highly developed nature of barrier islands and post-storm clean-up practices.

A development proposed in an overwash area may, by incorporating a "design dune" and buffer area, whose dimensions of which would be determined on a case-by-case basis, migrate the hazard and change the classification of the site so that it is no longer an overwash area.

7:7-9.22 Beaches

(a) Beaches are gently sloping areas of sand or other unconsolidated material, found on all tidal shorelines, including ocean, bay, and river shorelines that extend landward from the mean high water line to either:

1. A man-made feature generally parallel to the ocean, inlet, or bay waters such as a retaining structure, seawall, bulkhead, road or boardwalk, except the sandy areas that extend fully under and landward of an elevated boardwalk are considered beach areas; or
2. The seaward or bayward foot of dunes, whichever is closest to the bay, inlet or ocean waters.

(b) Development is prohibited on beaches, except for development that has no prudent or feasible alternative in an area other than a beach, and that will not cause significant adverse long-term impacts to the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances, or activities. Examples of acceptable activities are:

1. Demolition and removal of paving and structures
2. Dune creation and related sand fencing and planting of vegetation for dune stabilization, in accordance with N.J.A.C. 7:7-10;
3. The reconstruction of existing amusement and fishing piers and boardwalks;
4. Temporary recreation structures for public safety such as first aid and lifeguard stations;
5. Shore protection structures which meet the use conditions of N.J.A.C. 7:7-15.11(g);
6. Linear development which meets the rule on location of linear development, N.J.A.C. 7:7-14.1;
7. Beach maintenance activities which do not adversely affect the natural functioning of the beach and dune system, and which do not preclude the development of a stable dune along the back beach area. These activities, which include routine cleaning, debris removal, mechanical sifting, maintenance of access ways, and Department approved dune creation and maintenance

activities, must be carried out in accordance with the standards found at N.J.A.C. 7:7-10;

8. Post-storm beach restoration activities involving the placement of clean fill material on beaches, and the mechanical redistribution of sand along the beach profile from the lower to the upper beach. These post-storm activities, which are different than routine beach maintenance activities, must be carried out in accordance with the standards found at N.J.A.C. 7:7-10;

9. The following development in Atlantic City provided it meets the standards of N.J.A.C. 7:7-9.47:

i. Development on or over existing ocean piers;

ii. Pilings necessary to support development proposed on or over existing ocean piers; and

iii. Development on or over the Boardwalk; and

10. The maintenance of an engineered beach to the beach berm design template through the transfer of sand from the upper beach berm to the lower beach berm, from the lower beach berm to the upper beach berm, and/or alongshore provided:

i. It is demonstrated through pre- and post- construction surveys overlaid on the beach berm design template, that:

(1) The existing beach berm is not consistent with the beach berm design template; and

(2) The proposed transfer of sand will not result in the grading any portion of the beach below the beach berm design template;

ii. A New Jersey licensed professional engineer certifies that sand transfer will not compromise the beach system;

iii. The sand transfer:

(1) Is conducted in accordance with the State Aid Agreement between the Department and a municipality or county; and

(2) Complies with the management plan for the protection of State and Federally listed threatened and endangered species, as approved by the Department's Division of Fish and Wildlife and the USFWS;

iv. The sand transfer does not impact any existing dunes, unless the transfer complies with the dune rule, N.J.A.C. 7:7-9.16; and

v. Any sand transferred as part of the maintenance of the beach berm design template shall be moved only within the shore protection project and shall be placed within the existing engineered dune in accordance with N.J.A.C. 7:7-9.16(d).

(c) Public access shall be provided in accordance with the lands and waters subject to public trust rule, N.J.A.C. 7:7-9.48, and the public access rule, N.J.A.C. 7:7-16.9.

(d) Rationale: Undeveloped beaches are vital to the New Jersey resort economy. Unrestricted access for recreational purposes is desirable so that the beaches can be enjoyed by all residents and visitors of the State. Public access will be required for any beaches obtaining State funds for shore protection purposes. Beaches are subject to coastal storms and erosion from wave action and offshore currents. Public health and safety considerations require that structures be excluded from beaches to prevent or minimize loss of life or property from storms and floods, except for some shore protection structures and linear facilities, such as pipelines, when non-beach locations are not prudent or feasible.

Many of New Jersey's beaches, especially those along the Atlantic Ocean, have been nourished through the State's Shore Protection Program. These engineered beaches are designed to a specific height, width, slope, and length, in accordance with a beach berm design template.

Engineered beaches are subject to erosive forces of waves, winds, and tidal currents; in many instances, eroded material is moved and deposited in areas within the project area in such a way that the beach grows beyond the design template and thus the beach no longer conforms to the shore protection project design. For engineered beaches to provide the storm damage reduction and shore protection for which they were designed, the beach berm design template must be maintained throughout the entire project area. Municipalities are encouraged to maintain the project design to the maximum extent feasible between project renourishment cycles. However, maintenance of the engineered beach must not reduce any portion of the beach to less than the beach berm design template.

SUBCHAPTER 10. STANDARDS FOR BEACH AND DUNE ACTIVITIES

7:7-10.1 Purpose and scope

(a) This subchapter sets forth the standards applicable to routine beach maintenance, emergency post-storm restoration, dune creation and maintenance, and construction of boardwalks. These standards are referenced at N.J.A.C. 7:7-9.16, Dunes; N.J.A.C. 7:7-9.17, Overwash areas; N.J.A.C. 7:7-9.19, Erosion hazard areas; N.J.A.C. 7:7-9.22, Beaches; and standards for the general permit for beach and dune maintenance activities, N.J.A.C. 7:7-6.2. The standards in this subchapter are organized as follows:

1. The standards applicable to routine beach maintenance, including debris removal and clean-up; mechanical sifting and raking; maintenance of access ways; removal of sand from street ends, boardwalk promenades and residential properties; repairs or reconstruction of existing gazebos and dune walkover structures; and limited sand transfers from the lower beach to the upper beach or alongshore, are found at N.J.A.C. 7:7-10.2;

2. The standards that apply to the restoration of all beaches that are impacted by coastal storms with a recurrence interval to or exceeding a five-year storm event are found at N.J.A.C. 7:7-10.3;

3. The standards for dune creation and maintenance, including the placement and/or repair of sand fencing, the planting and fertilization of appropriate dune vegetation, the maintenance and clearing of beach access pathways less than eight feet in width, and the construction or repair of approved dune walkover structures are found at N.J.A.C. 7:7-10.4; and

4. The standards for construction of boardwalks along tidal shorelines are found at N.J.A.C. 7:7-10.5.

(b) Beach and dune maintenance activities subject to this subchapter shall comply with any applicable management plan for protection of State and Federally listed threatened and endangered species, as approved by the Department and the USFW

7:7-10.2 Standards applicable to routine beach maintenance

(a) Routine beach maintenance includes debris removal and clean-up; mechanical sifting and raking; maintenance of accessways; removal of sand accumulated beneath a boardwalk; removal of sand from street ends, boardwalks/promenades, and residential properties; the repair or reconstruction of existing boardwalks, gazebos, and dune walkover structures; and limited sand transfers from the lower beach to the upper beach or alongshore (shore parallel). Sand transfers from the lower beach profile to the upper beach profile are specifically designed to restore berm width and elevation, to establish/enhance dunes, and to repair dune scarps. Activities which preclude the development of a stable dune along the back beach are not considered to be routine

beach maintenance activities, pursuant to this section. Specifically, the bulldozing of sand from the upper beach (berm) to the lower beach (beach face), for the purpose of increasing the berm width or flattening the beach profile, is not considered to be routine maintenance, except as provided at (a)9 below.

1. All routine beach maintenance activities shall be conducted in a manner that does not destroy, jeopardize, or adversely modify endangered or threatened wildlife or plant species habitat; and shall not jeopardize the continued existence of any local population of an endangered
or threatened wildlife or plant species.

2. If the activities in (a) above are proposed to be conducted by a municipal or county agency on property owned by that governing body, then the municipal or county engineer must certify that the activities will be conducted in accordance with these standards. The appropriate municipal or county engineer is responsible for ensuring compliance with these requirements. If these activities are proposed to be conducted on privately owned property, then the property owner is responsible for ensuring that the activities will be conducted in accordance with these standards. If these activities are proposed to be conducted on State owned properties, then the DEP, Bureau of Construction and Engineering must certify that the activities will be conducted in accordance with these standards.

3. All guidelines and specifications of this section must be incorporated into any contract documents or work orders related to proposed beach and dune activities, as described in this section. The Division of Land Use Regulation is available to assist in the development of specific maintenance plans for oceanfront locations, upon request.

4. In areas documented by the Department as habitat for threatened or endangered beach nesting shorebirds such as Piping Plovers (*Charadrius melodus*), Least Terns (*Sternula antillarum*), and Black Skimmers (*Rynchops niger*), no beach raking, other mechanical manipulation of the beach, or use of non-emergency vehicles, shall take place between March 15 and August 31.

i. The Department's Division of Fish and Wildlife shall develop a list of specific areas where this restriction shall apply, based on documented habitat during the most recent nesting seasons. The list of restricted areas shall be updated annually by the Division of Fish and Wildlife, at the end of each nesting season and will be available from the Division of Land Use Regulation at the address set forth at N.J.A.C. 7:7-1.6. The updated list shall be provided by the Department to each permittee prior to March 1 of each year.

ii. If a particular beach area is identified on the updated list as described in (a)4i above as habitat for threatened or endangered beach nesting shorebirds, regardless of the habitat classification of the previous nesting season, no beach raking, other mechanical manipulation of the beach, or the use of non-emergency vehicles shall take place between March 15 and August 31 in those areas.

iii. If a particular beach area is not identified on the updated list as described in (a)4i above, but is subsequently found to contain a nest or unflighted chick of a threatened or endangered beach nesting shorebird, the Department shall notify the permittee and no beach raking other mechanical manipulation of the beach, or use of non-emergency vehicles shall take place between March 15 and August 31 in those areas.

iv. The restrictions contained in (a)4 above may be waived if the Department's Division of Fish and Wildlife determines that the identified areas do not represent suitable threatened or endangered beach nesting shorebird habitat, due to beach erosion or other causes. Requests for

such a waiver shall be made in writing to the Division of Land Use Regulation at the address set forth at N.J.A.C. 7:7-1.6.

