Certificate of Inclusion in the Massachusetts Habitat Conservation Plan for Piping Plover Nauset Beach, Town of Orleans July 8, 2016

The United States Fish and Wildlife Service ("USFWS") issued to the Massachusetts Division of Fisheries and Wildlife ("DFW") an Incidental Take Permit ("Permit") No. TE0128C-0, on July 8, 2016 for a period of 25 years, pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973 (ESA), as amended, 16 U.S.C. 1539(a)(1)(B). The Permit authorizes the "Take" of piping plover (*Charadrius melodus*) in accordance with the terms and conditions of the Permit, and the Massachusetts Statewide Habitat Conservation Plan ("HCP"). Under the Permit, the Town of Orleans ("Participant") is authorized to perform covered activities that may result in the "Take" of piping plover, provided such covered activities are conducted in compliance with all applicable terms and conditions of the Permit and the HCP.

As the owner of the property depicted in Appendix J of Exhibit "A", or an entity with written permission to use property including piping plovers or their habitat, attached hereto and incorporated by reference into this Certificate of Inclusion ("COI"), you are entitled to the protection of the Permit for the activities that may result in a Take of piping plover as authorized by the HCP and by DFW in Conservation & Management Permit No. 016-283.DFW, including but not limited to the Impact Avoidance and Minimization Plan and the Mitigation Plan and other exhibits attached thereto (collectively, "CMP"), which DFW has issued to you pursuant to the Massachusetts Endangered Species Act, MGL c. 131A, ("MESA")) and the MESA regulations at 321 CMR 10.00. The CMP and all attachments thereto are depicted at Exhibit "A," attached hereto and incorporated by reference into this COI.

This COI shall be valid for a period of three (3) years from the date signed by the Director of DFW unless otherwise suspended or revoked by DFW for noncompliance. However, plan participants are required to obtain reauthorization from the DFW on an annual basis, prior to carrying out covered activities in a given year. DFW may grant extensions or renewals of this COI or require the submittal of a new application for a COI, including in cases where your request for continued coverage under a COI would exceed the available number of statewide take allowances under the Permit because DFW cannot grant more take exposure allowances than allowable pursuant to the Plan. As set forth in Exhibit A, DFW reserves the right to unilaterally adjust on an annual basis the amount of take exposure authorized pursuant to this COI.

The undertaking of activities authorized by this COI and the associated CMP does not relieve the Participant of its obligation to comply with any other applicable federal or state law or regulation or municipal bylaw, ordinance or regulation.

In the event the Participant fails to comply with the terms and conditions of the Permit, the HCP or the CMP the Participant shall be subject to enforcement action, including but not limited to, the immediate suspension or revocation of the COI and/or the CMP. DFW shall notify the USFWS within 2 business days of DFW's discovery of the infraction, and within 1 business day of its decision to suspend or revoke

the COI. Administrative, judicial or other action on the part of DFW does not foreclose the possibility that FWS may seek its own remedy against Participant or DFW.

By signing this Certificate of Inclusion, you signify your election to receive Take Authorization to expose *up to two* Piping Plover broods/nests per year to covered activities under DFW's Permit, subject to the terms and conditions in the Permit and the associated CMP. You also assent to the requirement under both the ESA and MESA, and as explained in the HCP, that beach use and management, excepting the above-listed covered activities, must be comply with the State Guidelines and Federal Guidelines, effective at the time of COI issuance, or as amended during the term of the COI.

This Certificate of Inclusion does not impose additional regulatory control over the signatory nor require the signatory to provide additional information not called for in the HCP, Permit or COI, but instead ensures compliance with 50 Code of Federal Regulations, section 13.25(d).

Coverage under the Permit will become effective upon receipt of the executed COI by DFW and Participant, subject to all requirements of the Plan and COI Attachments. In the event the subject property is sold or leased, the Participant must inform the buyer or lessee of these provisions in writing with a copy to DFW. If the new owner or lessee desires to be covered under the ESA and MESA for piping plover take, it must: assent to the terms of the HCP, Permit, and CMP; demonstrate its financial ability and provide assurances to undertake the IAMP and mitigation plan requirements; demonstrate its eligibility under the provisions of the HCP. Otherwise the Participant should terminate the COI.

Massachusetts Division of Fisheries and Wildlife k Buckley, Director July 8, 2016

Town of Orleans

John F. Kelly, Town Administrator Date

EXHIBIT A: Conservation & Management Permit (Includes Impact Avoidance & Minimization Plan (IAMP) and Mitigation Plan as attachments)





Division of Fisheries & Wildlife

Jack Buckley, Director

MA ENDANGERED SPECIES ACT (G.L. c.131A) CONSERVATION AND MANAGEMENT PERMIT

DATE	July 8, 2016
CONSERVATION PERMIT NO.:	016-283.DFW
NHESP FILE NO.	16-35397
PERMIT HOLDER	Town of Orleans
ΑCTIVITY	Use of oversand vehicles and other activities associated with recreational beach management, Nauset Beach, Orleans, MA

Pursuant to the authority granted in the Massachusetts Endangered Species Act ("MESA") (G.L. c. 131A) and its implementing regulations (321 CMR 10.23), the Director of the Massachusetts Division of Fisheries & Wildlife (the "Division") hereby issues a Conservation and Management Permit to the Town of Orleans (the "Permit Holder"). This permit and associated Town of Orleans Certificate of Inclusion in the Massachusetts Habitat Conservation Plan (HCP) issued in accordance with the Endangered Species Act (ESA) for Piping Plover, dated July 8, 2016 (the "COI"), authorize the "taking" of the State and Federally listed Piping Plover which is listed as "Threatened" pursuant to the MESA and "Threatened" pursuant to ESA arising out of the use of oversand vehicles and other recreational and beach operation activities described in documents attached hereto (the "Activities"), at Nauset Beach, Orleans, Massachusetts (the "Property"). This permit also authorizes the "taking" of the state-listed Least Tern (*Sternula antillarum*) and Diamondback Terrrapin (*Malaclemys terrapin*), listed as Special Concern and Threatened, respectively, pursuant to MESA, associated with the aforementioned Activities.

During a given beach season, a maximum of 2 broods or nests of piping plovers and up to 20 unfledged least tern chicks could be exposed to oversand vehicle (OSV) use, or reduced symbolic fencing/nest moving in the case of nests, resulting in heightened risk of chick mortality or nest abandonment. Similarly, Diamondback Terrapin adults and hatchlings are exposed to some mortality risk when crossing the OSV corridor. However, numerous impact avoidance and minimization procedures required by way of this Permit and the HCP will significantly decrease risk.

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Under the authority granted by and in accordance with MGL c131A§3 and 321 CMR 10.23, the Director may permit the taking of a State-listed Species for conservation and management purposes provided that there is a long-term Net Benefit to the conservation of the impacted species. If the Director determines that the applicant for a permit has avoided, minimized and mitigated impacts to the State-listed Species consistent with the following Performance Standards, then the Director may issue a conservation and management permit, provided:

(a) the applicant has adequately assessed alternatives to both temporary and permanent impacts to State-listed Species;

(b) an insignificant portion of the local population would be impacted by the Activity or Activity, and;

(c) the applicant agrees to carry out a conservation and management plan that provides a long-term Net Benefit to the conservation of the State-listed Species that has been approved by the Director, as provided in 321 CMR 10.23(5), and shall be carried out by the applicant.

The Director has determined that the applicant for this permit has met the above noted Performance Standards and that the conservation and management plan described herein provides a long-term Net Benefit to the affected state-listed species.

Pursuant to this permit, multiple impact avoidance and minimization measures including but not limited to pedestrian vehicle escorting, limited daily OSV travel windows, enhanced monitoring of unfledged chicks during OSV travel windows, speed limits, narrow width of the travel corridor, and relocation of Diamondback Terrapin nests will be implemented in order to minimize the risk of direct mortality; funding will be provided for offsite selective predator management, increased law enforcement and or educational outreach to benefit Piping Plovers and Least Terns; Diamondback Terrapin nests will be relocated so that hatchlings will not need to cross the OSV corridor to reach Pleasant Bay, terrapin nests will be protected from predators with wire cages, and hatchlings will be made available for headstarting to augment the Pleasant Bay population.

Therefore, the Activity can be permitted pursuant to the MESA. This Conservation and Management Permit (the "Permit") is issued to condition the Activities and to provide a long-term Net Benefit to the affected species.

In accordance with the document submitted to the Division entitled:

- "Massachusetts Habitat Conservation Plan for Piping Plover, Request for Certificate of Inclusion", dated May 5, 2016 (the "Plan"; <u>Attachment A</u>).
- Escrow Agreement (<u>Attachment B</u>)

Incorporated by reference into this permit, and any other plans and documents referenced herein, this Conservation and Management Permit is issued with the following conditions:

Conditions:

1. This Permit authorizes the exposure of up to two Piping Plover broods/nests and up to 20 unfledged Least Tern chicks to certain covered activities, as well use of the oversand vehicle ("OSV") corridor in the vicinity of Diamondback Terrapins, as described in Attachment A, subject to limitations described in Attachment A, and set forth in this

Permit and the COI.

- 2. Other than the exceptions authorized by this Permit, the Permit Holder shall carry out beach use and management in compliance with the relevant State Guidelines and Federal Guidelines for management of recreational beaches with breeding plovers and terns effective during the term of the Permit.
- 3. This Permit authorizes only otherwise lawful activities. All activities carried out pursuant to this Permit must be carried out in accordance with applicable local, state, and federal statutes and regulations.
- 4. As set forth in the COI, all activities authorized by this Permit must be carried out in accordance with the Final Massachusetts Division of Fisheries & Wildlife Habitat Conservation Plan for Piping Plover (HCP), dated June 2016, and Incidental Take Permit (ITP) No. TE01281C-0, dated July 8, 2016. The COI, HCP and ITP are incorporated by reference into this Permit. By acceptance of this Permit, the Permit Holder acknowledges receipt of copies of the COI, HCP and ITP, official copies of which are located at the Division's field headquarters, 1 Rabbit Hill Rd., Westborough, MA.
- 5. Division representatives shall have the right to enter and inspect the Property subject to this Permit at reasonable hours to evaluate permit compliance and require the submittal of any reasonable information not otherwise required by this Permit but deemed necessary by the Division to complete its evaluation.
- 6. Any change to the proposed Plan shall require the Permit Holder to inquire of the Division, in writing, whether the change is significant enough to require the filing of a new Conservation and Management Permit Application, and or require additional long-term Net Benefit for affected State-listed species. The Division retains the right to require the submittal of additional, reasonable information to evaluate the plan change.
- 7. Prior to implementing the Plan, the Permit Holder shall notify the Division in writing of the name, address, business and home telephone numbers of the manager responsible for compliance with this Conservation and Management Permit. The Permit Holder shall provide updated information in writing to the Division should a new or additional manager be hired after the Activity has commenced.
- 8. The Permit Holder shall notify the Division at least 24 hours prior to initiating any covered activity affecting a new brood or nest not previously exposed.
- 9. Prior to the implementation of the Plan or any covered activity in any given year, the Permit Holder shall provide the Division with proof that it has secured adequate funding to implement the annual requirements of the Plan consistent with the budget provided in the Plan.
- 10. Impact avoidance and minimization procedures to protect Least Terns, Piping Plovers, and Diamondback Terrapins shall be implemented in accordance with the Plan.
- 11. Finding, relocation, and caging of Diamond Terrapin nests shall be carried out by qualified personnel approved and permitted in writing in advance by the Division.

- 12. Interim and annual reporting shall be conducted in accordance with the Plan.
- 13. Prior to the implementation of the covered activities in 2016, the Permit Holder shall execute the escrow agreement shown in <u>Attachment B</u> and fund the escrow account with \$11,600. Prior to carrying out covered activities in 2017 and 2018, the Permit holder shall provide additional funding of up two \$11,600 per year in order to ensure that a minimum of \$5,800 of mitigation funding is provided for every piping plover brood or nest exposed to covered activities over the life of the permit.
- 14. In accordance with the HCP, the Permit Holder must obtain written reauthorization from the Division to carry out covered activities prior to the 2017 and 2018 beach seasons. No covered activities may be carried out in 2017 or 2018 prior to receipt of written reauthorization. As set forth in the HCP, the Division may, in its sole discretion, reduce the allowable take exposure for those years or decline to reauthorize any exposure.
- 15. A violation of ny condition of this Permit, COI. HCP or the ITP will result in an unauthorized Take pursuant to M.G.L. c. 131A or under the HCP or ITP may be subject to civil and or criminal penalties pursuant to M.G.L. c. 131A. In the event of such non-compliance, the Division may suspend, or revoke this Permit and the COI. The Permit Holder shall have the right to request an appeal within 30 days of any suspension or revocation of this Permit or COI in accordance with the requirements of Condition No. 16 below.
- 16. <u>Notice of Appeal Rights:</u> This Determination is a final decision of the Division of Fisheries and Wildlife pursuant to 321 CMR 10.23. Any person aggrieved by this decision shall have the right to an adjudicatory hearing at the Division pursuant to M.G.L. c. 30A, s.11 in accordance with the procedures for informal hearings set forth in 801 CMR 1.02 and 1.03.

Any notice of claim for an adjudicatory hearing shall be made in writing and be accompanied by a filing fee in the amount of \$500.00. The notice of claim shall be sent to the Division by certified mail, hand delivered or postmarked within 21 days of the date of the Division's Determination to:

Jack Buckley Director Division of Fisheries and Wildlife Field Headquarters One Rabbit Hill Road Westborough, MA 01581

Any notice of claim for an adjudicatory hearing shall include the following information:

- 1. The file number for the Activity;
- 2. The complete name, address and telephone number of the person filing the request, and the name, address and telephone number of any authorized representative;
- 3. The specific facts that demonstrate that a party filing a notice of claim satisfies the requirements of an "aggrieved person," including but not limited to (a) how they have a definite interest in the matters in contention within the scope of interests or area of concern of M.G.L. c. 131A or the regulations at 321 CMR 10.00 and (b)

have suffered an actual injury which is special and different from that of the public and which has resulted from violation of a duty owed to them by the Division;

- 4. A clear statement that an adjudicatory hearing is being requested;
- 5. A clear and concise statement of facts which are grounds for the proceeding, the specific objections to the actions of the Division and the basis for those objections; and the relief sought through the adjudicatory hearing; and a statement that a copy of the request has been sent by certified mail or hand delivered to the applicant and the Record Owner, if different from the applicant.

Director kley, Massachusetts Division of Fisheries & Wildlife

On this 8th day of July 2016, before me, the undersigned notary public, personally appeared <u>Jack</u> <u>Buckley, Director</u>, proved to me through satisfactory evidence of identification, which was <u>personal knowledge</u>, to be the person whose name is signed on the preceding or attached document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

Emily Melissa Holt, Notary Public My Commission expires: July 28, 2017

Conservation Permit 016-283.DFW Issued this 8th day of July, 2016 Permit Expires: 1 December 2018



ACKNOWLEDGEMENT AND ACCEPTANCE OF ALL TERMS OF THIS CONSERVATION PERMIT

The undersigned below agrees that commencement of any work authorized by and described in this Conservation and Management Permit constitutes acknowledgement and acceptance of all terms of this permit.

John F. Kelley, Town Manager Town of Orleans	

COMMONWEALTH OF MASSACHUSETTS

On this ______day of ______, 20____, before me, the undersigned notary public, personally appeared _______, proved to me through satisfactory evidence of identification which was _______ to be the person whose name is signed on the preceding or attached document, and who swore or affirmed to me that the contents of the document are truthful and accurate to the best of his/her knowledge and belief.

Notary Public

SEAL

My commission expires:

Distribution List

Nathan Sears, Town of Orleans Orleans Board of Selectman Orleans Conservation Commission DEP Southeast Regional Office, Wetlands Program David Simmons, USFWS

ATTACHMENT A



STATEWIDE HABITAT CONSERVATION PLAN

Orleans Request for Certificate of Inclusion (COI)

NAUSET BEACH, 2016



Town of Orleans 19 School Road Orleans, MA 02653 Telephone (508) 240-3755 Fax (508) 240-3388 www.town.orleans.ma.us

May 5, 2016

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1 Site Description

The Nauset Beach Barrier Beach system includes the Nauset Spit, Nauset Public Bathing Beach, and Nauset Beach South. These areas are owned and operated by the Town of Orleans. The area is classified as a Barrier Beach (310 CMR 10.29), a resource area which itself contains the following resource areas: Land Subject to Coastal Storm Flowage (310 CMR 10.02 (1)(d)), Land Under the Ocean (310 CMR 10.25), Coastal Beaches (310 CMR 10.27), Coastal Dunes (310 CMR 10.28), Salt Marshes (310 CMR 10.32), and Rare Species Habitat (310 CMR 10.37).

Nauset Spit

The Nauset Spit is shown on Orleans Assessors' Map 22 and Map 14, Parcels 76 and 11 and Eastham Assessors' Map 26 and Map 27-A as parcel 26-6. The combined parcels contain 150+/- Acres. This area starts at the Aspinet Road and Inlet Road intersection then from Callanan's Pass onto the over sand corridor to the Town Line and continues in a northerly direction, into the Town of Eastham, to its terminus at the Nauset Inlet.

Nauset Public Bathing Beach

The Nauset Public Bathing Beach is seaward of the Town owned ~900 car parking lot at the end of Beach Road and is located on Orleans Assessors' Map 14 Parcel 11. The public bathing beach is only accessible to pedestrians. The lot contains recreational and administrative infrastructure buildings, including a toll booth, administration building, a privately operated town owned leased concession stand, bath houses and 3 primary recreational foot traffic access points leading to the main public beach.

Nauset Beach South

The area of Nauset Beach South is shown on Assessors' Maps as the following: Map 38, Parcels 13 and 14; Map 45, Parcel 11 and 50; Map 52, Parcel 10; Map 59, Parcel 1; Maps 73, Parcel 1. The combined parcels contain 700+/- Acres of Barrier Beach. This area starts at the end of the existing public beach parking lot, and continues in a southerly direction to the Chatham town line, where the beach extends into Chatham to its terminus.

1.1 Maps

Figure 1: Nauset Barrier Beach Site Maps



Statewide HCP - Town of Orleans Request for a Certificate of Inclusion, May 5, 2016





1.2 Description of Piping Plover Habitat, Past Population Size and Reproductive Success, Management Issues

The Nauset Barrier System is a wealth of resource areas much of which provide excellent habitat to many species of wildlife. The resource areas previously mentioned, Land Subject to Coastal Storm Flowage (310 CMR 10.02 (1)(d)), Land Under the Ocean (310 CMR 10.25), Coastal Beaches (310 CMR 10.27), Coastal Dunes (310 CMR 10.28), Salt Marshes (310 CMR 10.32), and Rare Species Habitat (310 CMR 10.37) make up the barrier system and within them are rare and unique conditions that provide excellent habitat specifically on the Nauset Spit and Nauset Beach South.

Nauset Spit

Nauset Spit is approximately 2.3 miles in length. The Spit contains Coastal Beaches, Coastal Dunes, Coastal Banks, and tidal creeks. It also lies adjacent to Town Cove, New Island, Stoney Island, Woods Cove, Tern Island, tidal mud flats and saltmarsh. The Spit has been slowly accreting northward into the Town of Eastham. It has also been subject to full breaches and overwash during severe storms and naturally migrates westward.

Nauset Spit contains many wash over areas where tidal storm surge and storm damage have breached through the primary dune system to the west area known as Town Cove. The overwash areas have created nesting habitat as well as foraging areas which allow the Piping Plovers to cross back and forth from the Atlantic Ocean to the Town Cove throughout the day and evening where they can forage on the east and west wrack lines as well as the tidal mud flats on the west side of the Spit. The tidal flats on the Town Cove or west side of the Spit contain abundant food source microorganisms, crustaceans and invertebrates for the Piping Plovers to forage on.

Recreational amenities on the Nauset Spit center on the use of the Spit by over-sand vehicles (OSVs). The Spit is open to use by OSVs in accordance with the DEP Order of Conditions (OOC) SE 54-723. The OOC contains key provisions requiring the protection of the key habitat. It is important to note that all of these habitat areas are required to be identified each year by Town staff by April 1 and delineated by a network of symbolic fencing and signs in order to ensure that the natural habitat is protected from pedestrians and OSVs each year.

New Island located within Town Cove just inside Nauset Spit, is monitored by both National Park Service staff and Town of Orleans staff. Since Orleans staff is on site daily, we conduct daily monitoring of New Island. One (1) nest is typically found on the island each year, but is almost always subject to high tide destruction and/or predator activity. The island is accessible at low tide by red fox and Eastern coyotes.

Nauset Public Bathing Beach

Nauset Beach is a ~3/4 mile long public bathing beach and it is located on the Atlantic facing Coastal Beach east of the public parking lot at the end of Beach Road. The beach is staffed by 3 lifeguard stations that cover roughly .25 mile where most of the pedestrian and beach bathing activity is focused. The

habitat in this area is predominantly Coastal Beach backed by a steep Coastal Dune system that is adjacent to a parking lot that hosts administration and bathhouse facilities. There are no OSVs allowed on this area of the Coastal Beach and the habitat type is not as diverse on this section of the barrier system as compared to north and south. This area does not have a historic nesting population of piping plovers.

Nauset Beach South

Nauset Beach South extends from the bathing beach area some ~4.3 miles to the Town line. The Barrier Beach then continues into Chatham where it's terminus is marked by an inlet into Pleasant Bay that was created in 2007. Nauset Beach South contains Coastal Beaches, Coastal Dunes, Coastal Banks, tidal creeks, Salt Marsh. Nauset Beach South is a true Barrier Beach with the Atlantic Ocean to the east and Pleasant Bay to the west. Nauset Beach South is accessible via OSVs and managed in accordance with an Order of Conditions that governs the use of the OSVs on the beach. Nauset Beach South, like the Nauset Spit, has many areas of overwash that lack dunes and elevation and create excellent habitat and foraging opportunities for nesting shorebirds. Two of the more significant areas of wash are the Little Pochet Wash area and an area south of that referred to as the Nemo Wash (Nor'easter Nemo 2012). Together, these areas are generally referred to as the Pochet Wash area.

The Pochet Wash area begins at Trail 1 on Nauset Beach South and runs .8 mile north just past the Little Pochet Wash at the area adjacent to the Pochet Creek. This area is the location of the OSV corridor which prior to the overwashes was referred to as the "back trail." This section of the OSV corridor provides important access to the front beach and also provides access to the head of the remaining back trail located at the base of Little Pochet Island. The habitat in this area extends as far west as Pochet Creek and Pochet Island and contains large areas of flat Coastal Beach. Vegetation consists of Cape American Beach Grass, Smooth Cordgrass, Slender Glasswort, Seaside Lavender, Salt Marsh Hay, Spikegrass and a variety of typical woody coastal shrubs. The grasses provide excellent habitat for adult plovers, their chicks, and their nests, providing shade and protection from avian predators.

Plovers often nest on the front beach from Little Pochet Wash south to Trail 1. Plovers also nest on the west side of the OSV trail in the large wash over areas. On the west side of the Pochet Wash, several salt marshes are present providing foraging opportunities for plovers. This foraging habitat is bordered by the shores of Little Pochet Island, Pochet Island, and Pochet Creek. These tidal mudflats are rich in food sources for chicks and enable them to thrive and develop. Plovers also feed to the east on the Atlantic Ocean wrack line.

The rest of the Nauset Beach South area consists of the Barrier Beach south of the Pochet Wash to the Chatham Town Line. The area consists of large Coastal Dunes and Coastal Beach. There are 5 historical trails known as Trail 1 through Trail 5 located in Orleans. They provide access to the beachfront from the back trail that runs the length of the Barrier Beach on the west side (landward) of the primary Coastal Dune. There are twelve private camps along the back trail. The historic camps date back to the early 1900s. They are privately owned and all have executed leases with the Town for occupation.

Due to the large dune system that separates the east facing beach where the nests and chicks may be

located, there is no danger presented to foraging adults and their chicks by use of the back trail since the dunes provide a sufficient barrier to plover movement from ocean to the bay. There are typically 3-4 nests established in the areas between Trail 2 and Trail 4 on the front beach. The front beach has been subject to severe erosion in the past few years and the area between Trail 4 and Trail 5 does not allow suitable conditions for plovers to nest because the high tides extend to the base of the dunes.

In summary, Nauset Spit and Nauset Beach South contain ideal piping plover habitat. The average number of piping plover nesting pairs is 20 to 25. Typically 10 to 12 pairs are located in the Pochet Wash, 2-5 pairs are located on Nauset Beach South from Trail 2 to Trail 5 and 1-2 pairs are located approximately north of Callanan's Pass on Nauset Spit. The number of pairs varies annually depending on the rate of predation, level of predator pressure, and amount of significant storm activity during the nesting season.

In the past 5 years the main predators have been large populations of red fox, Eastern Coyotes and American Crows. Nauset's unique habitat of open undeveloped land has contributed to an increased population of Eastern coyotes which have a foraging range of ~15 miles. On the Barrier Beach, they have no other natural predators other than humans who may take advantage of existing hunting laws. Very few coyotes are hunted by humans in the area, allowing their populations to grow year by year since they were first discovered on Cape Cod in the mid-1980s. Additionally, the Nauset Spit contains many south facing slopes ideal for red fox dens. As many as 6-12 adult red foxes have can be seen by staff nightly foraging on the Spit.

Fledge rates on Nauset Spit have been poor in recent years due to predator pressures from red fox, Eastern coyotes and American black crows. In 2014, the fledge rate on the Spit was 0. As a result of this intense predator pressure, plovers abandoned initial nesting attempts in areas 1-4 on Nauset Spit in 2015. Fledge rates were high in the Pochet Wash in 2015. With a total of 17 pairs, down from the average of 20 to 25 pairs, the fledge rate was 3.0 at the Pochet Wash, 2.85 on the Nauset Beach South and 2.85 on Nauset Spit. We attribute this high fledge rate to the aggressive non-lethal predator control program initiated by the Town of Orleans in 2015. *(See Appendix F)*

For specific productivity numbers for the last five years please see Appendix D.

1.3 Description of Habitat, Population, for Other State-Listed Species

Piping Plovers are not the only listed species present on the Nauset Barrier Beach. State-listed Least Terns (Sternula antillarum) and the occasional Common Tern (Sterna hirundo) nest on these beaches. American Oystercatchers (not listed), Roseate (Federal and State Endangered) and Arctic terns (State Special Concern), Black Skimmers (not listed), and Red Knots (Federal and State Threatened) are typically seen among staging migratory birds. The habitats described above are the same available for all of these species, with the exception of the red knot which is only occasionally found on the beach front and tends to forage on the flats of Pleasant Bay and roost in large aggregations on nearshore bayside flats south of the Chatham town line during high tide.

Least terns occupy similar nesting grounds as plovers. Terns prefer to lay their eggs in shallow depressions in the open sand. They typically arrive by May 15. Nests contain 2-3 eggs. The average

incubation is 21 to 23 days. Eggs are laid from the last week of May to the last week of July. Fledging occurs at 20-23 days. Adults deliver fish to their young. The most common prey for both chicks and adults are silversides smelt (Atherinops spp.) and anchovy (Anchoa spp.) Least Terns construct their nests very close to tide lines and as a result suffer great losses with over wash and/or storm surge. The chicks tend to hide in dune grass, vegetation, and wrack during the day and appear on the Coastal Beach when the adults are actively feeding them. They are subject to predation by black-backed gulls, American Crow, Herring Gulls, avian raptors, Red Fox, and Eastern Coyotes.

Recently, Least Terns have been present in the Pochet Wash. The colony has ranged from 65 pairs to 35 pairs in 2012-2015. They primarily nest and feed on the east side of the OSV corridor. In previous years, there was a Least Tern colony on the Spit that was one of the largest in the Northeast. In 2013, there were 45 pairs on the Spit. In 2014, the Least Tern colony on the Nauset Spit did not develop. In 2015 the number of terns decreased to 35. Chick productivity was moderate but no actual chick count is done based on monitoring individual nests. At one time, it reportedly had 800 nesting pairs.

2 Responsible Staff

2.1 Names and Credentials

Natural Resources Manager, Nathan Sears

Mr. Sears is the Town of Orleans Natural Resources Manager. He has a BS in Natural Resources and Wildlife Conservation, University of Massachusetts at Amherst, 1998. Mr. Sears has worked for the Town of Orleans for 9 Years and reports to the Town Administrator and the Board of Park Commissioners. Mr. Sears is also responsible for reporting to the Orleans Conservation Commission as it relates to beach operations under Order SE 54-723 or Order SE 54-2246.

Beach Director, Robert Bates

Mr. Bates is the Town of Orleans Beach Director. His experience is in Personnel Management and he has held this position for 2 years and has worked for the Town of Orleans since 2012. Mr. Bates is responsible for the daily operation of the Nauset Public Beach. Mr. Bates reports directly to the Orleans Natural Resources Manager.

Natural Resources Officer / Shorebird Specialist, Paul C. Wightman

Mr. Wightman is the Town of Orleans Shorebird Specialist and holds an A.S. in Plant & Soil Science, a B.S. Natural Resource Management & Wildlife Management and Environmental Science, Park Administration; and a Doctorate of Law in the Commonwealth of Mass.

For the past 4 years he has managed the Endangered Species Program (ESP) at Nauset Beach under the direction of the Natural Resources Manager. Mr. Wightman's responsibilities include daily monitoring operations of protected species, keeping daily logs, preparing NHESP Census Forms, endangered species habitat protection, daily management operations to protect and increase species productivity. He is also

responsible for advising the Natural Resources Manager on daily, short term and long term management issues and adherence to the Federal and State Guidelines for Managing Recreational Use of Beaches to Protect Piping Plovers, Terns and their Habitats MADFW (1993) and U.S. Fish & Wildlife Service (1994).

Seasonal Shorebird Monitor

During mid-May - August 31st, a full time Assistant Shorebird Monitor is employed (40) hours per week.

The Town of Orleans Seasonal Shorebird Monitor is responsible for the following:

- Locating and identifying endangered shorebird nesting and feeding areas, setting up exclosures, as directed by the Natural Resources Manager, signage, and symbolic fencing, conducting surveys and counts of birds.
- 2. Working in assigned habitat areas, must be able to: identify piping plover, least and common terns, American oystercatcher, and other shorebird species as required; identify and locate shorebird nesting and feeding areas; and map the identified areas.
- 3. Data collection and note taking to document nest establishment, egg laying, hatching, predation of nests, chick rearing, and fledgling activities.
- 4. Set up and maintain signage, symbolic fencing, and protective exclosures such that critical habitat areas are protected from human disturbance.
- 5. Interact with and educate the public to increase awareness of the birds and nesting/feeding areas.
- 6. Re-route vehicles around protected areas and escort essential vehicles through protected area as necessary.

In addition, the Town of Orleans employs from 6 to 9 temporary part time HCP Seasonal Shorebird Monitors who's roles are described in Section 4.2.2.

Beach Rangers

Beach Rangers are primarily responsible for code enforcement of all of the required Special Conditions in the Orders of Conditions as well as all of the Nauset Beach Rules and Regulations for ORVs. They report to the Beach Director and Natural Resources Manager. They assist the Shorebird Specialist and the Shorebird Monitors when enforcement of any violations concerning rare and endangered species is required.

Beach Ranger Tim Gould has worked for the Town of Orleans for 31 years as a Lieutenant in the Orleans Police Department.

Beach Ranger Matt Watts has worked for the Town of Orleans for 27 years as a Sergeant in the Orleans Police Department.

Beach Ranger David Young has worked for the Town of Orleans for 5 years.

3 Beach Management Plan

Both the Nauset Spit and Nauset Beach South are managed by the Board of Selectmen who serve as Orleans Park Commissioners. Nauset Spit operates under an Order of Conditions SE 54-723 issued in 1991. Nauset Beach South operates under an Order of Conditions SE 54-2246 issued in 2015. Each Order contains a comprehensive Off Road Vehicle (ORV) and Beach Management Plan that includes adherence to the Massachusetts Division of Fisheries & Wildlife, Natural Heritage and Endangered Species Program, *Guidelines for Managing Recreational Use of Beaches to Protect Piping Plovers and Terns and Their Habitat* (1993) ; U.S. Fish Wildlife Service (1994) and compliance with Coastal Resource area performance standards defined in the Massachusetts Wetland Protection Act, M.G.L. c 131 § 40 and 310 CMR 10.00 including 310 CMR 10.37 Protection of Rare and Endangered Species Habitat. **(See Appendix A and B)**

On the Nauset Beach South, a Low Effect Habitat Conservation Management Plan (HCP) is in effect until 2020 and authorizes a "incidental take" of up to 2 broods (8) plover chicks in the Pochet Wash area ~ .08 at Trail 1 to the Little Pochet Wash. The Town of Orleans and the Town of Chatham have entered into an Agreement to manage Nauset Beach South jointly. *(See Appendix E)*

3.1 Beach Operations

Beach operations are managed on a daily basis beginning from April through the Columbus Day Weekend. Up to 65+ seasonal employees are hired annually working under the daily supervision and direction of the Natural Resources Manager, the Beach Director and the Assistant Beach Director. Seasonal employees, comprised of lifeguards, EMTs, Beach Rangers, parking attendants, and shorebird monitors, operate out of the Nauset Beach Administration Building. All staff are equipped with radio communications. Video surveillance occurs 24 hours a day over the entire facility. The Nauset Spit OSV program and the Nauset South OSV program incorporate detailed traffic management protocols in order to alleviate OSV congestion. Beach Rangers are responsible for patrolling the entire Nauset Beach and ensuring compliance with the Nauset Beach Rules and Regulations for ORVs. Nauset Beach Rangers are staffed from 9:00 a.m. to 1:00 a.m. daily.

3.1.1 Recreational Activities

The Nauset Barrier Beach system is host to many recreational opportunities. Activities such as the OSV program, surfing, bathing, hiking, bird watching, fishing, hunting, metal detecting and photography are just a few that take place.