5. In areas documented by the Department as supporting known occurrences of Federally listed endangered or threatened plant species such as seabeach amaranth (*Amaranthus pumilus*), or known occurrences of State listed endangered plant species, such as sea-beach knotweed (*Polygonum glaucum*), no beach raking, other mechanical manipulation of the beach, or use of non-emergency vehicles, shall take place between May 15 and November 30.

i. The Department, in cooperation with the USFWS, shall develop a list of present and documented habitat areas where this restriction shall apply based on occurrence locations during the previous seasons. The list of restricted areas shall be updated annually and will be available from the Division of Land Use Regulation at the address set forth at N.J.A.C. 7:7-1.6. The updated list shall be provided by the Department to each permittee prior to May 1 of each year.

ii. If a particular beach area is not identified on the updated list as described (a)5 above, but is subsequently found to contain an occurrence of a Federally listed endangered or threatened plant species, or a State listed endangered plant species, the Department shall notify the permittee and no beach raking, other mechanical manipulation of the beach, or use of non-emergency vehicles, shall take place between May 15 and November 30 in those areas.

iii. The restrictions contained in (a)5 above may be waived if the Department determines that the identified areas do not support occurrences of Federally listed endangered or threatened plant species, or occurrences of State listed endangered plant species. Requests for such a waiver shall be made in writing to the Division of Land Use Regulation at the address set forth at N.J.A.C. 7:7-1.6.

6. Mechanical sifting and beach raking shall be limited to recreational beach areas only. For the purposes of this subsection, "recreational beach area" means all areas within 100 yards of a staffed lifeguard stand.

7. The excavation of sand accumulated beneath a boardwalk is conditionally acceptable provided:

i. The elevation of the area after the excavation is completed is not lower than either the upper beach berm design template for an engineered beach, or, for a non-engineered beach, the elevation of the existing beach berm;

ii. The excavated sand is relocated to the seaward toe of the existing dune, if present, or on the upper beach berm;

iii. Where breaching of an existing dune is necessary to allow for sand excavation, the following apply:

(1) The area of the dune breached shall be minimized; and

(2) The dune shall be restored to pre-existing conditions immediately upon excavation of the sand;

iv. Where sand is removed from the landward dune slope, the slope must be:

(1) Restored to the preexisting conditions and in no case be steeper than three horizontal to one vertical; and

(2) Revegetated in accordance with N.J.A.C. 7:7-10.4(b) and (c).

8. Any sand excavated from boardwalks, street ends, and single family lots shall be placed on the seaward toe of the existing dune, if present, or on the upper beach berm.

9. Placement of temporary sand fencing during the winter months, which results in the accumulation of sand that is later redistributed on the beach berm, is conditionally acceptable, provided:

i. The sand fencing is:

(1) Placed a minimum of 15 feet waterward of the seaward toe of any existing dune or, if no dune is present, from the waterward side of any structure;

(2) Installed no earlier than October 15 and removed prior to the Memorial Day weekend, unless threatened and endangered species timing restrictions apply;

(3) Installed in a manner that does not prevent public access along the tidal water and does not restrict public access to the beach from existing public access points; and

ii. The accumulated sand that is redistributed:

(1) Is placed on the beach;

(2) Does not result in the grading of the beach below the beach berm design template for an engineered beach or, for a non-engineered beach, below the elevation of the beach berm elevation existing prior to the redistribution; and

(3) Where feasible, does not result in the grading of the beach face to a slope steeper than 10 horizontal to one vertical.

(b) Projects involving the transfer of sand from the lower beach profile to the upper beach profile, or alongshore, are acceptable, in accordance with the following standards:

1. All sand transfer activities shall be conducted in a manner that does not destroy, jeopardize, or adversely modify endangered or threatened wildlife or plant species habitat; and shall not jeopardize the continued existence of any local population of an endangered or threatened wildlife or plant species.

2. The amount of sand transferred at any one time shall be limited to one foot scraping depth at the borrow zone. This borrow zone may not be rescraped until the sand volume from the previous scraping activities has been fully restored.

3. The borrow zone shall be limited to the area between the low water line and the inland limit of the berm. It is strongly recommended that a program of beach profiling be utilized to monitor the condition of the beaches and to ensure compliance with the standards of this section.

4. If the purpose of the sand transfers is to repair eroded dunes (dune scarps), all filled areas shall be stabilized with sand fencing and planted with beach grass in accordance with Department or Soil Conservation Service standards. Fencing shall be in place within 30 calendar days of the transfer operation, while the vegetative plantings may be installed during the appropriate seasonal planting period (October 15 through March 31, anytime the sand is not frozen).

5. There shall be no disturbance to existing dune areas.

6. In areas of documented habitat for threatened or endangered beach nesting shorebirds such as Piping Plovers (*Charadrius melodus*), Least Terns (Sternula antillarum), and Black Skimmers (*Rynchops niger*), no sand transfers shall take place between March 15 and August 31.

i. The Department's Division of Fish and Wildlife shall develop a list of specific areas where this restriction shall apply, based on documented habitat during the most recent nesting seasons. The list of restricted areas shall be updated annually by the Division of Fish and Wildlife, at the end of each nesting season and will be available from the Division of Land Use Regulation at the address set forth at N.J.A.C. 7:7-1.6. The updated list shall be provided by the Department to each permittee prior to March 1 of each year.

ii. If a particular beach area is identified on the updated list as described in (b)6i above as habitat for threatened or endangered beach nesting shorebirds, regardless of the habitat classification of the previous nesting season, no sand transfers shall take place between March 15

and August 31 in those areas.

iii. If a particular beach area is not identified on the updated list as described in (b)6i above, but is subsequently found to contain a nest or unflighted chick of a threatened or endangered beach nesting shorebird, the Department shall notify the permittee and no sand transfers shall take place between March 15 and August 31 in those areas.

iv. The restrictions contained in (b)6 above may be waived if the Department's Division of Fish and Wildlife determines that the identified areas do not represent suitable threatened or endangered beach nesting shorebird habitat due to beach erosion or other causes. Requests for such a waiver shall be made in writing to the Division of Land Use Regulation at the address set forth at N.J.A.C. 7:7-1.6.

7. In areas documented by the Department as supporting known occurrences of Federally-listed
endangered or threatened plant species, or known occurrences of State-listed endangered plant species, no sand transfers shall take place between May 15 and November 30.

i. The Department, in cooperation with the USFWS, shall develop a list of present and documented habitat areas where this restriction shall apply, based on occurrence locations during the previous seasons. The list of restricted areas shall be updated annually and will be available from the Department's Division of Land Use Regulation at the address set forth at N.J.A.C. 7:7-1.6. The updated list shall be provided by the Department to each permittee prior to May 1 of each year.

ii. If a particular beach area is not identified on the updated list as described at (b)7i above but is subsequently found to contain an occurrence of a Federally listed endangered or threatened plant species, or an occurrence of a State listed endangered plant species, the Department shall notify the permittee and no sand transfer on the beach shall take place between May 15 and November 30 in those areas.

iii. The restrictions contained in (b)7 above may be waived if the Department determines that the identified areas do not support occurrences of a Federally listed endangered or threatened plant species, or occurrences of State listed endangered plant species. Requests for such a waiver shall be made in writing to the Division of Land Use Regulation at the address set forth at N.J.A.C. 7:7-1.6.

8. Sand transfers to or from wetland areas that may exist on a beach are not authorized by this permit.

9. Records of all sand transfer activities shall be maintained by the property owner, beach association, governmental agency or other authority conducting the activities, and shall be available for inspection by the Department, upon request. These records shall include, but not be limited to, dates of transfer, borrow area limits, fill area limits, estimates of the amount of sand transferred, the name of the person(s) supervising the transfer activities, and the engineering certification required (if appropriate) for all sand transfer activities.

7:7-10.3 Standards applicable to emergency post-storm beach restoration

(a) This section on emergency post-storm beach restoration will apply to all beaches which are impacted by coastal storms with a recurrence interval equal to or exceeding a five-year storm event. Emergency post-storm beach restoration projects not specifically identified in this section may be authorized by the Department through an emergency authorization pursuant to N.J.A.C. 7:7-21 if the Department determines that there is an imminent threat to lives or property.

(b) Beach restoration activities, as part of an emergency post-storm recovery, include: the placement of clean fill material with grain size compatible with (or larger than) the existing beach material; the bulldozing of sand from the lower beach profile to the upper beach profile; the alongshore transfer of sand on a beach; the placement of concrete, rubble or rock; and the placement of sand filled geotextile bags or tubes.

(c) The emergency post-storm beach restoration activities in (b) above should be designed and implemented as a means to restore the beaches to the pre-storm condition, or to restore the beaches to a level sufficient to provide protection from a storm event with a minimum recurrence interval of five years (five-year storm protection). For the purpose of this section, five-year storm protection equates to a minimum 30-foot wide berm at elevation +8 Mean Sea Level (NAD, 1983). Restoration beyond the pre-storm beach condition is encouraged by the Department, but will not be considered "emergency post-storm beach restoration," pursuant to this section.

(d) The bulldozing of sand from the lower beach profile to the upper beach profile, as part of an emergency post-storm beach restoration plan, is acceptable, in accordance with the following standards:

1. Bulldozing is limited to the beach area landward of the low water line. Removal of material from below the low water line is considered dredging, and is not authorized pursuant to this section; and
2. The beach face cannot be graded to a slope steeper than one vertical to three horizontal.