3.1.2 Parking & Roads

The Nauset Public Beach parking lot is the primary main parking lot and is accessible from Beach Road. Nauset Spit is accessed via Callanan's Pass, a private road. The OSV access via Callanan's Pass is actively managed in order to alleviate the burden of the OSV Program on the private homes who share the roadway. Traffic attendants are staffed daily at the access and egress points and communicate via hand held radios. Nauset Beach South is accessed from the south corner of the public lot. Prior to arriving at the Nauset Beach South gate, an OSV must pass through two staffed check stations. The first station is the Nauset Public Beach Toll Booth which is staffed 24 hours a day from Memorial Day to Columbus Day. The second station, the Buggy Booth, is located at the OSV South Lower Lot and is staffed from 8 a.m. to 7 p.m. daily during the summer months. Airing Stations are also available at the OSV South Lower Lot.

3.1.3 Beach Cleaning and Refuse Management

There are several dumpsters provided at the beach and access areas for beachgoers. They are emptied when full and maintained yearly. Visitors are also encouraged through signage and literature to take all trash off the beach. This decreases predator activity. Beach Rangers clean the beaches daily, collect debris, and dispose of it in appropriate containers. No beach raking is allowed or conducted.

3.1.4 Rules and Regulations

The general rules and regulations for Nauset Public Beach, as well as all public beaches in Orleans, are as follows:

- 1. Absolutely prohibited at any time: ALCOHOLIC BEVERAGES, LITTERING, OPEN FIRES (Unless by permit for cooking purposes only.)
- 2. BEACHES: Children 12 years of age or younger must be accompanied by a responsible person 16 years of age or older.
- 1. PARKS: Children 8 years of age or younger must be accompanied by a responsible person 16 years of age or older.
- 2. No animals or pets will be permitted on the beaches, in the parking areas or in vehicles in the parking areas at any time during the period of the April 1 to Labor Day. No animals or pets will be permitted in playground areas. For rules on dogs specific to the OSV program *(See Appendix C).*
- 3. Parties, gathering or entertainment of 10 or more persons in beach or park areas are prohibited except by written permission of the DPW/Natural Resources Director who shall designate areas to be used.
- 4. Use of town playing fields by groups must have written approval by the DPW/Natural Resources Director or his designee and shall abide by a separate written policy.
- 5. No kite flying (including drones), ball playing, tossing of frisbees or other objects will be permitted on the beach or in the water except in an area designated by a lifeguard.
- 6. Fishing, surf-casting, windsurfing and surfboarding shall be permitted only in specified areas. Separate regulations shall apply to the conduct of windsurfers and surfboarders.
- 7. Scuba diving, skin diving and all other methods of underwater swimming is prohibited in designated swimming areas.
- 8. Use of rafts, tubes, inflatables and other similar types of flotation devices are prohibited in the waters off Nauset Beach. Use of rafts, tubes, inflatables and other similar types of flotation devices or umbrellas may be prohibited at any beach at the discretion of lifeguards.
- 9. No selling, advertising or giving away of goods or services will be permitted at any park and beach areas or in the parking lots except by concessionaires under contract with the Town or by written permission of the Park Commission.
- 10. Closures: The Town of Orleans reserves the right to close areas to swimming for health and safety reasons.
- 11. The erection of tents, and/or parking of trailers and/or overnight camping or sleeping in park or beach areas is prohibited.
- 12. No person shall walk or drive over sand dunes or vegetated areas at beach area (use designated trails only). Removal of sand, brush or plants is prohibited in all park and beach areas.
- 13. Hours: Unless otherwise authorized, the following areas are closed to the general public during these hours : Nauset Beach 12 midnight to 7:00 a.m.
- 14. All other beaches and park areas shall be closed to the general public from 1/2 hour after sunset to 1/2 hour before sunrise unless to participate in or observe an authorized entertainment, i.e. fishing, concerts,

etc.

- 15. Vehicles shall operate at a speed no greater than 15 m.p.h. in any park or beach area and all Massachusetts Motor Vehicle laws shall apply.
- 16. Parking of vehicles in park or beach areas for more than 16 consecutive hours is prohibited except by permission of the DPW/Natural Resources Director.
- 17. All vehicles entering Nauset and Skaket Beach parking areas when an attendant is on duty must come to a full stop and be identified at the toll house.
- 18. Off Road Vehicles: Separate rules and regulations shall apply to the use of ORV's on Nauset Beach, copies are available at the Town Offices and Police Stations of Orleans and Chatham, Nauset Beach during the season and at the Orleans Park Department office. OSVs are prohibited from other beach areas except to store and retrieve fishing gear.
- 19. Park and beach officials and lifeguards must be obeyed in the enforcement of the above regulations and in any other situation in which the judgement of the lifeguard must be exercised for the protection and safety of persons using the beach facilities.

The OSV programs on both Nauset Spit and Nauset Beach South are subject to detailed Rules and Regulations for ORVs. They are updated annually by the Natural Resources Manager in consultation with the Board of Park Commissioners and the Conservation Commission. *(See Appendix C)*

3.1.5 Law Enforcement

The Town of Orleans employs 4-5 full time seasonal Beach Rangers. They patrol day and evening shifts and are trained each season on any new regulations or policies which have been adopted by the Park Commissioners. Several of the Beach Rangers are former retired police officers, who have lived and worked in Orleans for decades. They are provided with all necessary equipment, communication radios, and enforce all of the rules and regulations. In addition, the Town has a working relationship with the Massachusetts Environmental Police who are occasionally called in for assistance in more serious violations. The Orleans Police Department also works in close concert with the Beach Rangers.

Patrols are conducted on the Nauset Spit and Nauset Beach South throughout the entire day during May to September. Patrols are conducted from 9:00 a.m. to 4:00 p.m. and from 4:00 p.m. to 1: 00 a.m. The beach is cleared north and south by midnight and the patrol ends at 1:00 a.m. In the off season, a Natural Resource Officer patrols on days and weekends. All Beach Rangers follow the written protocols established by the Natural Resources Manager and Beach Director.

3.1.6 Other Operations

Fireworks are strictly prohibited at Nauset Beach. There is no fireworks program at Nauset Beach. Should an occasional report of fireworks be reported to the police department, officers are dispatched and work cooperatively with Beach Rangers to enforce citations. Education is also provided to anyone using fireworks and their effect on breeding shorebirds. There is a Town sponsored end of season bonfire on Nauset Public Beach which is held after the breeding season in September.

3.1.7 Plover Monitoring and Management (and terns if applicable)

The Shorebird Specialist begins daily shorebird monitoring in the first week of March covering a 40 hour week over the course of 7 days. The Shorebird Specialist also installs symbolic fencing during the month of March that affords him or her the opportunity to walk the entire length of the Barrier Beach. Suitable Plover and Tern nesting habitat is identified and delineated with symbolic fencing in accordance with

the Guidelines. The entire Beach is assessed for plover courtship, and territorial behavior, and early plover activity. Many times the plovers will return to their early scrapes after a period of inactivity or storm over wash. Daily logs are kept and all activity is recorded including identifying possible breeding pairs, territorial behavior, scrapes, foraging range, tolerance to human disturbance, and predator activity.

The Assistant Shorebird Monitor starts full time during the first or second week of May. The Shorebird Specialist reviews the documented activity from the months of March and April. Once the Assistant is briefed over a two week period, non-overlapping schedules are arranged so that the utmost attention can be directed to all the plover activity on the entire beach. Because plover tracks are most visible in the early morning and evening hours, the two Monitors split their shifts to cover these time periods daily. Monitoring occurs with the two full time monitors 7 days per week. Notes, photographs, and daily log entries are organized in a log book.

The Natural Resources Manager is consulted daily with updates and weekly summaries are provided on all plover activity. In order to carry out their monitoring duties, monitoring staff are equipped with computers containing GPS programs and Excel Spreadsheet programs to record daily activities, identify trends, and provide interpretation for the Annual NHESP Census. Due to the length of the beach, monitors are provided with 4x4 compact utility vehicles that are easily maneuverable on the beach.

3.1.7.1 Symbolic Fencing & Signage (e.g. locations and timing)

Each year the Natural Resources Manager, Conservation Agent and Shorebird Specialist meet with representatives from MADFW/NHESP staff to review the symbolic fencing installed prior to April 1 and identify additional potential areas of plover and tern habitat. Fencing locations are examined and adjusted based on input from all parties. As indicated in the Beach Management Plans, Orleans has been following the criteria from the *Massachusetts Barrier Beach Guidelines* and the *State and Federal Guidelines for Managing Recreational Activates in Piping Plover and Least Tern Habitat*. Fencing is adjusted periodically to increase buffer zones to nesting plovers and terns.

3.1.7.2 Other Management (e.g. vegetation, predator control, exclosures)

The Natural Resources Manager and Shorebird Specialist use predator exclosures on a discretionary basis, subject to a permit issued by MADFW. The Standard type "A" exclosure is used. Installation of Exclosures is carried out in accordance with the USFWS guidelines.

Once a clutch reaches 3 eggs, the Natural Resources Manager, Shorebird Specialist, and Shorebird Monitor, and in some cases the MADFW staff consult on whether the nest should or should not be exclosed. The criteria for exclosing are based on accepted practices and experience with exclosures and are listed below:

- Tolerance to human activity
- Relationship of location to ongoing OSV corridors
- Consistent shared incubation
- Location of nest, i.e. on a dune slope or face which present issues and risk of abandonment
- Is nest in area where the pair has to fly in order to enter exclosure creating risk of abandonment

- Historic or active predator activity
- Proximity to other ongoing recreational activity

On the Nauset Beach South front beach from Trail 1 to Trail 5, the Coastal Beach habitat is backed by a large primary dune. In these areas we have found the use of exclosures almost always results in abandonment and/or predation. The regularity of high tide cycles diminishes the foraging habitat of the Coastal Beach. This narrow corridor enables coyotes and red fox to easily encounter the exclosure as they forage on the front beach. Because of these conditions, exclosures are generally not used on this area. The presence of avian predators identified in the area of a plover nest may factor into whether an exclosure is used or not.

In 2016, Orleans will to continue the non-lethal predator control program that was initiated in March 2015. A series of baited decoy electrified exclosures will be deployed on the beach with the purpose of modifying the behavior of targeted smart predators who have learned to associate the plover exclosures with a food source. Decoy exclosures will be deployed in March. The decoy electrified exclosures will be regularly baited and monitored through the Fall. The locations of the decoys will be changed periodically and track analysis and predator behavior will be recorded daily. For more detail please *See Appendix F.*

No vegetation management occurs on the Barrier Beach.

3.1.7.3 Frequency

Monitoring occurs daily during dawn and dusk hours 7 days per week. Monitors meet at the end and beginning of their shifts to discuss the daily observations and to share the most recent observations and activity. This allows monitors to share observations that are unique to a specific time of day. i.e ability to locate tracks in the lower light that might be obscured in the mid-day sun. It also allows monitors to observe the behavior of the pairs over the course of the entire day as well as help determine their foraging range. Daily observations are relayed to the Natural Resources Manager.

3.1.7.4 Shorebird Data Collection and Recording Protocols

Attached is a copy of the Shorebird Monitoring Daily Log Report and Nest Observation Form. The daily log contains a narrative of the plover and tern activity. Each Monitor reads the other Monitor's comments daily. They compare notes and observations, discuss trends, movement, and behavior. The information contains specific dates on egg counts, occurrence, exclosures, and predator activity.

3.1.7.5 Data reporting

Logs are maintained to document timing and frequency of activities such as installation of symbolic fencing, monitoring of plover activity, beach patrols, enforcement of ordinances such as leash rules, timely implementation of temporary prohibitions on non-essential vehicle use. In addition to daily logs, daily spread sheets, and GIS data are also kept. A nest data summary sheet is posted and consulted which shows all relevant dates including dates eggs appear, predation issues, nest failure, predicted hatch dates, and chick fledging rates. All nest data recoded on the GIS is available via cloud server with one workstation in the Administration Building and one tablet in the field. As required in the Compliance Monitoring section of the HCP, all logs will be made available to MADFW upon request.

In conclusion, Nauset beach management and monitoring is carried out in accordance with state and federal Guidelines in order to avoid take of breeding Piping Plovers and Least Terns (and Common Terns should they breed). Although some pedestrian and OSV disturbance of migrating and staging shorebirds, may occur, this is not expected to result in take. MADFW will issue a final take determination pursuant to 321 CMR 10.18 prior to issuance of a COI for Nauset Beach. Proposed OSV use has some potential to result in take of the Least Tern and Diamondback Terrapin so proposed impact minimization and mitigation procedures for these species are discussed below.

4 Covered Activities

4.1 Proposed HCP Covered Activities

The Town of Orleans is requesting a three year COI that would expose up to two piping plover broods (or one nest and one brood) to covered activities. Unfledged broods would be exposed to escorted OSVs and the nest would be exposed to beach activities with a reduced symbolic fence buffer and or nest moving as the need arises (see below). In 2015 there were 17 breeding pairs on Nauset Beach (north and south), so this request for take exposure would impact 2 of 17 broods (11.8%), less than the 15% maximum prescribed in the HCP. Should the population decline to <14 pairs, the Town is aware that MADFW may require the number of take exposures in the subsequent beach season to be reduced to one, during the three-year COI term, as set forth in the HCP. All other management will be implemented in accordance with state and federal guidelines as described above *(see section 4.1.7)*, as has been the case for the past 20 years or more.

The area where the monitoring and escorting program for continued OSV use in the presence of unfledged chicks is likely to occur is known as the Pochet Wash on Nauset Beach South. This area includes the "Little Pochet Wash" which is adjacent to Pochet Creek as well as the "Nemo Wash" which is adjacent to Pochet Island. Geographically the area known as the Pochet Wash begins at Trail 1 on Nauset Beach South and runs north .8 mile. However, as described below the area of potential OSV escorting could be shifted as the need arises (e.g. to Nauset Spit) provided that all the minimization protocols are implemented and provided that the limit on total, site-wide take exposure is not exceeded.

The Pochet area is located approximately three-quarters of a mile south of the Nauset Public Beach and is the only means of access to the majority of available area of Nauset Beach South via OSV. Nesting and related piping plover activity in this 0.8 mile long area is the primary reason for what has evolved into a predictable annual complete OSV access closure on Nauset Beach South. These closures related to piping plover prevent OSV access to approximately five (5) miles of beach located between the Pochet Wash and the southern end of Nauset Beach South in the Town of Chatham. Currently, when piping plover protection mandates complete closure of the Pochet Wash to OSV access, OSV use on the remaining portion of the five (5) mile area south of Pochet would otherwise be in compliance with all protective guidelines.

One of the problems this HCP is seeking to address is the repeated closure of OSV access to the majority

of Nauset Beach South from mid-July through August. The length of beach that is unavailable to OSV use is considerable and results in very limited numbers of pedestrians that are able to access Nauset Beach South. The only reliable means of access to the majority of Nauset Beach South is via the OSV trail that has been affected by the annual .8 mile "pinch point" closure that occurs when late nesting plovers and their young are present in the Pochet Wash area. Without OSV access, the majority of the public is unable to reach the 5 miles of available beach. Recreational users who are unable to visit much of Nauset Beach South include anglers, birders, family beach goers, children, the elderly and persons with disabilities for whom walk-on access is simply an unrealistic option.

The Town of Orleans is proposing to obtain ability for a reduced symbolic fencing buffer around a nest, and nest-moving of the same nest on the Nauset Spit, as necessary to keep Callanan's Pass, a major beach access point, open. Nauset Beach Staff anticipate that in 2016 a nest may appear at the base of Callanan's Pass. Callanan's Pass is the only deeded access (easement) to the Nauset Spit. This has occurred in previous years and has resulted in closing the entire Spit. Throughout the months of June – August, the average number of vehicles on Nauset Spit is 150-200. The area is extremely popular and has served Orleans residents for many decades. In 2012, a nest which appeared at the base Callanan's Pass hatched and shut down the entire spit on the 4th of July weekend. This brood and the remaining broods on the Spit resulted in a compete closure of the Spit from July to the end of August. (See Table A).

Year	Date of Closure	Date Re-opened	Number days Closed	
2007	6-June	11 -Aug	66	
2008	31-May	15-Aug	77	
2009	30-May	16-Aug	77	
2010	6-June	18-Aug	83	
2011	31-May	15-Aug	77	
2012	2 July	14-Aug	43	
2013	26-May	15-Aug	91	
2014	-	*	*	
2015	_	*	*	

Table A. Nauset Spit OSV Closure 2007 -2015

Additionally in 2012, a late nest hatched in the Pochet Wash area in July just as the chicks which had closed Nauset Beach South in June were fledging. This combination of hatching nests in the first week of June on Nauset Beach South coupled with the late nest and the Callanan's Pass nest resulted in the extensive closures of the entire OSV program that season. The 2012 closures were the catalyst for the development of the existing Orleans Low Effect HCP. (See Table B)

Year	Date of	Date	Number days	
	Closure	Re-opened	Closed	
2006	22-Jun	25-Jul	33	
2007	22-Jun	1-Aug	40	
2008	16-Jun	24-Jul	38	
2009	30-May	4-Aug	66	
2010	27-May	9-Aug	74	
2011	3-Jun	5-Aug	63	
2012	6-Jun	14-Aug	69	
2013	3-Jun	23-Aug	81	
2014	11-Jun	15-Aug	65	
2015	4-June	Open July 26	52	
		НСР		

TABLE B: South Trail OSV Closure at Pochet Wash, 2006 -2014

If a pair attempts to establish a nest on Nauset Spit adjacent within or adjacent to the main access corridor, it may be necessary to request a symbolic fencing buffer well below 50 yards and/or nest moving *(see Section 5.2.2.1.3)*. If this occurs, the Town would follow the Guidelines established by MADFW.

Additionally, The Town of Orleans is requesting a three year COI for the ability to escort vehicles in the vicinity of Least Tern chicks and nesting Diamondback Terrapins. Least Terns are listed as a species of *Special Concern* in Massachusetts. They return each year in May –and migrate south in late August early September. Egg clutch size is 2-3 eggs and they fledge in 21-13 days. They prefer to nest in flat washout areas. The chicks a semi-precocial and are fed by the parents. They are not as mobile as Piping Plover chicks. The will hide in dune grasses or in vegetation during the day and emerge to be fed by the parents. As they mature they move seaward onto the coastal beach and the edge of the ocean.

Since 2013 a Least Tern colony has appeared in the Pochet wash area. A single colony or sub-colonies defined as (20) pairs may develop in an area that is less than 2 acres. However the colony appears to be one connected group. The location of the colony begins at the southern edge of the Little Pochet wash and continues north along the Coastal Beach, landward of the toe the Coastal Dunes and terminates 200 yards south of Trail 1. The size has varied from an estimated 65 pairs in 2013 to 35 pairs in 2015.

Female Diamondback Terrapins are present, depending upon weather conditions, in *June* and *early July* during full moon tides cycles. Unlike most other turtles, terrapins nest during the day and night. Females may lay two clutches of 8 and 12 eggs each season. A single female may lay 1-3 nests per year. Terrapins can be found emerging from adjacent salt marshes just south of the Little Pochet wash over at the western high tideline and marsh edge, traveling all the way east to the ocean side. Their tracks crossing exposed low tidal areas and crossing the OSV corridor. Once they cross the OSV corridor or flats they enter dense vegetated areas, in search of a suitable nest site. Nest sites can be in open areas but are more often located in dense vegetated areas making them hard locate. In most cases there tracks are easily identifiable in the loose gravel sand emerging from the marsh heading across tidal flats to OSV corridors. They continue traveling east to lay their egg clutch close to the OSV corridor where they enter dense areas of vegetation of American Beach Grass. Females typically nest approximately two (2) weeks apart. They are so skilled at covering their nests, it takes a skilled individual with the proper handling permit locate nests. They female use her nose to test for moisture, soil consistency and whatever else they want for their nest when choosing a nest site.

Because small numbers of Diamondback Terrapins cross the OSV corridor to nest, there is some risk of adult and hatchling mortality as individual turtles cross the OSV corridor. Therefore, the Town is proposing a program of daily terrapin monitoring during nesting season, protecting nests from predators, and headstarting in cooperation with the Town of Barnstable.

4.2 Detailed Protocols for Covered Activities

4.2.1 OSV Use in the Vicinity of Unfledged Piping Plover Chicks.

The Orleans IAMP will include the following elements, as described in the statewide HCP:

- 1. Delineate and fence narrow travel corridor with no parking near chicks.
- 2. Travel restricted to 6 hours/day; at preset times of day; daylight hours.
- 3. Intensive monitoring of chicks during vehicle passage.
- 4. Self- escort of vehicle or trained staff escorts caravan of up to 50 vehicles.
- 5. Staff training, enforcement, and communication protocols.
- 6. Mandatory OSV operator education.
- 7. Vehicle ruts will be smoothed out at least once/day when young chicks are present.

Under the HCP, the number of vehicles that will be able to access Nauset Beach South (drive past unfledged chicks) has been reduced from 375 vehicles allowed under the OOC to 180 vehicles. This reduces the maximum number of vehicle passes in the vicinity of no more than two broods of piping plover chicks from 750 passes per day to 360 passes per day.

The number of vehicles allowed to pass plover chicks was set at not more than 180 in order to reduce the likelihood of a take by ensuring a manageable number of vehicles that may be self-escorted during the time allotted for beach access. To further reduce the likelihood of a take through harm, harassment or mortality of recently hatched chicks, escorting will be initiated past a brood no sooner than 24 hours after all chicks have hatched.

4.2.1.1 Vehicle Escort Program

The Town of Orleans vehicle escort protocol is administered by the Orleans Natural Resources Manager and the Orleans Beach Director. The protocol is as follows:

Start date: No Specific Start Date annually; Natural Resources Manager must notify MADFW at least 24 hours in advance of initiating the program. Frequency: Three times daily (times may be flexible within one hour based on weather

Frequency: Three times daily (times may be flexible within one hour based on weather and chick locations)

Morning Session: 08:00 – 10:00

Mid-Day Session: 12:00 noon - 2:00 p.m.

Afternoon Session: 16:00 - 18:00 (upon written notice to MADFW, the beach operator may change the designated travel times provided that they total no more than six hours in up to three travel windows during daylight hours)

Number of vehicles: 180 self-escorted vehicles for a maximum of 360 vehicles.

4.2.1.2 Self-Escort OSV Corridor Dimensions and Locations

The specific location of the self-escort OSV corridor is intended to be adaptive and variable to reflect the location of the brood(s). The self-escort OSV corridor may shift north or south along the identified route depending on piping plover locations and/or movements. The self-escort OSV corridor(s) will not exceed 4,000 feet in length and 15 feet in width (for vehicle traffic), with occasional turnouts for two-way traffic for a total impact area of approximately 60,000 square feet or 1.38 acres. Additionally, 100 feet laterally on either side of the OSV sand trail will be included in the corridor as the "safety zone" for plover chicks (vehicle traffic will be halted should plover chicks enter this zone).

The self-escort corridor will not be moved laterally and will be clearly marked at the beginning and termination points and will have the 15-foot travel width periodically delineated with wooden stakes. Updated corridor boundaries shall be reported daily to the Natural Resources Manager, Beach Director, or their designee, by shorebird monitor(s) prior to commencement of vehicle access and remarked as necessary.

4.2.1.3 Personnel (monitors) and Required Qualifications:

The Town of Orleans employs up to 9 temporary part time HCP Seasonal Shorebird Monitors that are responsible for all of the same tasks of a Shorebird Monitor (see Section 4.2.2). The Shorebird Specialist and the Seasonal Shorebird Monitor are responsible for training the HCP monitors in locating the plovers and identifying their nests and chicks. Prior to implementation of covered activities, HCP monitors are given approximately two weeks to learn the habits and territories of the plovers on Nauset Beach so that they are able to efficiently locate and identify the plover chicks and adults during the HCP. Monitors are also trained in all the HCP Procedures and Conditions so that they can effectively provide outreach education and enforcement to the beachgoers. These monitors report to the Shorebird Specialist and the Beach Director.

The HCP Monitoring Protocols as described in this document will be utilized to cover the use of OSVs in the presence of unfledged chicks for one or two of the authorized incidental take exposures.

Up to nine or more HCP monitors will be hired and trained beginning on or before July 1st. Training will occur for a period of approximately 1-2 weeks until staff is confident that all the HCP monitors are capable of monitoring the HCP broods and adults. The training and monitoring will focus on minimizing

the disturbance to the broods during the access windows. Monitors will have to demonstrate that they can find tiny chicks and track their movement from a distance without interfering with their natural behavior. Monitors will also be trained in all the HCP Procedures and Conditions so that they will be able to effectively provide outreach education and enforcement to all the beachgoers.

Each Monitor will keep a separate daily observation log and sketch map to record the activity of the adults and the chicks specific to foraging, territorial behavior, and habitat use relative to the location of the OSV corridor. Monitoring will also include recording the need for increased signage or fencing to afford greater protection to the HCP brood(s). The monitoring logs and maps will be reviewed daily by the Shorebird Specialist and Assistant Shorebird Monitor.

Monitors will be equipped with radios for communications with Beach Rangers, the Beach Director, full time monitoring staff, and the Natural Resources Manager. Orleans provides all necessary equipment including binoculars, daily log sheets, rain gear, and transportation. If it is decided that an incidental take will be applied to one or more broods, then HCP staff will begin HCP self-escort monitoring 24 hours after the last egg has hatched from the specified brood. The monitors will follow their assigned schedules and the daily HCP monitoring shifts will begin. The morning shifts will be from *6:30 a.m. – 2:30 p.m.* and the afternoon shifts will be from *2:00 p.m. – 7:30 p.m.* Two to three monitors will be staffed for each shift depending on the number of broods involved. One monitor will be responsible for keeping visual contact with each brood, one monitor or a Beach Ranger will be responsible for policing the self-escort corridor, and one monitor will be staffed at the entrance gate. All monitors will be responsible for assisting in locating the chicks prior to opening the self-escort corridor during the specified access and egress windows. See sample schedule below:

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday Saturday
6:30a-2:30p	Leah/Alexis/	Alexis/Steph	Steph/Alexis/	Alexis/Steph/	Susan/Rachel	Rachel/Susan	Leah/Alexis/
	Jamien	Jamien	Jamien	Jamien	Kevin	Kevin	Jamien
2:00p-7:30p	Rachel/Steph/	Steph/Len	Chris/Steph/	Kevin/Len/	Chris/Len/	Leah/Chris/	Susan/Rachel/
	Kevin	Kevin	Paul	Paul	Paul	Paul	Paul

Nauset Beach Rangers will be on duty from 7:30 a.m. – 1 a.m. daily during the HCP self-escort program. The monitor staffed at the entrance gate will be responsible for ensuring that all over-sand vehicles participating in the HCP are in possession of a signed copy (by the operator) of the *HCP Procedures and Conditions* and that they are fully aware of the protocols. The gate monitor will also be responsible for recording the over-sand vehicle activity (# of passes) in the daily log. Signage reiterating the *HCP Procedures and Conditions* will be displayed at the gate. Once the brood monitor has confirmed the corridor is clear prior to the scheduled self-escort windows, the Nauset Beach Ranger will be responsible for the opening and closing of the self-escort gates and enforcing the rules and regulations. The Nauset Beach Ranger will also be responsible for clearing the beach of vehicles and raking the ruts with a mechanical beach drag at the end of the afternoon egress window (unfledged chicks will be located and monitored during rut smoothing).

HCP Shorebird Monitors

Their duties are described as follows:

- Working in assigned habitat areas, must be able to: identify piping plovers, least and common terns, American oystercatchers, and other shorebird species as required; identify and locate shorebird nesting and feeding areas; and map the identified areas.
- Data collection and note taking to document nest establishment, egg laying, hatching, predation of nests, chick rearing, and fledgling activities.
- Set up and maintain signage, symbolic fencing, and protective exclosures such that critical habitat areas are protected from human disturbance.
- Interact with and educate the public to increase awareness of the birds and nesting/feeding areas and ensure compliance with the HCP procedures and conditions.
- Re-route vehicles around protected areas and escort vehicles through protected area as necessary.
- Assist the Lead Shorebird Monitor in field surveys and bird counts.
- Provide clear concise data summaries of nesting activities to the Lead Shorebird Monitor for inclusion in annual reports.
- Performs other duties as assigned and in conjunction with other Town departments and employees.

The HCP Shorebird Monitor shall have the following minimum qualifications:

- A high school diploma or equivalent.
- Ability to gain a working knowledge of State and Federal Guidelines for the protection of Piping Plovers, Least and Common Terns, and American Oystercatchers on multi-use recreational beaches.
- Good observational skills.
- Ability to perform physical labor associated with the placing of posts, signage, symbolic fencing, and protective exclosures in habitat areas.
- Ability to walk up to 1-3 miles per day within habitat area for survey and protection activities.
- Knowledge and experience, or willingness to obtain, with four wheel drive vehicles, small boat handling, and two-way radio communications.
- Ability to work independently with little direct supervisory oversight.
- Strong people skills, team oriented, and ability to work in a collaborative, problem-solving approach.
- A valid Massachusetts driver's license.

4.2.1.4 Self-Escorting Procedures

Basic Procedures for Escorting Past One Brood

- 1. A pre-determined area of the Nauset Public Beach parking lot, or other area free of protected species, will be identified for staging of OSVs.
- At least 1 hour prior to commencement of vehicle escorts, the shorebird monitor(s) will proceed along the designated vehicle route and surrounding area to determine locations of plover chicks. Each shorebird monitor will be responsible for monitoring the location of one brood. Once the shorebird monitor(s) have established the locations of chicks, they will notify the Natural Resources

Manager, Beach Director or their designee of the brood locations and the self-escort corridor will be delineated with highly visible markers. At this time, personnel at the entrance booth, as well as the vehicle monitor will be notified that the OSV trail is open for travel. In the event that all chicks are not located, opening the OSV trail will be delayed until such time that all chicks are accounted for or it has been determined by the shorebird monitor(s) that there are no chicks in the OSV trail. The shorebird monitor(s) will communicate their determination(s) to the Natural Resources Manager for confirmation to open the trail. The self-escort duration of two hours will be implemented per the HCP protocols although the time of closing may be adjusted accordingly to respond to a later opening.

- 3. Prior to opening the OSV trail, the vehicle monitor will contact the shorebird monitor(s) to confirm that the locations of all chicks are still being monitored, that all chicks are accounted for, and/or it is safe for the trail to open. During the two-hour self-escort period, monitor(s) shall maintain constant visual on any plover chicks using binoculars from a distance of no less than 200 feet. Disturbance, if any, of the chicks shall be minimized. Once vehicles have passed through the delineated "chick zone", which shall extend at least 200 feet past the closest chick, vehicles may proceed to use the sections of beach previously determined to be free of piping plover and least tern chicks, in accordance with state and federal Guidelines (including but not limited to restrictions on parking within 200 m of unfledged chicks; some exceptions apply, see Guidelines).
- 4. Each vehicle must have at least one passenger 16 years of age or older to walk approximately 10 feet in front of the vehicle in the self-escort corridor. The escort will look for chicks in the road and stop the vehicle if either a chick is observed or one of the monitors (shorebird or vehicle monitor) requires the vehicle to stop. All self- escorted vehicles must maintain a safe distance of at least 15 feet from the vehicle in front.
- 5. In order to avoid adverse effects to the habitat and allow unimpeded chick passage across the OSV corridor when vehicles are not present, the vehicle "ruts" will be raked at the end of the afternoon self-escort period. Mechanized raking will be utilized only with a trained observer walking in front of the vehicle to search for chicks.
- 6. If at any time during the escorting process, the shorebird monitor(s) lose visual contact with one or more chicks, the vehicles will be allowed to continue on their way and the period between the self-escort time frame (or after the afternoon session) will be used to determine the presence of the chick(s) in the area or absence of chicks in the corridor. Shorebird monitors will document in the daily report the approximate time that visual contact with the chick(s) was lost and efforts made to relocate it.
- 7. The Natural Resources Manager, Beach Director, and each individual shorebird monitor will have the independent authority to temporarily close the trail at any time for any reason. For example, if at any time a shorebird monitor determines that chicks have approached within 100 feet of the selfescort corridor, the monitor will immediately notify the gate and corridor monitors by radio to temporarily halt traffic and allow the chicks to cross the corridor and/or move >100 feet from it. The OSV trail will not reopen until the Natural Resources Manager or Beach Director determines that it is safe to do so. Monitors will document in the daily report the approximate time that the OSV trail was closed and the duration of the closure.

Basic Procedures for Escorting Past Two Broods

The following procedures are in addition to applicable actions outlined under Basic Procedures for Escorting Past One Brood (see above):

1. Two broods in close proximity (<1,200 feet apart): Only one segment of the OSV trail will require self-escorting due to the close proximity of the two broods and a single vehicle monitor

will ensure compliance. Two shorebird monitors will be deployed to monitor the chicks; one for each brood. The corridor in front of the broods will have beginning and end points clearly marked for self-escorting and the monitors will follow each brood. The shorebird monitors and vehicle monitor will be in close communication to ensure that chicks are not moving towards the OSV trail.

2. Two broods are more than 1,200 feet apart: Two segments of the OSV trail will require self-escorting. In this case, a second vehicle monitor will be assigned to monitor escorting compliance. Both sections will have beginning and end points clearly marked to delineate the separate self-escort corridors. Beginning and end points of the self-escort corridor may be moved in response to linear chick movements (information provided by the shorebird monitors). Two shorebird monitors will be deployed to monitor the chicks; one for each brood.