(e) The alongshore transfer of sand from one beach area to another, as part of an emergency post-storm beach restoration plan, is acceptable, in accordance with the following standards:

1. No disturbance to existing dune areas is permitted;
2. Sand borrow areas shall not be bulldozed to a depth which exceeds one foot;
3. The borrow areas may not be rescarped until full sand volume recovery has occurred; and
4. An adequate supply of sand is available at the borrow area site, so that the relocation of this material will not decrease the level of protection adjacent to the borrow area.

(f) The placement of sand filled geotextile bags or geotubes, as part of an emergency post-storm
beach restoration plan, is acceptable, in accordance with the following standards:

1. In areas where dunes are present, the geotextile bags or geotubes shall be placed along the toe of any scarped dune, or seaward of the dune toe, and not on the dune itself;
2. In areas where dunes are not present, the geotextile bags or geotubes shall be placed at the landward limit of the beach and in no case be placed below the mean high water line;
3. The geotextile bags or geotubes shall be tapered at the end of the project area, to minimize the impact to adjacent areas which are not protected by the geotextile bags or geotubes;
4. The crest and seaward side of the geotubes shall be buried to achieve a gradual, uniform slope from the upper beach to the crest of the geotextile bag or geotube;
5. The length of shoreline along which the geotextile bags or geotubes are installed shall not exceed a cumulative length of 500 feet;
6. Fill material for the geotextile bags or geotubes shall be from an upland source excluding the beach and dune or from suitable dredged material;
7. The geotextile bag or geotube shall be installed parallel to the shoreline; and

8. The geotextile bag or geotube shall be installed with the manufacturer's recommended scour apron.

(g) The placement of sand, gravel, rubble, concrete, rock or other inert material, as part of an emergency post-storm beach restoration plan, is acceptable, in accordance with the following standards:

1. All material shall be non-toxic sand, gravel, concrete, rubble, rock, or other inert material;

2. The placement of concrete, rubble, or rock shall be temporary in nature, and is not to be used as permanent protection, unless it is part of a Department-approved, engineered design for permanent shore protection;

3. All concrete, rubble, or rock placed on the beach shall be removed within 90 calendar days, unless an application is filed within 90 calendar days of the placement of the material for Department approval of an engineered design for permanent shore protection. If a permit application is filed within this period, the material may remain on the beach until a determination is made on the application; and

4. The use of automobiles, tires, wood debris, asphalt, appliances or other solid waste is prohibited.

7:7-10.4 Standards applicable to dune creation and maintenance

(a) Dune creation and maintenance includes the placement and/or repair of sand fencing (including wooden support posts), the planting and fertilization of appropriate dune vegetation, the maintenance and clearing of beach access pathways less than eight feet in width, and the construction or repair of approved dune walkover structures. Bulldozing, excavation, grading, vegetation removal or clearing, and relocation of existing dunes are not authorized pursuant to this section.

(b) All dune creation and maintenance activities should be conducted in accordance with the specifications found in Guidelines and Recommendations for Coastal Dune Restoration and Creation Projects (DEP, 1985), and/or Restoration of Sand Dunes Along the Mid-Atlantic Coast (Soil Conservation Service, 1992). The Department will provide site specific technical assistance for dune creation and maintenance projects, upon request.

(c) All proposed dune vegetation shall be native to New Jersey and should be limited to the following coastal species, to the maximum extent practicable: American Beachgrass (*Ammophila breviligulata*), Coastal Panicgrass (*Panicum amarulum*), Bayberry (*Myrica pensylvanica*), Beach Plum (*Prunus maritima*), Seaside Goldenrod (*Solidago sempervirens*), Beach Pea (*Lathyrus japonicus*), Bitter Panicgrass (*Panicum amarum*), Switchgrass (*Panicum virgatum*), Partridge Pea (*Chamaecrista fasiculata*), Eastern red cedar (*Juniperus virginiana*), Groundsel tree (*Baccharis halimifolia*), and Saltmeadow cordgrass (*Spartina patens*).

1. American beachgrass is the preferred species for the stabilization of newly established dunes, and for stabilization of the primary frontal dune. Woody plant species are suitable for back dune and secondary dune environments. Herbaceous plant species are preferred as supplemental plantings for all dune areas.

2. Dune vegetation should be diversified to the maximum extent practicable, in an effort to provide continuous stabilization in the event that pathogens reduce or eliminate the effectiveness

of one species. A complex of associated grasses, herbaceous species and woody species is preferred to the planting of one species.

3. A landscape plan is required as part of any dune creation activity. The landscape plan shall depict the proposed vegetative community on the dune and include:

i. Species and quantity to be planted;

ii. Spacing of all plantings;

iii. Stock type (plugs, potted, seed); and

iv. Source of the plant material.

(d) The construction of elevated timber dune walkover structures shall be in accordance with the standards and specifications (or similar specifications) described in Beach Dune Walkover Structures (Florida Sea Grant, 1981). The construction of elevated dune walkover structures, particularly at municipal street-ends and other heavily used beach access points is preferred to the construction of pathways or walkways through the dunes.

1. Copies of the DEP and Florida Sea Grant reports are available from the Department at the address set forth at N.J.A.C. 7:7-1.6.

(e) The construction of at-grade dune walkovers is acceptable only at single family and duplex residential dwellings, subject to the following conditions:

1. Only one walkover per residential building is allowed;

2. The width of the walkover must not exceed four feet;

3. The walkover shall be fenced on both sides through the use of sand fencing;

4. The use of unrolled sand fencing as a base for the walkover is preferred to the use of planks and boards. Sand fence based walkovers allow for easier seasonal removal and placement, and allow for greater growth of beachgrass, while still providing an adequate base for pedestrian traffic; and

5. Solid boardwalk type walkovers shall be elevated at least one foot above the dune, to allow for movement of sand and vegetative growth under the boardwalk structure.

(f) The controlled use of discarded natural Christmas trees for the purpose of dune stabilization is generally discouraged, but may be acceptable, in accordance with the standards set forth below. Discarded Christmas trees serve the same function as sand fencing, by trapping wind blown sand and facilitating sand deposition and dune formation. However, uncontrolled or inappropriate placement of trees will hinder the development of dunes and may present a fire hazard.

1. Only natural, coniferous trees are suitable for use in dune stabilization. The use of tree limbs, clippings, artificial trees, and other dead vegetation is prohibited;

2. Trees should be placed at least 100 feet landward of the high water line, in areas which are generally not subject to spring tidal inundation and wave swash action;

3. The placement of trees should be oriented against the prevailing winds, in either a straight line or zig-zag formation;

4. The trees should be installed by overlapping the stump end of one tree with the pointed end of another, and then anchoring the connection point with a sufficient amount of sand to hold the trees in place;

5. Newly placed trees should be monitored to ensure that the trees remain anchored and do not become dislodged. Additional quantities of sand or wooden anchor stakes may be used to

hold the trees in place until they become stabilized; and

6. All newly deposited sand should be stabilized through the planting of beachgrass, during the appropriate planting season.

7:7-10.5 Standards applicable to the construction of boardwalks

(a) The construction of oceanfront or bayfront boardwalks should address a number of engineering concerns related to structural support, resistance to vertical and horizontal water and wind loads, and scouring. The construction of boardwalks along tidal shoreline is acceptable, in accordance with the following standards:

1. All timber support piles shall be a minimum of eight inches in diameter;

2. Support piles should be driven to a depth of at least 10 feet (mean sea level), for all V zone locations. In A zones, the depth of penetration should be at least five feet (mean sea level);

3. The method for insertion of piles should be a pile driver or drop hammer;

4. All support joists and timber connections should be anchored through the use of hurricane clips or metal plates; and

5. All metal fasteners, including but not limited to bolts, screws, plates, clips, anchors and connectors, shall be hot dipped galvanized.

SUBCHAPTER 11. STANDARDS FOR CONDUCTING AND REPORTING THE RESULTS OF AN ENDANGERED OR THREATENED WILDLIFE OR PLANT SPECIES HABITAT IMPACT ASSESSMENT AND/OR ENDANGERED OR THREATENED WILDLIFE SPECIES HABITAT EVALUATION

7:7-11.1 Purpose and scope

(a) This subchapter sets forth the standards for conducting an endangered or threatened wildlife or plant species habitat impact assessment and for conducting an endangered or threatened wildlife species habitat evaluation. One or both must be employed by an applicant seeking to demonstrate compliance with or inapplicability of N.J.A.C. 7:7-9.36 when the site contains or abuts areas mapped as endangered or threatened wildlife species habitat on the Landscape Maps. This subchapter also sets forth the standards for reporting the results of an endangered or threatened wildlife or plant species habitat impact assessment and an endangered or threatened wildlife species habitat evaluation.

(b) An endangered or threatened wildlife or plant species habitat impact assessment is required to demonstrate that endangered or threatened wildlife or plant species habitat as defined at N.J.A.C. 7:7-9.36(a) would not, directly or through secondary impacts on the relevant site or in the surrounding area, be adversely affected by the proposed development. The standards for conducting an impact assessment pursuant to N.J.A.C. 7:7-9.36(b), (d), and (e) are found at N.J.A.C. 7:7-11.2.

(c) Pursuant to N.J.A.C. 7:7-9.36(c), an endangered or threatened wildlife species habitat evaluation is required to demonstrate that a site does not contain suitable endangered or

threatened wildlife or plant species habitat, as defined at N.J.A.C. 7:7-9.36(a). The standards for conducting an evaluation are found at N.J.A.C. 7:7-11.3.

(d) The reporting requirements for habitat evaluations and impact assessments are found at N.J.A.C.7:7-11.4.

7:7-11.2 Standards for conducting endangered or threatened wildlife or plant species habitat impact assessment

(a) Applicants who choose not to dispute the Department designation of the site as endangered or threatened wildlife species habitat shall demonstrate compliance with N.J.A.C. 7:7-9.36(b) by providing information required at this section and N.J.A.C. 7:7-11.4. The required information shall demonstrate that the proposed development will not negatively affect the population(s) or habitat of endangered or threatened wildlife species that resulted in identification of the site, or an area abutting the site, as endangered or threatened wildlife species habitat in accordance with N.J.A.C. 7:7-9.36(a) and/or (d).