Caravans

The Town reserves the right to substitute escorted caravans for self-escorting as described in the HCP. Under this scenario, groups of up to 50 OSVs would stage in the parking lot or other areas free of unfledged chicks and protected species. Once the caravan reaches the area where unfledged chicks are present and escorting is required, a trained and qualified shorebird monitor (see requirements above) would lead the caravan through the escort area either on foot or in an open top OSV. All other requirements including but not limited to brood monitors, compliance monitors, and speed limits would remain in place as described in the self escorting protocols.

Contingency Plan

Personnel availability

Two shorebird monitors *(i.e.,* one monitor per brood) will locate and observe chicks prior to and during the self-escort periods. A minimum of one vehicle monitor will oversee the self-escort corridor to ensure compliance by the self-escorted vehicles. Should two self-escort corridors be required (see above) then a second vehicle monitor will be required. In the event that one of these employees is unavailable, the Natural Resources Manager, Beach Director or their designee shall assume this duty.

Inclement weather

The Natural Resources Manager, Beach Director or their designee, will monitor weather forecasts on a daily basis. In the event that a storm warning is predicted by the National Weather Service, or any other weather warning that could jeopardize public safety within a 24-hour period, the OSV trail shall be closed for the duration of the hazard or the start time may be moved one hour later or earlier. The OSV trail may not reopen until the Natural Resources Manager, Beach Director or their designee has given the all clear. It shall be presented in writing prior to purchasing an OSV sticker that all users shall use the beach at their own risk. Exiting escorts will not take place due to unpredicted weather. OSV sticker holders shall be informed in writing that a "shelter in place" policy will go into effect until the inclement weather has passed, or scheduled exiting escorts have begun.

Medical or family emergencies

OSV sticker holders shall be advised verbally and in writing at the time of OSV sticker application, via affidavit, that egress from the beach outside of the self-escort windows shall be strictly prohibited (see permit Rules and Regulations for information to report an emergency). In the event of a life-threatening medical emergency, the staff of the Nauset Beach Administration Building and/or emergency responders should be notified. Essential vehicles will assist in escorting the vehicle off of the beach.

Violations

Any violations of the aforementioned protocol will not be tolerated. A zero based tolerance policy will be fully enforced. Monitors and Beach Rangers will be in constant contact to ensure enforcement. Beach Rangers will be authorized to revoke OSV stickers and eject the violators from the beach immediately. Violators of the escort protocols shall be subject to OSV sticker revocation and shall have their rights to operate an OSV on Nauset Beach suspended immediately for a period of one year from the date of the violation.

Escorting Program Reporting

Chick numbers, chick locations, and travel corridor locations/dimensions shall be provided to the Natural Resources Manager or Beach Director by the lead shorebird monitor daily, prior to commencing OSV escorts. A map showing the locations shall be posted at the Nauset Beach administration building and shall be updated daily. As required by the HCP, a daily implementation log will be kept to document staffing, frequency of brood monitoring, and compliance with OSV escorting procedures, and will be made available to MADFW upon request. Any violations, incidents or accidents associated with the vehicle escort program, including take of a chick(s) shall be immediately reported to MADFW and USFWS staff. In the event of an alleged incident related to the escort program, the Natural Resources Manager, Beach Director or their designee in coordination with a shorebird monitor shall cooperate with and assist Town, State and Federal officials with the investigation of the incident. Depending on the nature of the incident, the Town of Orleans, MADFW and USFWS reserve the right to suspend all vehicle escorts for such time as they deem appropriate.

Every week, a summary report will be submitted to MADFW. The report will include; (1) daily vehicle trip count (distinguishing counts for self-escorts versus caravans); (2) for each affected brood, daily observations of chick numbers and behavior including a daily sketch map of the observed range of the brood on the beach; (3) weekly tally and description of any rules violations and enforcement actions taken; (4) weekly tally and description of all observations of broods crossing or approaching <100 feet from the vehicle corridor; *both during the OSV travel windows and any other such observations* during routine monitoring; (5) any other notes, observations, or recommendations relevant to operating the escorting program.

By October 15th of each calendar year, the Town of Orleans will submit an escort monitoring report to MADFW describing at minimum, estimated age of chicks in each brood when self-escorting was initiated. Fledging success, escorting dates, number of broods, number of chicks present during self-escorting on each date, estimated daily chick survival based on daily brood counts, number of vehicle passages, and any documented "take" of chicks resulting from the vehicle escorting program shall be included in this report. The report will also contain recommendations for improving the efficiency and or effectiveness of the escorting program in the future.

4.2.2 OSV Use in the Vicinity of Least Tern Chicks

The Town of Orleans will include the same protective elements for Least Tern chicks as it does for Piping Plovers. Based on past years' shorebird monitoring it is anticipated that OSV use in the vicinity of unfledged Least Tern chicks will be limited to a subsection of the Pochet Overwash, the same section of beach where escorting past unfledged Piping Plover Chicks is likely to occur. Because Pochet Overwash is very wide and the bulk of the Least Tern Nesting activity is located along the east (seaward) section of the overwash, it may be possible to reroute the OSV corridor to the west, subject to MADFW and Conservation Commission approval, thereby minimizing risk to Least Tern chicks. However, due to the
presence of vegetation near the northern end of the overwash, rerouting is not possible in this area, and small numbers nest near the OSV corridor in this area in some years. With the exception of the Pochet Overwash area, Least Tern colonies are separated from the OSV corridor by an expansive dune system, and will not be exposed to potential take, as per the State Guidelines. Regardless of location, in no event will >20 unfledged Least Tern Chicks be exposed to OSV traffic. Again, based on past Least Tern nest locations and nesting phenology, the actual number of tern chicks to be exposed is likely to be considerably <20.

Impact Avoidance and Minimization Measures for Least Terns are as follows:

- 1. Monitoring of colony sizes and chick exposure Because Least Tern chicks spend much time hiding in vegetation or other cover, and are fed by parents, they are much more difficult to count than Piping Plover chicks. In order to estimate the number of chicks exposed to OSVs, the following procedures will be followed. In addition to obtaining an estimate, the amount of mitigation to be provided will be sufficient to mitigate the exposure of 20 unfledged Least Tern chicks, a conservative assumption to address potential undercounting (see mitigation section, below). First, shorebird monitors will obtain at least two independent nest/chick counts in the five days prior to the anticipated start of the escorting program including one count with 24 hours of the start date. Estimates of number of active nests and chicks will be obtained for all sections of beach located within 200 yards of the anticipated escorted OSV corridor. The bulk of the counting and sketch mapping of nest and chick locations will be conducted from a distance with binoculars to minimize disturbance, using standard procedures to observe incubation, eggs, chicks, and (inferred) chick provisioning. In some cases it may be necessary to enter the colony to confirm the presence of nests. Sketch maps will include key landmarks (i.e. fence post numbers or distinctive beach debris) to aid in recounting. Detailed notes will be kept on all counts including, date, time begun, time ended, personnel, whether each nest/chick was confirmed or inferred to be present and the basis of the inference. The approximate age of all chicks that are directly observed will be estimated based on the attached Least Tern Aging Guide (See Appendix H). MADFW has indicated that MADFW staff are likely to conduct independent counts or participate in joint censusing prior to initiation of the covered activity. During the period when OSV escorting is occurring unfledged chicks will be counted daily using these procedures, and every effort will be made to track the number of active nests, with formal recounts every three days during the escort period.
- 2. The maximum 15 foot wide travel corridor will be delineated with fencing and "no parking" areas will be delineated on the beachfront to prohibit parking within 200 yards of unfledged chicks.
- 3. Travel restricted to 6 hours/day; at preset times of day; daylight hours.
- 4. Monitoring of chicks during vehicle passage One hour prior to the start of each daily OSV travel window, one or more qualified shorebird monitors (see below) will search the section of beach adjacent to and within 200 yards of the escort corridor to locate unfledged Least Tern chicks. The search will be conducted by the Compliance Monitor, or if carried out by another qualified monitor, information about chick locations will be conveyed to the compliance monitor

prior to the start of the escorting period. Areas with chicks located <50 yards from the corridor will be noted for extra attention during the travel period. During the travel period the compliance monitor will patrol the travel corridor checking for compliance with escorting procedures (e.g. speed limit and presence of escort), while also scanning for unfledged Least Tern chicks. Vehicle traffic will be temporarily halted if unfledged chicks approach within 30 yards of the corridor; however the beach manager will have discretion to restart traffic under certain circumstances even if chicks remain within 30 yards (e.g. young chicks hiding in vegetation and not moving). Compliance Monitors and shorebird monitors conducting the pre-travel searches will be responsible for searching no more than 500 yards of vehicle corridor with Least Terns present will require to monitors). The Town acknowledges that DFW may, at its sole discretion require additional monitoring if the tern colony is subdivided into subcolonies with dispersed unfledged chicks (e.g. two different 200 yard sections of beach with unfledged terns subject to escorting, separated by 800 yards making it impractical for a single compliance monitor to cover the entire area)

- 5. Self- escort or escorted caravan of vehicles as described for Piping Plover, above.
- 6. Staff training, enforcement, and communication protocols as described above.
- 7. Mandatory OSV operator education as described above.
- 8. Vehicle ruts will be smoothed out at least once/day when young chicks (estimated <10 days old) are present as described above.

The Town of Orleans will notify DFW at least 24 hours prior to carrying out the covered activity affecting Least Terns, and will include a map and estimate of the length of the escort travel corridor as it affects unfledged Least Terns. Should the distribution of Least Tern chicks lead to changes in corridor length and location, DFW will be provided with updated maps and length calculations as quickly as possible, and no more than 24 hours after adjustments are made. In no event shall more than 20 unfledged chicks be exposed to escorted OSVs, cumulatively across the site.

Detailed reporting on the Least Tern escorting program, and distribution, exposure, and impacts to unfledged Least Tern chicks will be included in the annual report to be provided to DFW by October 15. The report will cover all of the topics listed above with respect to Piping Plovers, as applicable to Least Tern.

4.2.3 OSV Use in the Vicinity of Nesting Diamondback Terrapins

Diamondback Terrapins nest within the dunes of Nauset Beach, particularly in a section south of Little Pochet Island. As described above Terrapins nest predominantly in June and July. Nesting females may face some exposure to OSV traffic on the OSV corridor, but the corridor is likely to remain closed for a significant portion of the turtle nesting season for the foreseeable future due to restrictions to protect unfledged plover and tern chicks in Pochet Overwash. However, the corridor may still be used by essential vehicles when closed to recreational OSVs. To the extent that the corridor is open early or late in the Terrapin nesting season (prior to plover and tern nest hatching or after most plover and tern breeding is completed) there is some risk to nesting Terrapins. In addition, without protective measures there is some risk of hatchling mortality in the late summer and early fall as hatchlings emerge from nests and head to Pleasant Bay.

The Town of Orleans will include the following protective elements for nesting Diamondback Terrapins. Beginning the last week of May through July, the area immediately adjacent to the OSV corridor will be checked on foot at least once daily by trained personnel to check for turtle tracks. During periods of peak nesting activity as determined by onsite track activity and consultation with experts at Mass Audubon, every effort will be made to increase searches to twice daily. Timing and frequency of the track and nest surveys will be adjusted on an annual basis based on consultation with experts from Town of Barnstable, MassAudubon, and MADFW to account for inter-annual variation in the timing of nesting. Area to be searched will extend approximately from Little Pochet Island to the vicinity of "Baghdad" cottage, but will be expanded or increased in consultation with MADFW to encompass the entirety of the area of significant turtle activity as refined be additional field observation. Tracks will be used by qualified personnel approved in writing in advance by MADFW to locate and protect nests from predators (part of the net benefit mitigation strategy). At times when the corridor is open to OSV traffic (including essential vehicles), standard tracking techniques will be used in an effort to determine if one or more females are located near (and in particular east of) the travel corridor.

To the extent that adult turtles are present or tracks indicate an area of high turtle activity, temporary turtle crossing signs will be placed on appropriate sections of the OSV corridor and vehicle operators will be advised of the situation at the gatehouse. Vehicle operators will also be requested to immediately report any turtle observations to the beach staff.

Based on ongoing consultation with MADFW, Mass Audubon, and experts from the Town of Barnstable, nests will either be caged on-site or moved and protected elsewhere. Hatchlings will be collected from caged nests following standard protocols to ensure their safety, and released into Pleasant Bay at Nauset Beach or headstarted in cooperation with the Town of Barnstable, Sandy Neck Reservation. A state permit for protecting nests and handling Terrapins will be obtained by qualified personnel in advance of implementing the program and all headstarted terrapins will be PIT-tagged prior to release.

Detailed information about the Terrapin Protection program will be provided in the October 15 annual report to be provided to DFW, including but not necessarily limited to dates and times of all track surveys, personnel, gps coordinates for any tracks observed crossing the OSV corridor, GPS coordinates for all nests, nest dispositions and fates, hatch dates, number of hatchlings hatchling disposition, protective measures taken (e.g. signage if OSV corridor is open), pit tag codes, standard carapace lengths (SCL) and weights for all headstarted individuals.

4.2.4 Proposed Reduced Symbolic Fencing Buffer at a Nest and/or Nest Moving Where No Other Option for Management is Available

As described above, in the past Piping Plovers have occasionally nested <50 yards from Callanan's Pass, necessitating closure of the entire beach north of the pass to OSVs (the Guidelines require a 50 yard buffer around nests). Unless a nest is located directly within the travel corridor, management will first

consist of reduced fencing. Prior to nest movement reducing symbolic fencing shall occur in consultation with MADFW staff.

Initially, it is necessary to determine if the incubating pair is tolerant of the reduction of fencing and increased recreational activates near the nest. Many pairs have demonstrated an increase tolerance to human activity nearby incubating nests, especially when the pair is well into the incubation period. The range of tolerant behavior to reduced fencing adjacent to nest differs widely. Some pairs will tolerate the reduced fencing well, continue to incubate, and bring the clutch to a hatch; while others will become increasingly agitated and reducing fencing increases the risk of nest abandonment.

4.2.4.1 Reduced Fencing Protocol Prior to Nest Movement

- Fencing should only be reduced to the extent necessary to achieve specific recreational or beach operations objectives (e.g., opening a specific beach access trail) such as Callahan's Pass or Pochet wash area to gain access to Trails 1-5 and the town of Chatham area and to Nauset Spit.
- Symbolically fenced buffers should not be reduced to less than 10 yards; in first movement, however, limited exceptions may be permitted provided that the fencing is reduced gradually and that the plan participant demonstrates a compelling need to maintain reasonable recreational and beach operational use.
- 3. The fence will be reduced another 10 yards or until a point where the OSV corridor and OSV use can continue with the pair undergoing steady incubation.
- 4. For example, if a nest is located less than 10 yards from a major beach access trail, the MADFW may allow less than 10 yards of fencing rather than authorize nest moving associated with Covered Activity. The extent of all proposed fence reductions must be included in the IAMP and approved by the MADFW based on consideration of the circumstances at a given site in a given year. Increments of yardage may be determined based on a site analysis I consultation with MADFW staff and Shorebird Monitors reporting on the overall behavior of the pair.
- 5. A fenced buffer larger than the target buffer will be established initially and maintained during egg laying and through at least the first 24 hours after clutch completion, but every effort should be made to maximize fencing distance from the nest during this sensitive period.
- 6. Fencing distance from the nest should be gradually reduced, in increments of approximately 10 yards, no more than once daily.
- 7. If fence reduction process successful based on intense monitoring from a distance then the need to the nest not be necessary.

4.2.4.1.1 Monitoring of Reduced Fencing

Monitoring will occur frequently at least 3 times a day. To reduce any added stress on a pair which has had the fencing reduced around the nest and *territory*, monitoring will occur by scopes to determine if steady incubation is occurring and/or the pairs are agitated not incubating and overexcited. In that case, the fencing will be increased in increments and/or to the original location to create a stable environment for the incubating pair. If the reduction of fencing is deemed successful and OSV use can continue without moving a nests nest will not be moved.

Should the reduced fencing prove to be impractical due to topography, location of recreational actives

and no alternative access route available nest moving may be considered as the next viable step in consultation with MADFW staff and in accordance with Nest Moving Protocols as set for the in the HCP.