(b) If an endangered or threatened plant species has been documented to be on the site or a portion of the site or an area abutting the site, applicants shall demonstrate compliance with N.J.A.C. 7:7-9.36(b) by providing information required at this section and N.J.A.C. 7:7-11.4. The required information shall demonstrate that the proposed development will not negatively affect the population(s) or habitat of endangered or threatened plant species documented to be on the site or a portion of the site or on an area abutting the site.

(c) Impact assessments shall be conducted for each endangered or threatened wildlife or plant species described in (a) and/or (b) above. The impact assessment shall consider the likely affects of the proposed development on the local populations of the particular species on or abutting the site. The impacts shall be assessed using accepted ecological principles and scientific literature on each species and both direct and indirect impacts of the proposed development shall be considered. This assessment shall be based on habitat requirements and life history of each species, and the manner in which the proposed development may alter habitat, including, but not limited to, vegetation, soils, substrate, bathymetry, salinity, hydrology, wildlife movement corridors, human disturbance, and effects on competitor, parasite, or predator species.

7:7-11.3 Standards for conducting endangered or threatened wildlife species habitat evaluation

(a) Applicants who dispute the Department designation of the site as endangered or threatened wildlife species habitat, or dispute the boundary of that habitat shall provide information that demonstrates that the habitat is not suitable for each of the endangered or threatened wildlife species that resulted in identification of the site, a portion of the site, or an area abutting the site, as endangered or threatened wildlife species habitat in accordance with N.J.A.C. 7:7-9.36(a) and/or (d).

(b) Habitat evaluations for endangered or threatened wildlife species pursuant to N.J.A.C. 7:7-9.36(c) shall be conducted for each wildlife species described in (a) above. This habitat evaluation shall:

1. Use scientific methodology appropriate for each species or species group;

2. Examine specific attributes and characteristics of the site that limit or eliminate its suitability as habitat, including, but not limited to, an examination of vegetative cover, soils, hydrology, existing land use and any other factors that are used to determine suitability of a site for the species. The site's vegetative analysis shall include an on-site investigation and evaluation; and

3. Include an examination of the area surrounding the site using aerial photographs and/or appropriate cover maps.

(c) A survey for the endangered or threatened wildlife species that resulted in identification of the site, a portion of the site, or an area abutting the site, as endangered or threatened wildlife species habitat in accordance with N.J.A.C. 7:7-9.36(a) and/or (d), will only be considered in the context of supplementing information on habitat suitability. If such a survey is conducted, it shall be conducted consistent with techniques established in the scientific literature.

7:7-11.4 Standards for reporting the results of impact assessments and habitat evaluations

(a) All habitat evaluations and impact assessments submitted to the Department shall include:

1. An introduction describing the goals of the habitat evaluation and/or impact assessment;

2. A copy of the USGS quad map(s) showing the location of the site, with the State plane coordinates of the site. The accuracy of these coordinates shall be within 50 feet of the actual center point of the site. For linear sites, 2,000 feet in length and longer, additional coordinates shall be provided at each 1,000 foot interval;

3. The lot, block, municipality and county in which the site is located;

4. For wildlife habitat evaluations and impacts assessments only, a map identifying the site, and the areas mapped as endangered or threatened wildlife species habitat on the Landscape Maps onsite and abutting the site, along with a list of the endangered or threatened species that resulted in the mapping of endangered or threatened species habitat;

5. For impact assessments for plant species only, a map identifying the location of the species habitat on the site or abutting the site along with a list of the potential plant species from the Department's Natural Heritage Database;

6. A description of the habitat requirements for each of these species identified at (a)4 and/or 5 above, including appropriate literature citations; and

7. The names and qualifications of all investigators who performed habitat evaluations, species surveys, and/or impact assessments.

(b) Wildlife habitat evaluations shall include a narrative with supporting documentation, including maps, photographs, and field logs, which contains the following:

1. A description, for each species, of the findings of the habitat evaluation performed in accordance with N.J.A.C. 7:7-11.3;

2. If a survey was conducted in accordance with N.J.A.C. 7:7-11.3(c), literature citations for the methodology used and a description of how the methodology was applied to the survey, giving the following information: surveyor's name(s), dates and times surveys were performed, number of samples, and number of replications. This information shall be provided for each species surveyed; and

3. A comparison of the findings of the habitat evaluation with the known habitat requirements for each species, as provided at (a)6 above, and a description of the specific attributes and characteristics of the site that limit or eliminate the site's suitability as habitat.

(c) Impact assessments shall include a narrative with supporting documentation, such as maps and photographs, which contains the following:

1. A description for each species, of how the proposed development will alter habitat, including vegetation, soils, hydrology, human disturbance, and effects on competitor, parasite, or predator species. The impact assessment shall describe the likely affects of the proposed development on the local populations of the particular species on or abutting the site and why the development would not directly or through secondary impacts adversely affect each endangered or threatened species habitat; and

2. Literature citations used to reach the conclusions in (c)1 above.

APPENDIX D

Summary of the Binding Provisions of the September 2002 Programmatic Biological Opinion Between the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers Regarding Sections I and II of the Atlantic Coast of New Jersey Beach Erosion Control Project, Sea Bright to Manasquan

This document provides a summary of the binding provisions of the Programmatic Biological Opinion (PBO) issued by the U.S. Fish and Wildlife Service (Service) for the U.S. Army Corps of Engineers, New York District's (Corps) ongoing program of beach nourishment from Sea Bright Borough to Manasquan Borough, Monmouth County, New Jersey pursuant to Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.) (ESA). Additional binding provisions may be developed during streamlined consultation that is required before each scheduled renourishment. The PBO addressed the federally listed (threatened) piping plover (*Charadrius melodus*) and seabeach amaranth (*Amaranthus pumilus*).

Definitions

Sections 4(d) and 9 of ESA, as amended, prohibit *taking* (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. *Harm* is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. *Harass* is defined as actions that create the likelihood of injury to listed species by annoying it 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 any take of listed animal species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the federal agency or the applicant.

Incidental Take

The PBO issued by the Service includes an Incidental Take Statement. 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 provided that such taking is in compliance with the provisions of the PBO. All the binding provisions of the PBO, as described below, are non-discretionary and must be undertaken by the Corps for the exemption in Section 7(o)(2) to apply. The Corps has a continuing duty to implement the activity covered by the PBO. If the Corps: (1) fails to implement the provisions or (2) fails to require all contractors to adhere to the provisions, the protective coverage provided by Section 7(o)(2) to the Corps and its contractors may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to the Service as specified in the Incidental Take Statement.

Binding Provisions

The binding provisions of this PBO include: (1) the Conservation Measures incorporated by the Corps into their project description for the protection of listed species; and (2) the Terms and Conditions of the Incidental Take Statement issued by the Service to reduce the level of anticipated incidental take of piping plovers.

CONSERVATION MEASURES

1. Continuing Consultation with the Service

   The Corps will informal consultation with the Service at least 6 months prior to the start of initial nourishment and each renourishment cycle to reevaluate any potentially changed conditions. If a changed condition occurs that was not covered by the existing Programmatic Biological Opinion, if incidental take of piping plovers is likely, or if relevant new information regarding federally listed species has become available, the Corps will reinitiate programmatic, formal consultation at that time.

2. Fill Material and Placement

   All renourishment material will consist of clean sand fill material (*i.e.*, 90 percent or greater sand), will conform with the existing beach substrate, and will consist of material that is capable of maintaining suitable piping plover and seabeach amaranth habitat. Grain size will be compatible with existing beach material. Placement areas will be finished to approved and previously constructed grade

3. Endangered Species Management Program

   In partnership with the Service and the New Jersey Division of Fish and Wildlife (the NJDFW), the Corps will continue to institute the existing Endangered Species Management Program to advance public education and protection of the piping plover and seabeach amaranth. The Endangered Species Management Program includes the employment of a full time seasonal local monitor, under the supervision of the NJDFW with oversight by the Corps and Service, to provide on-site education and outreach; to conduct endangered species surveys, monitoring, and management (including the use of symbolic fencing and predator exclosures as appropriate); and to serve as a municipal liaison. The survey, education, outreach, and protection protocols of future monitoring efforts will generally follow those of previous years, but may be changed as appropriate, pending consultation with the Service. If, at any time during the life of the Project, sufficient Corps funding is no longer available to continue the Endangered Species Management Program, the Corps will reinitiate programmatic consultation with the Service to reevaluate project impacts with the loss of beneficial effects provided by monitoring and management.

4. Educational Signs

   In addition to the educational signs already developed and paid for by the Corps, the Corps will provide for the development and production of additional signs regarding threatened and endangered species for the project area if necessary.

5. Seasonal Restrictions to Protect Piping Plovers

Except under extenuating circumstances, the Corps will conduct all scheduled nourishment activities between the fledging of the last piping plover chick in an area and March 14 (*i.e.*, all work will occur outside of the nesting season). The PBO provides detailed contingency plans if weather or other unforeseen circumstances jeopardize the schedule of planned nourishment activities, and limited work during the nesting season is necessary.

6. Measures to Avoid, Minimize, and Compensate for Adverse Effects to Seabeach Amaranth

(a) Surveys

If any activities are scheduled to occur during the growing season of seabeach amaranth (May 15 to December 1), a Corps or contract biologist, botanist, or designated representative will survey the project area for this species twice a month from July 1 to October 1, and also immediately prior to any construction or other work. Plant locations, numbers, and sizes will be recorded.