4.2.4.2 Protocols for Nest Moving

In the event that reduced fencing results in repeated or prolonged flushing of birds, the Town will temporarily close Callanan's pass and request authorization to attempt nest moving. If nest movement is deemed necessary and approved, the Town will utilize their experienced monitoring staff in consultation with MADFW to move a nest. The general protocols are to wait 24 hours after the nest is complete and to await appropriate weather conditions. The following steps will guide any nest moving:

- 1. Nests will not be moved until at least 48 hours after the clutch is completed.
- 2. Nests will not be moved during inclement weather, in extreme heat, or during evening hours.16
- 3. An appropriate relocation site will be chosen in suitable habitat that minimizes the movement distance to the extent practicable. However, the MADFW may approve a greater movement distance in order to minimize disturbance to the nest after relocation, or disruption of breeding by adjacent pairs. For example, it may be preferable to move the nest a greater distance to a site that is visually isolated or further away from an OSV corridor. MADFW will be consulted onsite to determine the final nest moving location and strategy for gradual moving.
- 4. Nests will be moved using the "cylinder/plate/platform method" (Gordon and Kruse 1999). This method allows the intact nest cup, with eggs, to be moved intact in a large cylinder pressed into the substrate around the nest. The excavated nest is then placed on a platform with adequate drainage to allow for rapid repeated movement of the nest over small distances, if necessary. Visual landmarks (i.e., rocks, sticks) are moved with the nest to serve as visual cues.
- 5. Nests will be moved gradually to reduce the risk of abandonment. The first move will likely be less than 15 feet; however, distances may vary site by site, as determined by MADFW (see 3 above). MADFW staff will be present on-site to oversee, at minimum, the first nest moving attempt. Orleans staff involved in nest moving must have at least one year prior shorebird monitoring experience and have past experience this season monitoring the nesting pair with a nest being moved.
 - a. If incubation is not resumed within 1.5 hours, the nest will be moved halfway back to the original nest location and monitored for signs of incubation.
 - b. If incubation is observed at the relocated nest, the nest should be monitored for 90 minutes to ensure consistent incubation behavior before attempting to move the nest a second time.
 - c. The nest may then be moved repeatedly, up to two times per day, in 10-20 foot increments following this monitoring procedure. The MADFW may allow up to three movements per day once procedures for repeated nest-moving have been tested and proven. The Town will obtain verbal approval from MADFW prior to each nest moving attempt.
 - d. If inconsistent incubation or significant distress behavior is observed, nest movement should be halted and resumed the next day.
 - e. If the first attempt to move the nest is unsuccessful, nest moving may be attempted again the following day.
 - f. In cases where parent birds fail to accept the moved nest, the MADFW will be consulted to determine the best course of action.
- 6. The vehicle corridor will not be reopened until MADFW provides written approval to do so.

5 Mitigation

Piping Plover and Least Tern - The Town will provide funding for off-site educational outreach, increased law enforcement and selective predator management to be administered by DFW. As specified in the HCP the Town will provide \$5,800 per year for each piping plover brood, nest or territory exposed to covered activities. A maximum of two exposures are permitted per year. Because the funds will be used by DFW to benefit both Piping Plovers and Least Terns at sites where the two species co-occur, no additional payments will be necessary for Least Tern mitigation. In the unlikely event that only Least Terns and no Piping Plovers are exposed to covered activities, the Town will still provide \$5,800 to mitigate impacts to Least Tern. These funds will be sufficient to achieve the 2.5:1 mitigation ratio for both Piping Plovers and Least Terns as described in the HCP. Prior to carrying out covered activities during a given beach season; during the three year COI term, the Town will deposit mitigation funds into an escrow account *(See Appendix I).*

Diamondback Terrapin - The program of nest protection and headstarting described above will provide a significant net-benefit the Pleasant Bay Terrapin subpopulation given the relatively low risk associated with OSV use and the proposed impact minimization measures.

6 Budget

The approved annual budget covering all management and staff associated with implementation of the IAMP is detailed below:

Estimated Costs for Implementing HCP	
ITEM	COST
Vehicle Monitors	\$12,096
HCP Monitors	\$15,552
Public Education Program	\$1,000
Uniforms	\$975
Off-site Mitigation (2 take exposures)	\$11,600
MESA & Conservation Mgmt Plan Fee (1 time fee)	\$900
TOTAL	\$43,023

7 Appendices

- A. Nauset Spit Special Conditions for ORV Use (1991 SE 54-723)
- B. Off Road Vehicle and Beach Management Plan for Nauset Beach South dated 6/18/14 (2015 SE 54-2246)
- C. Nauset Beach Rules and Regulations for ORVs
- D. 5 Years of Massachusetts Shorebird Census Data for the Nauset System
- E. Town of Orleans OSV HCP User Guide/ Procedures and Conditions
- F. Town of Orleans Non-Lethal Predator Control Program for the Protection of Federally Endangered Piping Plovers at Nauset Beach
- G. Town of Orleans and Chatham Annual Beach Agreement
- H. Least Tern Aging Guide
- I. Mitigation Escrow Agreement Orleans
- J. Proof of Ownership: Assessor's Map of Beach Parcels

A. Nauset Spit Special Conditions for ORV Use (1991 SE 54-723)

1991

DEP SE 54-723

SPECIAL ORDER OF CONDITIONS RELATING TO ORV USE ON NAUSET SPIT

I. FINDINGS

A. THE ACTIVITY

The Orleans Conservation Commission finds, in accordance with the December 4, 1990 Superseding Determination of Applicability issued by the Massachusetts Department of Environmental Protection, that the activity for which the Town of Orleans seeks a permit under the provisions of State Wetland Protection Act MGL ch 131 Section 40 and the Town of Orleans Wetlands Protection Bylaw consists of the operation of ORV's on the Nauset Spit Barrier Beach system, 310 CMR 10.29. Although the permit request is narrowly defined to ORV use, where ORV use/management issues overlap pedestrian and boating uses, it is herein recognized by the Conservation Commission and the Park Commissioners that these uses will be controlled in a manner consistent with permitting requirements for the ORV use, i.e., signage, fencing, plantings, temporary closures, etc.

The Department of Environmental Protection further determined, and the Orleans Conservation Commission so finds, that the area in which the proposed activity will take place is a barrier beach, 310 CMR 10.29, a resource area which itself contains the following wetland resource areas: Land Subject to Coastal Storm Flowage (310 CMR 10.02(1)(d), Land Under the Ocean (310 CMR 10.25), Coastal Beaches(310 CMR 10.27), Coastal Dunes (310 CMR 10.28) Salt Marshes (310 CMR 10.32) and Rare Species Habitat (310 CMR 10.37).

The above cited regulations, provide that where the proposed activity involves alteration of a resource area, the issuing authority shall presume the resource area to be significant to the interests noted in the regulations governing that specific area unless that presumption is overcome by a clear showing otherwise. No such showing has been made. The Commission therefore adopts the presumptions of significance for the resource areas cited in the previous paragraph.

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PROJECT COMPLIANCE WITH MGL 131 ch. S.40 PERFORMANCE STANDARDS

Project compliance with MGL ch, 131 s.40 performance standards as cited in the attached regulations: Coastal Beaches, 310 CMR 10.27; Coastal Dunes, 310 CMR 10.28; Barrier Beaches, 310 CMR 10.19; and Rare Species Habitat, 310 CMR 10.37

The proposed project calls for the following activities designed to prevent adverse impact of ORV usage upon the resource areas of the Nauset Spit Barrier Beach cited above:

- Placement of signage and wooden barrier posts, to be located as necessary to confine ORV traffic to defined access ways, to be maintained by hand, and spaced an average of 100 feet apart; signage to be attached to posts and/or fencing where possible, such posts to be placed in such a manner as not to disturb vegetative cover;
- Placement of symbolic fencing and/or predator exclosures, as necessary, around potential nesting habitat and actual nesting and foraging sites;
- 3. Placement of fencing barriers for access closures and/or openings, as deemed necessary for tern and plover habitat, nesting, and foraging protection.

The Commission finds that the above activities as controlled by the conditions herein meet the performance standards set forth in 10.27 (3),(6), and (7);10.28 (3),(5), and (6); 10.29 (3) and (4). See "Rare Species" for compliance with 10:27.

- 4. With regard to the primary activity proposed, ORV usage itself, the Commission finds the following:
 - a. <u>Coastal Dunes</u> (310 CMR 10.28)
 - i. <u>Evaluation of ORV Access and Egress</u> Trail Location

The suggestion was made that the more southerly access trail be closed and that the more northerly egress trail be expanded to accommodate two way traffic using pullover/bypass areas. Field inspection of

the southerly access trail showed it to be sensitive to environmental concerns with respect to sinuosity and topography. Its layout was not believed to promote wind tunnelling and erosion or wave overwash. According to historical data, this showed the greatest stability in terms of shoreline migration over a 100 year period. Therefore, although the more northerly egress trail had initially been proposed to be expanded in width to accommodate two way traffic based on the closure of the more southerly trail, the record suggested that the existing layout and orientation characteristics of the more northerly trail should not be changed and that maintenance of the existing two trail system was preferable. The Commission, therefore finds, based on the testimony and references of record, that maintenance of the existing two ORV trail routes is appropriate, and meets the performance standards set forth in 310 CMR 10.28 as follows:

10.28 (3)(b) Use of existing access and egress corridors through the dunes will be restricted to corridors already without vegetation due to previous ORV use, and no further devegetation and consequent destabilization should occur given appropriate posting as required in the Special Orders.

10.28 (3)(c) It is recognized that the ongoing use of an ORV corridor may cause limited modification to small dune areas. However, the Commission credits testimony that due to the orientation, location, restriction in size, and proposed maintenance activities, no significant increase from storm or flood damage is anticipated.

10.28 (3)(d) No interference with landward movement of coastal dunes will occur since the Special Orders provide that no ORV traffic, with the possible exception of temporary alternate routes provided in response to plover and tern protection needs, will be permitted on the Cove (west) side of

the spit, toward which the landward movement is directed.

10.28 (3)(f) See section on Rare Species

ii. North/South Corridor

Given the Special Orders requiring that this corridor be a minimum of 15 feet seaward of the toe of the Coastal Dune, no change in vegetation should occur and the performance standards set forth in 10.28 (3)(b) and (c) should be met. (10.28(3) see section on Rare Species)

iii. <u>Dune Enhancement</u>

Concern was expressed that inappropriately located dune enhancement projects could adversely impact potential plover and tern habitat areas. Based on the testimony received, the Conservation Commission finds that specific delineation of dune enhancement areas on the present project plans should not be shown at this time. Rather, delineation of specific areas will be made by the Park Commissioners and their agents in consultation with the Conservation Commission and/or its agent based on wildlife habitat observations and reports presented to both agencies as required by the Order of Conditions.

b. Coastal Beaches (310 CMR 10.27 (3)(7)

The continued use of the existing ORV corridors may cause temporary limited impact to the profile (form) of the beach area. The Commission credits testimony that given the climatic and geologic characteristics of the Nauset Spit, these changes will not result in significantly increasing the potential for wind and wave erosion.

The Commission credits testimony that sediment disturbed by the passage of ORVs is not lost from the beach resource area and that significant sediment movement is not attributable to ORV use. Therefore it finds ORV use as proposed will not result in a significant decrease to beach volume and that such significant changes in beach volume

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are more likely to be influenced by climatic and/or meteorologic factors (also see Rare Species 10.27(7).

II. SPECIAL CONDITIONS

A. PREAMBLE

The Orleans Conservation Commission, in setting the following Conditions, intends that they be flexible enough to reflect the needs of the changing environment they are designed to protect. The Nauset Barrier Beach system has been shown to be extremely dynamic over time. Significant changes in geomorphic form and wildlife habitat have occurred both prior to, and now during, recreational uses of this resource area. The challenge for this Commission is to manage the competing uses of this barrier beach system under the provisions of both the Massachusetts Wetlands Protection Act, MGL 131 Section 40 and the Town of Orleans Wetland Protection Bylaw, Chapter 160 of the Code of the Town of Orleans.

The following Conditions are designed to:

- protect coastal resource areas and identified wetland interests for the Nauset Barrier Beach system as it currently exists;
- allow for the ongoing recreational use of the barrier beach system, but at a lesser impact level than previously existed;
- require management of ORV use to be sensitive to any adverse environmental impact to the Nauset Barrier Beach system;
- require greater restrictions on ORV users with respect to environmental education, scheduled and unscheduled temporary closures of access routes, etc;
- require future management of the barrier beach system resource area to include hiring of specially qualified personnel to conduct detailed monitoring of and reporting on wildlife and wildlife habitat areas which will serve as basis

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for modifying permitted management procedures/policies;

require interdisciplinary and agency cooperation which will result in sensitive, flexible and responsive management of the barrier beach system.

B. RULES AND REGULATIONS

The Board of Selectmen, acting, and hereafter referred to, as the Park Commission, is responsible for implementing and enforcing Rules and Regulations for ORV use on Nauset Spit. These regulations shall be reviewed annually by the Conservation Commission and at a minimum require the following:

- a) That the figure set for a maximum number of ORV's allowed on the beach at any one time be reduced from the 300 maximum permitted in 1990 to an initial figure of 200 for 1991 which may be subject to a downward revision dependent upon general beach or nesting considerations.
- b) Posting of temporary closures due to tide conditions or nesting considerations.
- c) Driving on the Town Cove (west) side to be prohibited (see Page 8).
- d) Driving on the low beach to be permitted only during the winter season between the first Friday in November and the Friday before Memorial Day and at such other specially designated times and places to avoid disturbance of nesting birds.
- Parking to be permitted seaward of a 37' corridor consisting of 15' from the toe of the dune, plus 12' for the vehicle track, plus a 10' margin between the vehicle track and parking area.
- f) Closure of the beach between the hours of 11:00 PM and 6 AM except for active fishing. Driving in all but designated ORV corridors prohibited.

- g) In posted areas near bird nesting or roosting areas, a speed limit of 5 mph.
- h) No jet ski launching or landing.
- i) No kite flying: March 15 September 15.
- j) No pets: March 15 September 15.
- All permittees to view educational film/slide presentation prior to issuance of and renewal of ORV permit.
- Minimum permittable equipment standards including tire size and pressure as listed in regulations issued by Park Commissioners
- m) Any other condition responsive to significant environmental changes and/or any conditions necessary to protect the Nauset Spit barrier beach system, the public health, safety and welfare of the users and/or property owners.
- n) Such fines and penalties as the Park Commission may invoke.
- Walking between the cove side and the ocean side to be prohibited in all but designated areas.

C. CLOSURE OF THE TOWN COVE (WEST) SIDE TO ORV TRAFFIC

In 1990, the Orleans Park Commission, on the recommendation of Dr. David Aubrey, coastal geologist with the Coastal Research Center of Woods Hole Oceanographic Institution and with the full concurrence of the Conservation Commission, closed the Town Cove side of the Nauset Spit to ORV traffic. Tidal flats and shellfish beds which adjoin the Town Cove side of the beach are extremely sensitive to ORV use, and ORV use should not be allowed in these resource areas under any circumstances. Barrier beaches migrate landward due to overwash events and consequent sand deposition of the barrier beach, 310 The operation of ORVs on the landward CMR 10.29(1). side of the beach could serve to inhibit dune formation through the formation of ruts and the crushing of ammophila rhizomes, stopping the landward migration of the inside, while the ocean side is continually eroded

by wave action. The net effect of these processes could be an ever narrower barrier spit, increasingly susceptible to overwash and inlet formation. This result would violate the performance standards for coastal dunes, which prohibit any modification of dune form that would increase the potential for storm or flood damage, or any interference with the landward or lateral movement of the dune, 310 CMR 10.28(3) and 10:29(3). Therefore, with the possible exception of temporary alternate routes as described below, the westerly (Town Cove) side of the barrier beach shall remain closed to ORVs except for emergency use by town officials.

D. TEMPORARY ALTERNATIVE ROUTES:

The applicant (Town of Orleans) has proposed that should the ORV corridor along the oceanside be closed to protect plovers foraging for food on that side, an alternate route along the Town Cove (west) side be approved on a temporary basis.

In answer to the concern that such temporary alternate routes could inhibit the landward migration of the barrier beach in violation of the performance standards and in CMR 10:28 and 10:29, the applicant has suggested that there is evidence relating to the seasonal climatic/meteorologic energy levels and historical storm or wind patterns documented during the summer months and evidence relating to the textural components (coarse sand and gravel) of the back shore area which would indicate it was unlikely that the limited seasonal use of proposed alternative routes, i.e., June, July and perhaps August, would result in increasing potential for storm and flood damage in violation of 310 CMR 10.28 (3)c or interfere with the landward movement of the dunes of the barrier spit in violation of 10.28 (3) (d) and 10.29 (3). Contradicting evidence was also offered.

However, the applicant has also suggested, and the Commission agrees, that the site specific delineation of temporary alternate routes is presently inappropriate. Therefore, the Commission makes no finding nor will it issue any orders as to the temporary alternate routes at this time.

When the need to protect specific habitat, nesting, and/or foraging sites by closure of the access routes

approved herein and shown on the plan of record is determined, the Town may file amended plans after consultation with its agents and the Conservation Commission or its agent and shall provide the Commission with information on such proposed temporary access routes including, but not limited to, delineation of the such proposed route or routes on the plan of record, an estimate of the duration of use, an estimate of the reduction or proposed reduction of daily vehicle traffic, a description of signage and fencing for such alternate ORV corridor, a description of proposed mitigating measures, etc. If the Commission finds that such plan meets the performance standards cited in the relevant regulations, the Commission may approve such temporary alternate ORV access route or routes,

E. RARE SPECIES

1. Project Compliance with Performance Standards

Based on the testimony provided by Massachusetts Natural Heritage Endangered Species Program, the Massachusetts Audubon Society and others, the Conservation Commission finds that a potential to alter the resource area which is part of the mapped habitat of State-listed species does exist. However, the Commission finds that the project as proposed and conditioned herein, inclusive of the hiring of a qualified habitat specialist and incorporation of temporary beach closure measures should provide the protection necessary so that no adverse effect on specified habitat sites will result.