(b) Fencing and Avoidance of Plants

If construction personnel or vehicles will be present in, or may pass through seabeach amaranth areas, symbolic fencing will be erected encompassing a 3-meter protective buffer around the plants if practical. All construction activities will avoid all delineated locations of seabeach amaranth where feasible. The Corps will undertake all practicable measures to avoid incidental take of plants. (As per recent agreements with the Corps, all plants outside the immediate sand placement area will be fenced and avoided during construction. The Corps will designate staging areas and access routes for vehicles and personnel to avoid seabeach amaranth occurrences. Fenced plants will not be disturbed.)

(c) Salvage, Restoration, and Other Measures

The PBO recognizes that some plants may be damaged or destroyed within the immediate sand placement template, and provides for a flexible approach to salvage plants and seeds, and/or to conduct restoration activities following nourishment.

TERMS AND CONDITIONS

- Sequence renourishment activities to provide maximum avoidance of nesting areas during the nesting season and to allow maximum recovery time of prey resources and adjustment of the beach profile, by conducting renourishment of known piping plover nesting areas as soon as possible following fledging of the last chick in each nesting area (preferably late August or September).

- Remove any material or equipment staged or stored within nesting areas by March 15.

- During the nesting season, locate all pipelines outside of piping plover nesting areas or floated off-shore. On-shore pipelines, either buried or on the surface, may impede piping plover foraging.

- Provide all project engineers, contractors, and construction staff with a written summary of the PBO (including all Conservation Measures and Terms and Conditions), a written statement that all Conservation Measures, Reasonable and Prudent Measures, and Terms and Conditions contained therein are non-discretionary, and maps of current piping plover "nesting areas" as defined in the PBO (*i.e.*, to include a 1,000-meter (m) buffer).

- Schedule a meeting prior to the start of construction among the Service, Corps planning staff and supervisors, the selected field monitor(s), and appropriate representatives of project engineers, contractors, and construction staff to discuss implementation of Conservation Measures and Terms and Conditions.

- Provide appropriate documentation to the Service at least one week prior to exercising any contingencies for work during the piping plover nesting season.

- For any work during the nesting season, provide the Service, the NJDFW, and construction contractors a weekly report of piping plover activity indicating the geographic extent of "nesting areas" as defined in the PBO. Also provide the Service and the NJDFW a weekly report of the location of sand placement activities, both current and planned over the coming week, as well as the results of the pre-construction monitoring described under Conservation Measures. Notify all parties immediately if a nesting area expands, or if there is a change to the planned location of sand placement activities.

- Evaluate the Endangered Species Management Program annually, and, with Service input, adapt the program as needed to maintain species protection at levels at least equal to those of the 2000-2002 nesting seasons. As species distributions and/or threats may change, different levels and/or methods of species management may be necessary to maintain current levels of protection (*i.e.*, more or less effort than one full-time, seasonal, local monitor may be needed).

- Obtain legal easements or authorizations allowing Service, State, and Corps field staff, or their official representatives, continued access to all portions of the project area for the life of the project, including private property within the beach-dune ecosystem, for the purposes of carrying out endangered species management activities, including, but not limited to, installation of fencing, observation, and data collection. Provide documentation of these easements or authorizations to appropriate field staff, municipal officials, and private parties as needed.

- Work cooperatively with municipal officials in each project area municipality with known occurrences of federally or State-listed species to develop and implement a Service-approved endangered species management plan.

- Monitor the response of the wrack line and intertidal infaunal invertebrate communities during and after sand placement within nesting areas. Place special emphasis on species likely to be piping plover prey items (*i.e.*, flying insects, polycheates, amphipods, young mole crabs), and produce estimates of total recovery time, as well as recovery rates, of abundance, biomass, and composition of piping plover prey items.

- Schedule or locate monitoring of physical or biological beach parameters, especially the use of "sleds" to take beach profiles, outside of the nesting season (March 15 to fledging of the last chick), or at least 300 meters (m) outside of areas known to support courting, territorial, and/or breeding plovers during any of the three most recent nesting seasons. Ensure that a Service-approved monitor is present when conducting activities within 1,000 m of such areas during the nesting season.

- Schedule repair and maintenance of seawalls, bulkheads, and other structures, and any other construction or activity requiring motorized vehicles or equipment, outside the nesting season (March 15 to fledging of the last chick).

- Prohibit further sand fencing or vegetation planting within areas known to support courting, territorial, and/or breeding plovers during any of the three most recent nesting seasons.

- Prohibit mechanical beach raking and removal of natural organic materials within 200 m of areas known to support courting, territorial, and/or breeding plovers during any of the three most recent nesting seasons. Litter may be manually removed from such areas. If no nesting activity occurs in such an area by July 1, mechanical beach raking may resume, except as constrained by New Jersey Coastal Zone Management Rules.

- Work with the NJDFW to schedule and implement beach nourishment and associated activities to avoid direct adverse effects to least terns, including no sand placement within 200 m of an active colony.

- Report the extent of direct incidental take of piping plovers to the Service within 30 days of completing renourishment Through the Endangered Species Management Program, document annually the extent of observed indirect incidental take of piping plovers from recreational activities and unfavorable beach management practices.

- Exercise care in handling any specimens of dead piping plover adults, young, or nonviable eggs to preserve biological material in the best possible state.

APPENDIX E

Addendum Regarding Timing of Management to Protect Unfledged Chicks

GUIDELINES FOR MANAGING RECREATIONAL ACTIVITIES IN PIPING PLOVER BREEDING HABITAT ON THE U.S. ATLANTIC COAST TO AVOID TAKE UNDER SECTION 9 OF THE ENDANGERED SPECIES ACT: ADDENDUM REGARDING TIMING OF MANAGEMENT TO PROTECT UNFLEDGED CHICKS

Northeast Region, U.S. Fish and Wildlife Service

March 9, 2015

The purpose of this addendum is to provide recent information regarding the phenology of Atlantic Coast piping plovers that may have management implications for beach managers and property owners seeking to avoid potential violations of Section 9 of the Endangered Species Act (16 U.S.C. 1538) and its implementing regulations (50 CFR Part 17). The guidelines are advisory, and failure to implement them does not, of itself, constitute a violation of the law. Rather, they represent the U.S. Fish and Wildlife Service's best professional advice to beach managers and landowners regarding the management options that will prevent direct mortality, harm, or harassment of piping plovers and their eggs due to recreational activities.

Addendum

1. The April 15, 1994 Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take under Section 9 of the Endangered Species Act (Guidelines) state that "Restrictions on use of vehicles in areas where unfledged plover chicks are present should begin on or before the date that hatching begins and continue until chicks have fledged. For purposes of vehicle management, plover chicks are considered fledged at 35 days of age or when observed in sustained flight for at least 15 meters, whichever occurs first." This language is now amended as follows:

Restrictions on use of vehicles in areas where unfledged plover chicks are present should begin on or before the date that hatching begins and continue until chicks have fledged. *For purposes of management, plover chicks are considered fledged when observed in sustained flight for at least 15 meters, irrespective of age. In most cases, piping plovers attain flight capability by 35 days of age, but longer pre-fledge periods may occur* (italics denotes new wording).

We note that it is unnecessary and potentially counter-productive to repeatedly attempt to "flight test" piping plover chicks by trying to flush them. Fledglings will readily demonstrate flight capability as soon as their primary feathers become sufficiently developed.

2. The Guidelines also state that, when plover nests are found after the last egg has been laid (making it impossible to predict hatch date), sites without intensive monitoring should begin restrictions on nonessential vehicles on May 15. This language is now amended as follows:

When plover nests are found after the last egg has been laid, making it impossible to predict hatch date, restrictions on vehicles should begin on a date determined by one of the following scenarios:

1) With intensive monitoring: If the nest is monitored at least twice per day, at dawn and dusk (before 0600 hrs and after 1900 hrs) by a qualified biologist, vehicle use may continue until hatching begins. Nests should be monitored at dawn and dusk to minimize the time that hatching may go undetected if it occurs after dark. Whenever possible, nests should be monitored from a distance with spotting scope or binoculars to minimize disturbance to incubating plovers.

OR

2) Without intensive monitoring: Restrictions should begin on *May 10* (the earliest probable hatch date). If the nest is discovered after *May 10*, then restrictions should start immediately (italics denotes new wording).

Discussion

The dates and intervals associated with piping plover breeding cycle stages in the 1994 Guidelines were formulated following an extensive review of the large volume of available breeding records. They were intended to furnish reliable advice to land managers seeking to avoid violations of the Endangered Species Act without causing unnecessary restrictions on beach recreation. Review of monitoring reports routinely includes dates of piping plover arrival, nest initiation, hatching, and fledging. As of 2010, the U.S. Fish and Wildlife Service (Service) was unaware of deviations in breeding phenology with implications for management.

Since 2011, however, the Service has received occasional reports of unusually delayed fledging periods, early hatch dates, and other phenological "anomalies." Piping plovers older than 35 days that are incapable of flight have now been reported from several widely distributed sites in Massachusetts, New York, and Maryland. A few hatch dates prior to May 15 have been reported from New Jersey, Virginia, and North Carolina; given the overall synchrony of piping plover chronology across the U.S. Atlantic breeding range, we cannot rule out the potential for early hatching anywhere from Maine to North Carolina. The Service has solicited information about potential contributing factors (e.g., evidence that prey is limited, harsh weather, unusual disturbance), but rare events are inherently difficult to interpret. To the best of our knowledge, these situations remain rare, but we continue to request reports of such instances and any potential causal factors. At this time, the Service is furnishing this information to help managers provide reliable expectations to the beach-going public.

APPENDIX F

Standard Operating Procedures for Predator Management
for New Jersey Division of Fish and Wildlife – Endangered and Nongame Species Program
and the Borough of Belmar

Standard Operating Procedures for Predator Management
for New Jersey Division of Fish and Wildlife – Endangered and Nongame Species Programand the Borough of Belmar

Purpose: To establish guidelines for the New Jersey Division of Fish and Wildlife's - Endangered and Nongame Species Program (ENSP) and the Borough of Belmar to effectively manage predator populations that pose a direct threat to endangered and threatened beach nesting birds. These procedures include but are not limited to monitoring and local predator population control through trapping or other means of removal.

Definitions:

Aversive conditioning – a type of behavior conditioning in which negative stimuli are associated with undesirable behaviors. Examples of prior aversive conditioning include electrified eggs.

Dispatch – humane killing of an animal.

Live-capture box trap – non-lethal box trap that is baited and triggered to close upon entrance of the animal.

Live-capture cable restraint – non-lethal cable type trap designed to capture an animal and hold it in place until the trapper arrives.

Live-capture foot encapsulating trap – non-lethal, also known as a enclosed foothold or dog-proof traps, they are specifically designed to capture species such as raccoon and opossum while minimizing the capture of non-target animals especially domestic dogs and cats. In New Jersey, these may only be triggered with the pulling mechanism (the pushing mechanism may not be engaged).

Predator – any species, especially avian or mammalian, that preys upon beach nesting birds and their eggs and young. This group primarily includes crows, gulls, raptor and falcon species, red fox, raccoon, opossum, skunks and feral cats.

Tracking – the science of observing animal tracks and other signs, with the goal of understanding the movement and demographics of a species population.

Trapping – use of a device to remotely capture an animal.

Pre-Season Trapping:

ENSP will employ pre-season trapping upon discretion of beach nesting bird managers and their expert opinion of nesting probability for the upcoming season. ENSP will notify the borough one day prior to any trapping activity on site. Pre-season trapping is common among most nesting sites throughout the state to allow nesting birds to set up territory absent of predator activity.

Breeding Season Trapping:

ENSP will employ breeding season trapping when predator activity (including but not limited to destruction of adults, eggs and nests) is observed that warrants predator management on beach nesting bird breeding sites. ENSP will notify the borough one day prior to any trapping activity on site.

Trapping Procedures:

1. ENSP will monitor nesting birds and predator activity within Belmar. All ENSP monitors will be trained to correctly identify signs of mammalian and avian predation. Monitoring of nesting birds and tracking of predators will take place synchronously.
2. If predators are detected within the nesting area (documented through pad tracking, visual spotting, and/or observed harassment of nesting birds) and if nesting behavior (including territorial and courtship displays and presence of eggs or young) has been confirmed, predator management will take place. The Borough will be notified one day prior to any detrimental predator activities that warrant trapping efforts.
    a. If avian predator signs are observed, aversive conditioning will be considered and determined if applicable by ENSP. ENSP will work to reduce perching opportunities by placing pigeon spikes on posts and other vertical structures. Trap and removal efforts will also be considered and implemented if recommended by ENSP biologists.
    b. If mammalian predator signs are observed, trap and removal efforts will be implemented.
3. ENSP will utilize predator trappers that specialize in both avian and mammalian trapping. All trappers will be properly licensed and in compliance with all legal practices approved and regulated by the New Jersey Division of Fish and Wildlife.
    a. Regulations regarding frequency of trap checks as stipulated in the New Jersey Hunting & Trapping digest, "All traps must be checked and tended at least once every 24 hours, preferably in the morning except traps set for semi-aquatic species in tidal waters only must be checked once per calendar day."
4. ENSP will meet on site with trappers to review nesting activities and any observed predator activity.
5. Trapping activity timing will be dependent upon the trapper's schedule and based upon their expert opinion for optimal time based on species activity but will take place as soon as possible after initial contact.
6. Avian trapping is currently limited to live-capture box traps, but other legal methods will be explored by ENSP and expert trappers.
7. Mammalian trapping will use a variety of New Jersey regulated and legal trapping techniques including, but not limited to, live-capture cable restraints, live-capture foot encapsulating traps, and live-capture box traps.
8. Upon capture, animals will be removed from site and dispatched in a humane and lawful way at the discretion of the trapper. In the event a feral cat is captured, the cat will be transported to a shelter as required under New Jersey state law.
9. If additional predators are observed on site after initial removal efforts, ENSP will repeat above listed procedures to ensure the success of nesting birds.

Resources

Hunting and Trapping regulations in the state of New Jersey are outlined in the annual New Jersey Hunting and Trapping Digest which can be found online, or a print copy may be requested through ENSP.

https://www.state.nj.us/dep/fgw/pdf/2018/dighnt18.pdf

APPENDIX G

Borough of Belmar Beach Vehicle Use Regulations

BOROUGH OF BELMAR BEACH VEHICLE USE REGULATIONS

Recreational vehicles are prohibited on all Borough beaches.

Operators of motor vehicles must possess a valid New Jersey driver's license.

Incidents that result in injury and/or property damage must be reported immediately to the Borough Police Department and/or Business Administrator.

All drivers must obtain a copy of the Borough of Belmar Beach Management Plan and the weekly Beach Nesting Birds & Endangered Species Update issued by the NJDFW Endangered & Nongame Species Program to be aware of the No-Drive Zone restrictions.

All vehicles are prohibited in the Protected Zone (March 15 – November 30) except for Emergency Response Vehicles. Borough beach clean-ups with a Public Works vehicle (separate from Clean Ocean Action) may perform clean-ups in the Protected Zone between December 1 and March 14.

Non-municipal vehicles, licensed beach vendors are permitted to use motor vehicles in the Recreational Zone only for conducting business from 7:30 a.m. to 9:30 a.m. and from 5:00 p.m. to 6:30 p.m.

Vehicle travel will be prohibited in the Plant Protection Strips from May 15 – November 30.

Maximum speed limit shall be 5 miles per hour.

Seat belts must be worn at all times.

Vehicles must be equipped with fire extinguisher.

Lights must be on at all times.

Vehicles must be turned off when operator is out of the vehicle.

Tailgates must be up while vehicles are moving.

Backing up vehicles without a clear view will only be conducted with a ground guide.

Personnel must be seated inside of vehicle with seatbelt (maximum 3 persons in front seat).

APPENDIX H

Effects of Sand Fences and Planting of Vegetation on Piping Plover Breeding Habitat and Recommendations to Avoid or Minimize Habitat Degradation

Effects of Sand Fences and Planting of Vegetation on Piping Plover Breeding Habitat and Recommendations to Avoid or Minimize Habitat Degradation

The Atlantic Coast Piping Plover Recovery Plan (USFWS 1996) includes Task 1.23:

> **Discourage beach stabilization projects including snowfencing and planting of vegetation at current or potential plover breeding sites.** Snowfencing and plantings of American beach grass (*Ammophila breviligulata*), sea oats (*Uniola paniculata*), and other vegetation accelerate the processes that degrade habitat and should be avoided. Installation of snowfences and "planting" of discarded Christmas trees in blowouts, overwashes, or elsewhere on the beach should also be avoided. To the extent possible, the natural processes of overwash and blowouts that perpetuate characteristics of preferred habitat should be allowed to continue unimpeded.

Various consultations (e.g., USFWS 1995, 1997) for piping plovers have incorporated explicit conservation measures to avoid adverse effects by proscribing use of snowfences (referred to as "sand fences" in many documents and hereafter in this document) and planting of vegetation in current and potential piping plover habitat. Here, we (1) update and summarize literature on relevant aspects of piping plover habitat requirements, (2) summarize literature on the effects of sand fences and vegetation planting on barrier beach topography and vegetative cover, (3) discuss effects of sand fencing and vegetation plantings on piping plover habitat, (4) provide recommendations to avoid adverse effects of sand fencing and vegetation planting on piping plover habitat, and (5) provide recommendations to reduce and mitigate those effects where they cannot be avoided.

1. Piping Plover Habitat Requirements

Piping plover nests are situated above the high tide line on coastal beaches, sandflats at the ends of sandspits and barrier islands, gently sloping foredunes, blowout[1] areas behind primary dunes, and washover[2] areas cut into or between dunes. They may also nest on areas where suitable dredge material has been deposited at a low slope and elevation. Nests are usually found in areas with little or no vegetation although, on occasion, piping plovers will nest under stands of American beachgrass (*Ammophila breviligulata*) or other vegetation (Patterson 1988, Flemming et al. 1992, MacIvor 1990). Feeding areas include intertidal portions of ocean beaches, washover

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[1] Blowouts are distinctive "bowl-like" areas within the interdune area caused by wind erosion behind the primary dune ridge; the ocean view is often obstructed.

[2] Washover areas are created by the flow of water through the primary dune line with deposition of sand on the barrier flats, marsh, or into the lagoon, depending on the storm magnitude and the width of the beach (Leatherman 1979). Nests may be situated on portions of these storm-created areas that are relatively dry during the nesting season, while plovers may feed on any portions that stay moist.

areas, mudflats, sandflats, wrack lines[3], and shorelines of coastal ponds, lagoons, or salt marshes (USFWS 1996). A large body of evidence reinforces the importance of wide, flat, sparsely-vegetated barrier beach habitats for recovery of Atlantic Coast piping plovers.

At Cape Cod National Seashore in Massachusetts, Jones (1997) found that significantly more nests were on beaches with access to bayside feeding habitats compared with random points. However, almost two-thirds of Jones's nests occurred on beaches without chick access to bayside foraging; nest success was significantly greater on beaches without bayside access, while fledging success did not differ significantly. Two logistic regression models indicated that sparse vegetation and distance from pedestrian access points were important indicators of beach suitability, while one of the models also identified bay access as characteristic of nest habitat selection. Beach slope at nests averaged 5.6%, less than the mean slope at random points (8.3%; Jones 1997).

Out of 80 piping plover nests observed by Strauss (1990) at Sandy Neck in Barnstable, Massachusetts, no nests were located seaward of "steep foredunes," where this habitat constituted 83% of the beach front. Much of the beach in Strauss's study site that was not used by piping plovers had been artificially plugged with discarded Christmas trees and/or sand fences. Piping plover distribution and foraging rates during the pre-nesting period (during establishment of territories and courtship) on South Monomoy Island, Massachusetts, indicated that sound and tidal-pond intertidal zones were the most important feeding areas in the period before egg-laying (Fraser et al. 2005).