The presumption that the maintenance activities requested in order to continue ORV use of Nauset Spit will adversely impact specified habitat sites, in the opinion of this Commission, has been overcome/rebutted/by the proposed species management plan as required by this Order of Conditions. This management plan will require, among other measures, observation and tracking of the plover and tern species to determine exact habitat sites, including foraging routes; will require temporary closures of the identified sites and routes to ORV and pedestrian use; and will provide emplacement of physical fencing and

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predator barriers to afford habitat protection. The Commission, as issuing authority, therefore finds that the project as proposed and herein conditioned should not result in an adverse impact to specified habitat sites identified for plover and tern populations on Nauset Spit. If, however, these conditions prove inadequate to protect the wetland interests defined in MGL 131, Section 40 or to ensure that there is no adverse impact on rare species habitat as required by CMR 10:37, the Commission reserves the right to impose the necessary additional conditions and restrictions upon the use of ORVs on the Nauset Spit.

The Conservation Commission wishes here to note that the applicant, the Town of Orleans by its Selectmen serving as Park Commissioners, has, in fact, conducted a tern preservation project in cooperation with the Massachusetts Audubon Society which has contributed to the establishment of the largest least tern colony in The Town has supported this New England. preservation effort through the efforts of the Town's Parks Department under the direction of Paul Fulcher, Parks Superintendent with the financial support of the town. It now proposes to continue and broaden these efforts through the hiring of a plover habitat specialist to monitor the breeding, hatching, and fledging of the plovers, and by recognizing that temporary closures of the spit during critical plover breeding and fledging periods may be necessary.

2. Plover Monitor

The Park Commission, in cooperation with the Conservation Commission, shall be responsible for the hiring of a suitably qualified person to serve as a Piping Plover (and Tern) Habitat Analysis Specialist, hereafter referred to as "Monitor", responsible to the Park Superintendent. This person shall be selected by the Park Commissioners based on review of applicant qualifications and recommendations from the Conservation Commission, and will be required to participate in the site specific field training program developed and conducted cooperatively with the Massachusetts Division of Fisheries and Wildlife Natural

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Heritage Program and the Cape Cod National Seashore Park experts on coastal bird habitats. Further, the Monitor shall cooperate and coordinate his/her activities with the Massachusetts Audubon Society Staff.

The Monitor will be employed annually from April 1 through August 31 to provide technical information relative to the habitat and characteristics of the Piping Plover and tern populations on Nauset Beach, and will be responsible for alerting the Park Superintendent and the Conservation Commission, or their designated agents, as to the need to temporarily close access to ORV traffic during plover nesting activity periods. The Monitor and fledgling will also be responsible for providing the Parks Commission and the Conservation Commission daily data on plover broods and tern nesting, and a season-end report relative to the Piping Plover population.

3. Limitation of access to prime nesting habitat areas

a. <u>Vehicular Access</u>

Parking in or vehicular access through identified plover and Least Tern habitat areas as shown on the attached map entitled "Approximate Rare Species Habitat", and as determined annually by the plover Monitor, shall be prohibited. This restriction will not necessarily prohibit vehicular access past (i.e. northward/southward) such areas if consistent with specific management guidelines.

b. Boater and Pedestrian Access

It has been the custom for many visitors to Nauset Spit to arrive by boat on the west or Town Cove side. Some remain on this west beach while others walk across the spit to the ocean side. This traffic is expected to increase as a result of increased ORV restrictions. Most boats land near the tip, beyond the dunes, the vegetation, and the

Least Tern colony, and they present a minimum threat to either birds or other resources. The other boaters, however, tend to come ashore in three areas where they must cross the dunes, either over the crest or through a washover area to reach the Atlantic side. Disturbance of the birds by these pedestrians may be minimized by: 1) Posts, signs and fencing to indicate closed areas and 2) installation of well-marked wooden walkways over the dunes in areas far from Since it is much easier to plover habitat. walk on these boardwalks than in the soft sand, pedestrians will be encouraged to use the designated walkways and thus they will help to protect dune form and vegetation as well as birds.

Pedestrians shall be excluded from existing washover areas in a manner which does not interfere with, or cause any adverse effect to, the ability of such washover areas to serve as nesting habitat for Piping Plover.

4. Piping Plovers

The beach management strategy for the plovers includes devoting highest priority to encouragement of the earliest arriving birds to nest as quickly and successfully as possible. This means minimizing human disturbance. The result in addition to a high reproductive success rate, may be to minimize the period during which the beach is closed to ORV use.

<u>Spring Arrival</u> (March 16 - April 30)

Piping Plovers return from their southern winter quarters to establish nesting territories along Cape Cod beaches in early spring.

<u>Management</u> - Prior to the arrival of Piping Plovers, potential nesting areas shall be visited by a person familiar with their habitat requirements to evaluate the natural changes that have occurred through the winter and to identify areas of suitable nesting habitat. The nesting habitat shall be posted, with endangered species

nesting area signs, prior to the arrival of plovers - no later than April 1 - to reduce the potential disturbance by beachgoers upon plovers establishing their nesting territories. Vehicular access into or through posted areas shall be prohibited, though vehicles may pass by such areas at this time.

Laying and Incubation of Eggs (April 20 - August 10)

Normally the nest, a shallow scrape in the sand, is placed at the toe of the dune, in a washover, or along the spring tide wrack line. The first of the sand-colored eggs is laid in late April and may contain a full clutch of 4 eggs a week after the first egg is laid. Then both adults incubate the eggs, alternating every few hours, for the next 28 days.

<u>Management</u> - when a nest is located with one to four eggs, a welded wire fence shall be placed around the nest, using a design recommended by the Massachusetts Division of Fisheries and Wildlife. Endangered species signs shall be placed outside the fenced area and strung off with twine to add additional protection from curious passersby. Vehicular access within the area strung off with twine shall be prohibited.

Before eggs hatch, it is necessary to close the beach and to level the ORV ruts to prevent an adverse effect on the young hatchlings. This must be accomplished within a 28 day period after incubation commences. If ruts are to be leveled by natural process, one week should be allowed, and the beach should be closed 21 days after the last egg is laid or the start of incubation. If ruts are to be leveled by hand, the beach could remain open a few additional days. If the monitor does not know when the last egg was laid or when incubation commenced, the beach should be shut down and ruts leveled immediately.

Due to the narrowness of the Nauset barrier beach, in some portions of plover habitat, the closure shall extend from the ocean side through the dunes to the cove side in a line 100 yards south of the location of the first nest

encountered for outbound travel (i.e., the southerly most nest on the spit). The point of closure would be designated with posts, rope, and signs.

Hatching Eggs and Movement of Young (May 20-August 20)

Piping Plovers have precocial young, capable of walking and feeding themselves within 24 hours The most vulnerable stage in after hatching. their breeding cycle is the period when hatchlings are less than 10 days old when they accompany the adults in their feeding forages. Normally, all eggs in a clutch hatch within a 24hour period between the hatching of the first and The hatchlings then accompany the last eqqs. adults to feed on small invertebrates along the wrack line, toe of the dunes, and interdunal blowouts. During their first week the young usually do not wander more than 100 yards from their original nest site. They do not use the nest after the first couple of days from their hatch date, but depend on their cryptic coloration to blend in with their surroundings. If an adult plover sounds an alarm note, the young either run for cover beneath one of the adults or seek cover in vegetation, among stones, along the wrack line, or in a vehicle rut. Plover chicks over a week old may accompany the adults for greater distances, up to 1/4 mile, and spend increasingly more of their time foraging along the wrack line and out into the intertidal zone.

Management - Plover chicks on Nauset Spit may be seen foraging with adults in areas anywhere between the Cove and the ocean intertidal zones in areas where there is little vegetation to obstruct Because they may go from the their movements. ocean side to the cove side of the spit within minutes, using existing blowouts and overwash areas, they are vulnerable to vehicular travel at Also, the ruts left by vehicles are all times. known to trap young chicks that subsequently may be run over by another vehicle using the same ruts, or they remain trapped in the rut and die from exhaustion or found in the rut by a predator.

Therefore, temporary closures to vehicular traffic shall be required in habitat areas used by young foraging plovers. The size of this closure will vary depending on the data collected by the Monitor. The closure point of 100 yards south of hatched eggs shall be used until the Monitor can establish the perimeter of the total feeding range.

Fledging of the Young (June 28 - August 20)

Young plovers are capable of flying short distances within 30 days of their hatch date. Typically, these novice fliers remain with the adults foraging in the same general area for anywhere from a few days to the rest of the summer. Adults may lead fledged young to more remote portions of neighboring beaches if they are disturbed by recreation or predation.

<u>Management</u> - Once the Monitor has determined that the young have fledged or left the beach, the area may be reopened to vehicular traffic.

5. Least Terns

Nauset Spit has been home to the largest Least Tern nesting colony in New England for the past two years. This is largely due to the extensive nesting area available on the sand spit which has increased in its length annually since the storm in 1978. Another factor that has contributed significantly to the size of this colony is the placement of welded wire fence by the Massachusetts Audubon Society in cooperation with the Town of Orleans Parks Department, which has reduced disturbance to the birds by beachgoers and predators.

Spring Arrival (May 7 - July 10)

Least Terns return from their winter quarters in South America to establish nesting colonies ranging in size from a dozen pairs to over 1,000 pairs. Least Terns have historically used Nauset Spit, and data over the past 20 years shows that colony size has varied between 100 to 600 pairs nesting annually.

<u>Management</u> - Prior to the arrival of the terns, welded wire fence, three or four feet in height, with 4" x 2" mesh shall be used to encircle the Least Tern nesting area based upon the prior year's data. On Nauset Beach the Least Tern Colony increased in size annually, and it is likely that the fence will have to be adjusted to encompass additional portions of the colony.

The side of fence running parallel to the oceanside wrack line shall be as close to the mean high tide line as possible. This will ensure that nests near the wrack line are included and that chicks that wander or fly outside the colony are less likely to become trapped in ruts and be run over by subsequent traffic. Endangered species signs should be placed five feet inside the fence, one every 50 feet along the entire perimeter.

Laying and Incubation of Eggs (May 20 - August 5)

Most clutches of 2-3 eggs are laid in early June. The nests are simple scrapes in the sand or on bare stone between the wrack line and the toe of the dune, or in an open blow-out. Typically, Least Terns nest in colonies of 10 to 1,000 pairs.

The adults incubate the eggs for 21 days after the last egg is laid. It is not uncommon for Least Terns to lose nests to storms or high tides. Least Terns will attempt to discourage mammalian, avian, or human intruders who come near their nests by attacking in unison, calling loudly, and dropping their "white wash".

<u>Management</u> - Incubation is the most vulnerable stage for breeding Least Terns. The presence of people, dogs, kites, and predators too close to a colony causes the entire flock of nesters to leave their nests during the disturbance. If the disturbance lasts more than 15 minutes, the eggs may be destroyed by exposure to the sun, rain, or wind-blown sand. Therefore, it is critical that the Monitor for the colony adjust the perimeter of the fence and signs to include a buffer zone wide enough to prevent disturbance to incubating adults. Research has shown a minimum distance of 80 to 150 feet is needed between the outermost

nests in the colony and the protective barrier.

Hatching of Eggs and Movement of Young (June 9-August 25)

The 2 to 3 semiprecocial young are active within 24 hours of hatching. Least Tern young are fed by the adults. Although the young are capable of running within a week of hatching, they typically do not wander more than 15 feet from their nest depression during the first 10 days. However, at ages between 10 and 28 days they will run longer distances to flee an intruder or to find better locations for hiding or awaiting the return of adults with food. These older juveniles, over 14 days old, are often difficult to see. Their plumage is camouflaged, and they hide in vegetation and cover on the wrack line.

Managment - Dogs and feral cats shall be excluded from colonies using welded wire fence. The young terns, however, pass through the fence outside the Typically, the young try to migrate colony. toward the tidal zone to be fed by the adults. The young often become trapped in vehicle ruts and are run over by subsequent traffic. To reduce this problem, vehicles shall be directed to drive below the high tide line when possible. Fewer chicks go far from the colony and flattened sand in the tidal zone makes the chicks more visible. Also, a finer mesh plastic or wire fence can be used to discourage the young terns from migrating into areas where there are vehicles. This, however, must not be used if a pair of Piping Plovers has a nest or young in the area of the Least Tern colony, because plover young could get separated from adults or be excluded from their foraging areas. Also, a finer mesh plastic or wire fencing will not keep the young terns from migrating outside the colony once they are capable of flight.

Fledging of Young (July 9 - September 10)

Least Terns young are capable of weak flight about 28 days after hatching. Most young in a colony fledge in mid-to late July in Massachusetts, unless the colony has been abandoned because of by tides, storms, or predators and the survivors

renest. Once the young are capable fliers, after a week of practice, they are led by the adults further from the busy colony to quieter portions of beaches and sandbars. The young will even fly out to the fishing grounds where they rest on the water and wait to be fed. Most Least Terns have left their breeding grounds by September 10 for the long journey to South America.

<u>Management</u>- If vehicles are permitted near the Least Tern nesting area they pose a threat to the fledging terns during the day <u>and night</u>. The Monitor shall use signs, and twine if possible, to post the boundaries of the roosting area to restrict and slow traffic.

The Monitor of the colony will determine when the terns have left the nesting area. As long as Least Terns are landing in the fenced area, it is likely that they are still nesting or rearing young. Most Least Terns will have left Massachusetts by early September.

F. MANAGEMENT AND ANNUAL REVIEW

Management of the resource areas in terms of ongoing use, use restrictions, etc. will be the primary responsibility of the Park Commission and Park Department with provisions for annual review of management guidelines and personnel hirings to be made cooperatively with Conservation Commission input prior to April 1st.

As part of the overall ORV management plan, the Park Commission will instruct the Park department personnel to maintain the approved ORV corridors and to install posts fencings, and signage as indicated on the plan of record dated January 7, 1991 or as revised and subsequently approved by the Conservation Commission and will instruct the Park Department personnel to continue ongoing revegetaiton and nourishment efforts as described and approved by the Conservation Commission. These actions and the overall ORV management plan will be reviewed and approved annually by the Conservation Commission based upon the reports and recommendations resulting from the implementation of this Order of Conditions.

G. ENFORCEMENT

The Park Commission shall require additional enforcement patrol of the Nauset Spit ORV corridor to include expanded patrol coverage during off-peak usage, specifically weekday and pre-season periods. Should expanded patrol prove inadequate to protect the natural and wildlife resources which are the subject of this Order, the Conservation Commission may require additional enforcement.

Overall enforcement responsibility for management of the Nauset Barrier Beach system as described by the attached Order of Conditions is designated by state and local statutory requirements to Town of Orleans officials. In this instance, primary enforcement responsibility will be shared by the Conservation Commission, Park Commission, and their respective agents.

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B. Off Road Vehicle and Beach Management Plan for Nauset Beach South dated 6/18/14 (2015 5E 54-2246)

Off Road Vehicle (ORV) and Beach Management Plan for Nauset Beach South

FINDINGS

A. THE ACTIVITY

The Town of Orleans seeks a permit under the provisions of the State Wetland Protection Act MGL ch 131 Section 40 and the Town of Orleans Wetlands Protection Bylaw consisting of the operation of Off Road Vehicles (ORV's) on Nauset Beach South, 310 CMR 10.29. Although the permit requested is narrowly defined to ORV use, where ORV use/management issues overlap pedestrian and boating uses, it is herein recognized by the Conservation Commission and the Park Commissioners that these uses will be controlled in a manner consistent with permitting requirements for the ORV use, such as signage, fencing, plantings, temporary closures, etc.

The area of Nauset Beach South is shown on Assessors' Maps as the following: Map 38, Parcels 13 and 14; Map 45, Parcel 11 and 50; Map 52, Parcel 10; Map 59, Parcel 1; Maps 73, Parcel 1. The combined parcels contain 700+/- Acres. This area starts at the end of the existing public beach parking lot, and continues in a southerly direction to Chatham town line, where the barrier beach extends into Chatham to its terminus.

The Orleans Conservation Commission so finds that the area in which the proposed activity will take place is a Barrier Beach (310 CMR 10.29), a resource area which itself contains the following wetland resource areas: Land Subject to Coastal Storm Flowage (310 CMR 10.02 (1)(d)), Land Under the Ocean (310 CMR 10.25), Coastal Beaches (310 CMR 10.27), Coastal Dunes (310 CMR 10.28), Salt Marshes (310 CMR 10.32), and Rare Species Habitat (310 CMR 10.37).

For the above cited regulations, provided that where the proposed activity involves alteration of a resource area, the issuing authority shall presume the resource area to be significant to the interests noted in the regulations governing that specific area unless that presumption is overcome by a clear showing otherwise. The Commission therefore adopts the presumptions of significance for the resource areas cited in the previous paragraph.

B. PROJECT COMPLIANCE WITH MGL 131 ch. S.40 PERFORMANCE STANDARDS

Project compliance with MGL ch, 131 s.40 performance standards as cited in the attached regulations: Coastal Beaches, 310 CMR 10.27; Coastal Dunes, 310 CMR 10.28; Barrier Beaches, 310 CMR 10.19; and Rare Species Habitat, 310 CMR 10.37.