Goldin and Regosin (1998) found significantly higher chick survival and overall productivity among chicks with access to salt pond "mudflats" than those limited to oceanside beaches at Goosewing Beach, Rhode Island. Goldin and Regosin (1998) also reported that broods on the pond shore spent significantly less time reacting to human disturbance (1.6%) than those limited to the ocean beach (17%). Since ocean beaches are highly attractive to recreational beachgoers, limiting plovers to these habitats may also increase the potential for disturbance from people and pets.

A 1992-1993 study of nest site selection on 90 km (55.8 miles) of beach on Jones Beach Island, Fire Island, and Westhampton Island, New York (Elias et al. 2000) found that all 1-km beach segments with ephemeral pools or bay tidal flats were used for nesting and brood rearing, whereas less than 50% of beach segments without these habitats were used. When the amount of time that plover broods used each habitat was compared with its availability, broods preferred ephemeral pools on segments where pools were present. On beach segments with bay tidal flats, broods preferred bay tidal flats and wrack to other habitats. On segments with neither ephemeral pools nor bay tidal flats, wrack was the most preferred habitat, and open vegetation was the second most preferred. Indices of arthropod abundance were highest on ephemeral pools and

[3] Wrack is organic material including seaweed, seashells, driftwood and other materials deposited on beaches by tidal action.

bay tidal flats. Chick peck rates were highest on ephemeral pools, bay tidal flats, and the ocean intertidal zone.

Cohen et al. (2008) reported that mean vegetative cover around piping plover nests on a recently re-nourished Long Island beach was 7.5%, and all plovers nested in <47% cover. Although almost 60% of nests were on bare ground, nests occurred in sparse vegetation more often than expected based on availability of this habitat type. Plovers also exhibited some preference for nest sites with coarse substrate compared to pure sand. At the same study area, piping plover chicks foraged more than expected and exhibited high peck rates in wrack, where arthropod abundance indices were also high (Cohen et al. 2009).

Following storm-and human-related increases in nesting and foraging habitat, the population at West Hampton Dunes, New York, grew from five pairs in 1993 to 39 pairs in 2000, and then declined to 18 pairs by 2004 concurrent with habitat losses to human development and vegetation growth (Cohen et al. 2009). Distribution of nests was heavily concentrated on the bayside of the barrier island in the early years following inlet formation and closure, but bayside nests decreased precipitously starting in 2001 and disappeared by 2004 as the study area was redeveloped and the bayside revegetated. The chick foraging rate was highest in bayside intertidal flats and in ocean and bayside fresh wrack. Chicks used the bayside more than expected based on percentage of available habitat, and survived better on the bayside before village construction and the initiation of predator trapping, but not after. In most years, density of nesting pairs adjacent to bayside overwash was 1.5 to two times that at an adjacent reference site, where beach nourishment increased nesting habitat but not foraging habitat. Cohen et al. (2009) concluded that local population growth can be very rapid where storms create both nesting and foraging habitat in close juxtaposition. An increase in local nesting habitat via artificial beach nourishment, however, is not necessarily followed by an increase in the local population if nearby intertidal flats are absent. Cohen et al. (2009) also note similarity between their results and observations by Wilcox (1959) of rapid colonization of habitats created on Westhampton barrier beaches by storms in the 1930s and their subsequent decline following revegetation and redevelopment.

Classification and regression tree analysis of piping plover nest-site selection at 19 New Jersey beaches was used to develop target values for habitat (i.e., goals for restoration projects): vegetative cover <10% on the backshore and 13% on the primary dune, 17-18% shell cover, dune height ≤1.1 meter, and dune slope ≤13% (Maslo et al. 2011). "Triggers" (when action is required to maintain suitable conditions) included vegetation density of 17% on the backshore and 22% on the primary dune, dune height 1.6 meter, and dune slope 17%. Habitat became unsuitable when vegetative cover exceeded 33.5%, distance from the high tide line to toe of the dune was less than 9.5 meters, dune height exceeded 2.0 meters, and dune slope exceeded 20%.

Dramatic increases in plover productivity and breeding population on Assateague Island in Maryland following the 1991-1992 advent of large overwash events corroborated earlier findings of significantly higher survival rates of piping plover chicks using sparsely vegetated access routes to reach foraging habitats on the island interior and bay beaches compared with those

which foraged solely on the ocean beach (Loegering and Fraser 1995). Piping plover productivity, which had averaged 0.77 chicks per pair in a five-year period before the overwash, averaged 1.67 chicks per pair from 1992 to 1996 following the overwash events. The nesting population also grew rapidly, doubling by 1995 and tripling by 1996, when 61 pairs nested there. Over the 12 years from 1996-2007, the breeding population held steady at approximately 60 pairs (range = 56-66), but increasing vegetation caused, in part, by construction of a foredune that impeded overwash, forced nesting locations further seaward or into atypical vegetated habitats and blocked chick access to bayside foraging habitats (NPS 2012, Schupp et al. 2013). The breeding population declined to 49 pairs in 2008, and productivity matched the previous recorded low of 0.41 chicks per pair. Overwash restoration efforts have included the cutting of 14 notches (i.e., cross-shore depressions with a peak elevation of 2.16 meters) in the constructed foredune in 2008 and 2009 (Schupp et al. 2013).

In Virginia, Boettcher et al. (2007) reported that the five islands where piping plover breeding was observed every year from 1986-2005, "… encompass large segments of broad beaches with low discontinuous dunes and expansive sand-shell flats … providing unimpeded access from beach nest sites to the moist-soil ecotones of backside marshes." Cross and Terwilliger (2000) found that chick habitat use, foraging rates, and invertebrate prey abundance on four Virginia barrier islands was highest at moist inner-beach marsh edge and barrier flat habitats.

At Cape Lookout National Seashore, North Carolina, 13-46 pairs of plovers have nested on North and South Core Banks each year since 1992. While these unstabilized barrier islands total 70.4 km (44 miles) in length, nesting distribution is extremely patchy, with all nests clustered on the highly dynamic ends of the barrier islands, recently closed and sparsely vegetated "old inlets," expansive barrier mudflats, or new ocean-to-bay overwashes (NPS 2008). During a 1990 study, 96% of brood observations at Cape Lookout Seashore were on bay tidal flats, even though broods had access to both bay and ocean beach habitats (McConnaughey et al. 1990).

2. Effects of sand fences and vegetation planting on barrier beach topography and vegetative cover

Sand fences accelerate sand accumulation, affecting both topography and density of vegetative cover. Replicate treatments using sand fences oriented parallel to the shore, parallel with perpendicular additions, and zigzag (also termed oblique or diagonal) and vegetation plantings at Timbalier Island, Louisiana and Santa Rosa Island, Florida demonstrated appreciable vertical height and volume accumulation over controls (Mendelssohn et al. 1991, Miller et al. 2001). Fences filled rapidly, with half the accumulation over three years occurring in the first six months in Florida, 64% in the first 14 months in Louisiana. In sand deficient systems, however, the shoreline will continue to erode back toward the dune unless the beach also is nourished (Mendelssohn et al. 1991, Freestone and Nordstrom 2001).

Vegetation also traps sand (USACE 1967), but it plays a smaller role than fences in sand accumulation during the first few years after planting (Mendelssohn et al. 1991, Miller et al. 2001). Over time, however, vegetation will continue to accumulate sand through upward and lateral growth without additional inputs (Miller et al. 2001). Lower density plantings resulted in

formation of a low gradient sand ramp whereas higher density plots resulted in formation of a steep dune (Jackson and Nordstrom 2011). Thinning can be used to temporarily reduce cover, but hand-pulling did not prevent rapid regrowth in vigorous stands of American beach grass (USACE 1967).

Nordstrom et al. (2000) state that the frequent use of fences or earth-moving equipment to rebuild the foredune after scarping or breaching by floods leads to a linear, uniform dune ridge. Their recommendations for enhancing more naturally functioning dunes on developed coasts include restricting use of sand-trapping fences after burial of the initial fence that is used to create the initial dune ridge that provides interim protection to human structures. Symbolic (string) fences allow for aeolian (wind) transport while preventing trampling of dunes (Nordstrom et al. 2000, Grafals-Soto and Nordstrom 2009). Protecting the backbeach using signs or non-sand-trapping fences allows dunes to form at the uppermost wrack lines and define the seaward location of the foredune on natural criteria (Nordstrom et al. 2000).

Cessation of sand fence installation and beach-raking in Avalon, New Jersey resulted in greater dune volume and beach volume, but lower dune crests compared with "managed" sites with sand fences and beach-raking (Nordstrom et al. 2012). Suspension of raking and sand fence installation allowed the dunes to build seaward creating greater and more natural topographic variability as well as diversity of plant species. Furthermore, the new fences at "managed" sites had to be placed close to the dune to retain space for beach recreation (Nordstrom et al. 2012).

3. Effects of sand fences and vegetation plantings on piping plover habitat

The wide, flat, sparsely vegetated barrier beaches preferred by the piping plover are an unstable habitat, dependent on natural forces for renewal and susceptible to degradation by development and shoreline stabilization efforts (USFWS 1996). Study-specific management recommendations to conserve ephemeral pools, bay tidal flats, sparse vegetation, gently-sloping foredunes, and overwashes are contained in Loegering and Fraser (1995), Elias et al. (2000), Fraser et al. (2005), and Cohen et al. (2009). Conversely, activities that accelerate the formation of heavily vegetated berms and dunes that block overwash and replace gently sloping and sparsely vegetated foredunes adversely affect piping plovers and their habitats. Jones (1997) stated that the use of sand fencing or discarded Christmas trees will degrade piping plover nesting habitat if these installations create dune slopes >10%. Cohen et al. (2008) noted that once beach grass becomes dense, it may have to be thinned each growing season to retain characteristics of suitable piping plover nesting habitat. Maslo et al. (2011) conclude that recovery and persistence of piping plovers will depend on conservation and restoration of breeding habitats with very low slopes, dune heights, and vegetative cover.

Other consequences of artificial beach stabilization include exacerbating conflicts with beach recreation as sand fences and vegetation plantings narrow the remaining seaward beach at the same time that they impede landward or cross-island movement of sand. Piping plovers at Westhampton Dunes placed most of their nests on the bay side of the beach in the first years following the breach and its closing, but redevelopment and revegetation of the bayside shifted nesting to the ocean beach (Cohen et al 2009). Sand fences and vegetation plantings similarly

accelerate loss of sparsely vegetated foredune habitats, forcing piping plovers and human beach-goers to compete for the same narrowing swath of seaward beach.

Piping plover nests on narrow linear beaches backed by sand fences and vegetation may also be more susceptible to predation. Modeling by Seymour et al. (2004) using red fox movement data from northern England indicated that risk of fox predation on ground-nesting bird species in long, linear habitats increased with narrowing habitat width, and was sensitive to changes in habitat width of even a few meters. Furthermore, artificially-enhanced dunes and vegetation may augment denning habitat for mammalian predators.

4. Avoiding Adverse Effects From Sand Fences And Vegetation Planting

Not installing sand fences or planting vegetation is the practice most compatible with conserving piping plover habitat. However, one-time installation of a single strand of sand fence not more than three meters seaward of dense vegetation or developments that are currently unsuitable habitat for piping plovers may constitute a *de minimus* impact. If zigzag configurations or perpendicular spurs are included in the sand fence design, the seaward limit of the fence should not extend beyond the three meter limit. Likewise, planting native herbaceous vegetation within three meters of existing dense vegetation or developments is likely to cause *de minimus* effects. This should not be interpreted, however, to mean that successive additions of sand fencing or vegetation will not rise to the level of significant adverse effects (i.e., if more fence rows are added as the initial installations engender dense vegetation, then the width and area of available piping plover habitat is likely to be substantially compromised). Furthermore, sand fence installation and vegetation planting should be conducted before March 15 or after September 1 in order to avoid direct disturbance to piping plovers in their breeding range.

Whenever possible, symbolic fences should be used instead of sand fences to channel public use away from sensitive vegetation or wildlife habitat. Where temporary use of sand fences is deemed necessary for public use management, adverse effects can be avoided via prompt removal. Sand fences placed for public use management in suitable piping plover habitat should not be allowed to become buried. They should always be removed before September 1; if natural processes do not restore beach topography to pre-installation elevation and profile, remedial mechanical re-grading to restore the pre-fencing topography should be conducted before March 15.

5. Reducing and Mitigating Adverse Effects from Sand Fences and Vegetation Planting Where Their Use Is Deemed Essential to Protection of Infrastructure

The most deleterious effects from sand fences and vegetation occur when they are situated on habitat at unstabilized inlets, on spits, or on other shoreline with overwashes or blowouts, which constitute the most valuable plover habitat. The highest priority should be accorded to avoiding use of sand fences and vegetation planting in these highly suitable habitats, which support the highest densities of breeding piping plovers (Cohen et al. 2009).

Where they are deemed essential to protection of beachfront developments or other infrastructure (and where overwashes or blowouts have not formed), sand fences should be placed as far

landward as possible in order to minimize the amount of sparsely vegetated and gently sloping beach that will be replaced with steep dunes and dense vegetation. The number of rows of sand fence should be minimized to decrease the extent of habitat loss.

Only native herbaceous vegetation should be planted and the areal extent and density of plantings should be minimized. Adverse effects can be further reduced if conservation commitments include periodic thinning of planted beach grass, with a goal of maintain vegetation density of around 10% on the backshore and 13% on the primary dune (Maslo et al. 2011). Both mechanical and chemical (herbicide) thinning treatments can be considered. Project sponsors or landowners are strongly encouraged to include provisions for monitoring and evaluating effects of thinning on both the vegetation and on piping plover habitat use. Removal of dead vegetation may be needed to restore habitat suitability.

On beaches where dune erosion is a concern, managers should consider suspending any ongoing mechanical beach cleaning activities. Hand-picking anthropogenic trash and leaving the wrack will foster the natural dune development process (Nordstrom et al. 2000, Nordstrom et al. 2012, Cathcart and Melby 2009). It will also conserve important wrack foraging habitat for piping plovers and other shorebirds (Gibbs 1986, Hoopes 1993, Elias et al. 2000, Cohen et al. 2009, Defeo et al. 2009).

Beach managers should anticipate increased conflicts between piping plovers and human recreation seaward of dunes on beaches narrowed through the use of sand fences and vegetation planting. Additional piping plover monitoring, wardening, public outreach, and enforcement of symbolic fences should be provided to manage and reduce human disturbance of piping plovers.

Predator removal should be provided to mitigate the increased efficiency of predators hunting on beaches that made narrower and more linear by sand fences or vegetation planting.

Effects of sand fences and planted vegetation on habitat characteristics and essential piping plover behaviors should be monitored[4] and compared with nearby untreated control areas. Data collection should be conducted pre-project (to document baseline conditions) and annually for five years following project implementation. Important parameters may include (but are not limited to) dune height, dune slope, width and density of vegetation, width and slope of the beach seaward of the dune and of vegetation, abundance and distribution of piping plover breeding territories, piping plover chick habitat use, and predator track patterns.

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[4] This monitoring should be considered during formulation of requirements under 50 CFR 402.14(i)(1)(iii) and 50 CFR 402.12(i)(3).

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APPENDIX I

Borough of Belmar Beach Actions Table

Action	Zone	Prohibited Start Date	Prohibited End Date	Comment
Borough Police Patrols (non-emergency)	Protected	March 15 September 1*	August 31 November 30*	Only Emergency vehicles are allowed during this period. * Between September 1 and November 30, vehicles will remain at or below the high water line.
	Recreational	No Restrictions* May 15**	No Restrictions* November 30**	* When no listed species are present. ** Vehicles prohibited in Plant Protection Strip, preferentially year-round but minimally from May 15 to November 30.
Beach Lifeguard Patrols (non-emergency)	Protected	March 15 September 1*	August 31 November 30*	Only emergency vehicles are allowed during this period. * Between September 1 and November 30, vehicles will remain at or below the high water line.
	Recreational	No Restrictions* May 15**	No Restrictions* November 30**	* When no listed species are present. ** Vehicles prohibited in Plant Protection Strip, preferentially year-round but minimally from May 15 to November 30.
Public Works (non-emergency)	Protected	March 15 September 1*	August 31 November 30*	Only emergency vehicles are allowed during this period. * Between September 1 and November 30, vehicles will remain at or below the high water line.
	Recreational	No Restrictions* May 15**	No Restrictions* November 30**	* When no listed species are present. ** Vehicles prohibited in Plant Protection Strip, preferentially year-round but minimally from May 15 to November 30.
Organized Beach Clean-Ups, including Large Debris Removal (with vehicles)	Protected	March 15 September 1*	August 31 November 30*	NJDFW and USFWS will provide a monitor to oversee SOE Clean-ups. * Between September 1 and November 30, vehicles will remain at or below the high water line.
	Recreational	No Restrictions* May 15**	No Restrictions* November 30**	* When no listed species are present. ** Vehicles and plant disturbance prohibited in Plant Protection Strip, preferentially year-round but minimally from May 15 to November 30.

Action	Zone	Prohibited Start Date	Prohibited End Date	Comment
Beach Raking	Protected	Year-round	Year-round	No raking except for SOE. NJDFW and USFWS will provide a monitor to oversee SOE raking.
	Recreational	No Restrictions* May 15**	No Restrictions* November 30**	Refer to DLUR permit. * When no listed species are present. ** No beach raking in Plant Protection Strip, preferentially year-round but minimally from May 15 to November 30.
Beach Nourishment	Protected	March 15	Fledging of the last chick (plover or tern)	Refer to USFWS's 2002 Programmatic Biological Opinion.
	Recreational	March 15	Fledging of the last chick (plover or tern)	Refer to USFWS's 2002 Programmatic Biological Opinion.

Action	Zone	Prohibited Start Date	Prohibited End Date	Comment
Sand Scraping	Protected	Year-round	Year-round	NJDFW and USFWS will provide a monitor to oversee SOE scraping.
	Recreational	No Restrictions* Year-round**	No Restrictions* Year-round**	Refer to DLUR permit. * When no listed species are present. ** No sand scraping in Plant Protection Strip year-round.
Dune Management (Routine)	Protected	March 15	August 31 November 30*	* If seabeach amaranth is present, any work will be carried out between December 1 and March 14.
	Recreational	No Restrictions* May 15**	No Restrictions* November 30**	Refer to DLUR permit. * In the event that no listed species are present. ** Vehicles and plant disturbance prohibited in Plant Protection Strip, preferentially year-round but minimally from May 15 to November 30.
Fireworks	Protected	March 15	August 31	Launch area prohibited within 0.75 mile of any nesting site.
	Recreational	No Restrictions*	No Restrictions*	* Launch area prohibited within 0.75 mile of any nesting site.

Action	Zone	Prohibited Start Date	Prohibited End Date	Comment
Organized Events	Protected	March 15	August 31 November 30*	*Between September 1 and November 30 only when the area has been surveyed for seabeach amaranth and any plants are fenced with a minimum 3-meter buffer.
	Recreational	No Restrictions* May 15**	No Restrictions* November 30**	* When no listed species are present. ** Vehicles and plant disturbance prohibited in Plant Protection Strip, preferentially year-round but minimally from May 15 to November 30.
Kite and Drone Flying	Protected	March 15	August 31	Prohibited within 200 meters of posted nesting areas.
	Recreational	No Restrictions*	No Restrictions*	*Prohibited within 200 meters of posted nesting areas.
Pets on the Beach	Protected	Year-round	Year-round	Refer to Borough Ordinance Code 18-2.7(l).
	Recreational	May 1	September 30	Refer to Borough Ordinance Code 18-2.7(l)(1).