The proposed project calls for the following activities, designed to prevent any impact of ORV usage upon the resource areas of the Nauset Beach South cited above:

- Placement of signage and wooden barrier posts, to be located as necessary to confine ORV traffic to defined access ways, maintained by hand, and spaced an average of 100 feet apart; signage to be attached to posts and/or fencing where possible; such posts to be placed in such a manner as not to disturb vegetative cover;
- 2. Placement of symbolic fencing and/or predator exclosures, as necessary, around potential nesting habitat, actual nesting, and foraging sites;
- 3. Placement of fencing barriers for access closures and/or openings, as deemed necessary for tern and plover habitat, nesting, and foraging protection. The Commission finds that the above activities, as controlled by the conditions herein, meet the performance standards set forth in 10.27 (3),(6), and (7);10.28 (3),(5), and (6); 10.29 (3) and (4). See "Rare Species" for compliance with 10:27.
- 4. With regard to the primary activity proposed, ORV usage itself, the Commission finds the following:
 - a. Coastal Dunes: 310 CMR 10.28
 - i. An evaluation of ORV access and egress trail location, field inspection of the ORV trails, show them to be sensitive to environmental concerns with respect to sinuosity and topography. The existing layout is not believed to promote wind tunneling, erosion, or wave overwash. Therefore, the Commission finds that based on the history and references of record, maintenance of the existing ORV trail routes is appropriate, and meets the performance standards set forth in 310 CMR 10.28 as follows:

10.28 (3)(b) Use of existing access and egress corridors through the dunes will be restricted to corridors already without vegetation due to previous ORV use. No further de-vegetation and consequent destabilization should occur given appropriate posting as required in the Special Conditions.

10.28 (3)(c) It is recognized that the ongoing use of an ORV corridor may cause limited modification to small dune areas. However, the Commission finds that due to the orientation, location, restriction in size, and proposed

maintenance activities, no significant increase from storm or flood damage is anticipated.

10.28 (3)(d) No interference with the landward movement of Coastal Dunes will occur as a result of the Special Conditions that provide for managing ORV traffic on the existing ORV trails of Coastal Dunes, with the possible exception of temporary alternate routes, provided in response to plover and tern protection needs, will be permitted.

10.28 (3)(f) See section on Rare Species

ii. Ocean Side North/South Corridor

Given the Special Conditions requiring that this corridor be a minimum of 15 feet seaward of the toe of the Coastal Dune, no change in vegetation should occur, and the performance standards set forth in 10.28 (3)(b) and (c) should be met. (10.28 (3) See section on Rare Species). Furthermore, the general location of the ocean side ORV corridor is typically westerly of the normally occurring wrack line.

b. Coastal Beaches: 310 CMR 10.27 (3)(7)

The continued use of the existing ORV corridors may cause temporary limited impact to the profile (form) of the beach area. The Commission recognizes that given the climatic and geologic characteristics of Nauset Beach South, these changes will not result in increasing the potential for wind and wave erosion.

The Commission recognizes that sediment disturbed by the passage of ORVs is not lost from the Beach resource area, and that significant sediment movement is not attributable to ORV use. Therefore, it finds ORV use as proposed will not result in a significant decrease to beach volume, and that such significant changes in beach volume are more likely to be influenced by climatic and/or meteorological factors (also see Rare Species 10.27 (7)).

SPECIAL CONDITIONS

A. PREAMBLE

The Orleans Conservation Commission, in setting forth the following Special Conditions, intends that these conditions be flexible enough to reflect the needs of the changing environment they are designed to protect. The Nauset Barrier Beach system has been

shown to be extremely dynamic over time. Significant changes in geomorphic form and wildlife habitat have occurred both prior to and during recreational uses of this resource area. The challenge for this Conservation Commission is to manage the competing uses of this Barrier Beach system under the provisions of both the Massachusetts Wetlands Protection Act, MGL 131 Section 40 and the Town of Orleans Wetland Protection Bylaw, Chapter 160 of the Code of the Town of Orleans.

These Conditions are designed to:

- Protect Coastal Resource areas and identify wetland interests for the Nauset Beach South Barrier Beach system as it currently exists;
- o Allow for the ongoing recreational use of the Barrier Beach system;
- Allow for the continued historic uses and access of the twelve fowling & fishing camps located on the Town of Orleans Nauset Beach South;
- Allow for access to private property on Pochet Island;Require management of ORV use to be sensitive to any potential environmental impacts to the Nauset Beach South Barrier Beach system;
- Require greater restrictions on ORV users with respect to environmental education, scheduled and unscheduled temporary closures of access routes, etc;
- Require future management of the Barrier Beach system resource area to include hiring of specially qualified personnel to conduct detailed monitoring of and reporting on wildlife and wildlife habitat areas, which will serve as basis for modifying permitted management procedures/policies;
- Require interdisciplinary and agency cooperation which will result in sensitive, flexible, and responsive management of the Barrier Beach system.

B. RULES AND REGULATIONS

The Board of Selectmen, acting, and hereafter referred to, as the Park Commission, is responsible for implementing and enforcing the Rules and Regulations for ORV use on Nauset Beach South. These regulations shall be reviewed annually by the Conservation Commission and at a minimum require the following:

a) The maximum limit of ORV's permitted on the beach at any one time shall be determined by the Natural Resource Manager after taking into consideration the general beach and nesting conditions. Based on management since the 2007 breach, the limit of ORV's permitted on the beach at any one time shall be 375 ORV's. This number shall include those vehicles passing through Orleans to the Town of Chatham portion of the beach but shall not include the ORV's used to access the 12 camps and the private homes/cottages on Pochet Island, as they have their own dedicated parking areas.

- b) Posting of temporary closures due to tide conditions or nesting considerations.
- c) Driving on the Bay (west) side, along the shoreline, is prohibited, with the exception of driving upon the existing ORV trails and spurs off of the main trail or the private drives to camps.
- d) Driving on the low beach may be permitted during the winter season between the first Friday in November to the Friday before Memorial Day, and at any additional specially designated times and places to avoid disturbance of nesting birds.
- e) Parking is permitted seaward of a 37' corridor consisting of 15' from the toe of the dune, plus 12' for the vehicle track, plus a 10' margin between the vehicle track and parking area.
- f) Closure of the beach between the hours of 11 PM and 6 AM except for active fishing and fowling and self contained vehicles. Driving anywhere outside of the designated ORV corridors is prohibited.
- g) In posted areas near bird nesting, a speed limit of 5 mph shall be enforced.
- h) No jet ski launching or landing.
- i) No kite flying from March 15 to September 15.
- j) Pets shall only be allowed as designated by the Nauset Beach Rules and Regulations for ORV's. Rules and Regulations on pets shall be developed to maximize protection of nesting shorebirds and shorebird habitat.
- k) All ORV permittees must view an educational film /slide presentation prior to issuance and renewal of an ORV permit.
- Minimum permittable equipment standards including but not limited to tire size and pressure as listed in regulations issued by Park Commissioners.
- m) Any other conditions responsive to significant environmental changes and/or any conditions necessary to protect the Nauset Beach South Barrier Beach system, public health, safety, and welfare of the users and/or property owners.
- n) Fines and penalties may be invoked, as necessary, by the Park Commissioners.
- o) Walking between the bayside and the ocean side shall be prohibited in all but designated areas. No walking is to be allowed upon vegetated dunes, slopes or bare dune faces. No activity, i.e. sand sliding, dune jumping, or similar, is permitted at any time.

C. CLOSURE OF THE BAY (WEST) SIDE TO ORV TRAFFIC

Salt Marsh, tidal flats, and shellfish beds which adjoin the Pleasant Bay side of the beach are extremely sensitive to ORV use. Therefore, ORV use should not be permitted in these resource areas other than via existing ORV access corridors. Where the existing access corridors terminate, so shall the ORV use. Resources being accessed from the end of these ORV corridors for fishing, fowling, or passive recreation shall be via foot travel only. Furthermore, the Department of Natural Resources shall install signage, as necessary, at these locations indicating no ORV use.

Barrier Beaches migrate landward due to windblown sediment and overwash events of the Barrier Beach system, 310 CMR 10.29 (1). Therefore, the operation of ORVs on the landward side of the Barrier Beach, other than in existing ORV trails (corridors), could serve to inhibit dune formation through the creation of additional ruts and the crushing of ammophila rhizomes. This could potentially inhibit the landward migration of the inside beach, while the ocean side is continually dynamically eroded, and at times accreted, by wave action and long shore sediment transport. The net effect of these processes could be an ever narrower Barrier Beach, increasingly susceptible to overwash and inlet formation. This result would violate the performance standards for Coastal Dunes, which prohibit any modification of Dune form that would increase the potential for storm or flood damage, or any interference with the landward or lateral movement of the Dune, 310 CMR 10.28(3) and 10.29(3). Therefore, with the possible exception of temporary alternate routes discussed with the Commission, as described below, the westerly side of the Barrier Beach shall remain closed to ORVs, as previously described, except for emergency use by town officials and essential vehicles.

D. TEMPORARY ALTERNATIVE ROUTES:

The Town of Orleans has proposed that should the ORV corridor or ORV trail network be closed to protect shorebirds, alternate routes may be approved on a temporary basis. When considering a location of a temporary route, the route will be designed to provide greater protection for nesting shorebirds.

In answer to the concern that such temporary alternate routes could inhibit the landward migration of the Barrier Beach in violation of the performance standards and CMR 10.28 and 10.29, the Conservation Commission recognizes that there is evidence relating to the seasonal climatic/meteorologic energy levels and historical storm or wind patterns documented during the summer months and evidence relating to the textural components (coarse sand and gravel) of the back shore area which would indicate it was unlikely that the limited seasonal use of proposed alternative routes, would result in increasing potential for storm and flood damage in violation of 310 CMR 10.28 (3)(c) or interfere with the landward movement of the Dunes of the Barrier Beach in violation of 10.28 (3)(d) and 10.29 (3).

When the need to protect specific habitat, nesting, and/or foraging sites by closure of the access routes is necessary, the Town may propose temporary access routes. When specific temporary routes are proposed, they will be done so after consultation with the Conservation Agent, Natural Resources Manager, and staff from the NHESP. If the Commission finds that such routes meet the performance standards cited in the relevant regulations, the Commission may approve temporary alternate ORV access route or routes.

E. RARE SPECIES

In addition to Piping Plovers and Least Terns that receive special protection measures under the Federal and or State Endangered Species Acts, and have specific management requirements detailed herein, the Commission recognizes that Nauset Beach South is habitat for other migratory waterbirds and shorebirds. Use of this habitat may be for nesting, resting, or feeding, either in the nesting season or during bird migration. The performance standards and management guidelines documented here for use in protecting Rare Species may be applied, as needed, to benefit other nesting shorebirds at the recommendation of the Natural Resource Manager.

1. Project Compliance with Performance Standards

The Conservation Commission finds that a potential to alter the resource area within part of the mapped habitat for State-listed rare species does exist. However, the Commission finds that the project as proposed and conditioned herein, inclusive of the hiring of a qualified habitat specialist and incorporation of temporary beach closure measures, should provide the protection necessary so that no effect will result within these specified habitat sites.

The presumption that the maintenance activities requested in order to continue ORV use of Nauset Beach South will impact specified habitat sites, in the opinion of this Conservation Commission, has been overcome and rebutted by the proposed species management plan. This management plan will require, among other measures, observation and tracking of the Plover and Tern species to determine exact habitat sites, including foraging routes; it will require temporary closures of the identified sites and routes to ORV and pedestrian use; and it will provide placement of fencing and predator barriers to afford habitat protection. The Commission, as the issuing authority, therefore finds that the project as proposed, and herein conditioned, should not result in an impact to specified habitat sites identified for Plover and Tern populations on Nauset Beach South. If however, these conditions prove inadequate to protect the wetland interests defined in MGL 131, Section 40, or to ensure that there is no impact on rare species habitat as required by CMR 10.37, the Commission reserves the right to impose the necessary additional conditions and restrictions upon the use of ORVs on the Nauset Beach South.

2. Plover Monitor

The Park Commission, in cooperation with the Conservation Commission, shall be responsible for the hiring of a suitably qualified person to serve as a Piping Plover and Tern Habitat Analysis Specialist, hereafter referred to as "Monitor," responsible to the Director of Natural Resources. The Monitor will be employed annually from April 1 through August 31 to provide technical information relative to the habitat and characteristics of the Piping Plover and Tern populations on Nauset Beach, and will be responsible for alerting the Director of Natural Resources and the Conservation Commission, or their designated agents, as to the need to temporarily close access to ORV traffic during plover nesting and fledgling activity periods. The Monitor will also be responsible for providing the Parks Commission and the Conservation Commission regular updates on plover and tern activity, as well as a season-end report.

- 3. Limitation of access to prime nesting habitat areas
 - a. Vehicular Access

Parking in or vehicular access through identified Plover and Least Tern habitat as determined annually by the Plover Monitor and Natural Resources Manager, shall be prohibited. This restriction will not necessarily prohibit vehicular access past (i.e. northward/southward) such areas if consistent with specific management guidelines.

b. Boater and Pedestrian Access

It has been the custom for visitors to the Nauset Beach South to arrive by boat. Generally, this takes place in the area of the barrier beach terminus currently located outside the Town of Orleans. Disturbance of the birds by these pedestrians may be minimized by installing posts, signs, and fencing to indicate closed areas. Pedestrians will be
encouraged to use the designated walkways thereby helping to protect dune form, vegetation, and birds.

Pedestrians shall be excluded from existing wash over areas in a manner which does not interfere with, or cause any effect to, the ability of such wash over areas to serve as nesting habitat for Shorebirds.

4. Piping Plovers

The beach management strategy for the Plovers includes devoting the highest priority to encouragement of the earliest arriving birds to nest as quickly and successfully as possible: i.e. minimizing human disturbance. The result, in addition to a high reproductive success rates, may be to minimize the period during which the beach is closed to ORV use.

Spring Arrival (March 16 - April 30)

Piping Plovers return from their southern winter quarters to establish nesting territories along Cape Cod beaches in early spring.

Management

Prior to the arrival of Piping Plovers, potential nesting areas shall be visited by a person familiar with their habitat requirements to evaluate the natural changes that have occurred through the winter, and to identify areas of suitable nesting habitat. The suitable nesting habitat shall be posted, with endangered species nesting area signs, and delineated with symbolic fencing, prior to the arrival of plovers (no later than April 1) to reduce the potential disturbance of this potential habitat by beachgoers for Plovers establishing their nesting territories. Vehicular access into or through posted areas shall be prohibited, though vehicles may pass by such areas at this time.

Laving and Incubation of Eggs (April 20 – August10)

Normally the nest, a shallow scrape in the sand, is placed at the toe of the dune, in a wash-over, or along the spring tide wrack line. The first of the sand-colored eggs is laid in late April and may contain a full clutch of 4 eggs a week after the first egg is laid. Then both adults incubate the eggs, alternating every few hours, for the next 28 days.

Management

When a monitor determines a nest is to be enclosed, a welded wire fence shall be placed around the nest, using a design recommended by the Massachusetts Division of Fisheries and Wildlife. Endangered species signs shall be placed outside the symbolically fenced area to add additional protection. Vehicular access within the symbolically fenced area shall be prohibited.

Before the eggs hatch, it is necessary to close the beach and to level the ORV ruts to prevent an adverse effect on the young hatchlings. This must be accomplished within a 28 day period after incubation commences. If ruts are to be leveled by natural process, one week should be allowed, and the beach should be closed 21 days after the last egg is laid or the start of incubation. If ruts are to be leveled by hand, the beach could remain open a few additional days. 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 1 of 3 scenarios:

1) If a plover nest found with a complete clutch is monitored twice per day, at dawn and dusk (before 0600 hrs and after 1900 hrs), 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.

2) If a plover nest is found with a complete clutch before May 22 (the earliest recorded hatch date for piping plovers in Massachusetts), and is not monitored twice per day, at dawn and dusk, then restrictions on vehicles should begin May 22.

3) If a plover nest is found with a complete clutch on or after May 22, and is not monitored twice per day, at dawn and dusk, then restrictions on vehicles should begin immediately.

Hatching Eggs and Movement of Young (May 20 - August 20)

Piping Plovers have precocial young, capable of walking and feeding themselves within 24 hours after hatching. The most vulnerable stage in their breeding cycle is the period when hatchlings are less than 10 days old, when they accompany the adults in their feeding forages. Normally, all eggs in a clutch hatch within a 24 hour period between the hatching of the first and last eggs. The hatchlings then accompany the adults to feed on small invertebrates along the wrack line, toe of the dunes, and inter-dunal blowouts. During their first week, the young usually do not wander more than 100 yards from their original nest site. They do not use the nest after the first couple of days from their hatch date, but depend on their cryptic coloration to blend in with their surroundings. If an adult Plover sounds an alarm note, the young either run for cover beneath one of the adults, or seek cover in vegetation, among stones, along the wrack line, or in a vehicle rut. Plover chicks over a week old may accompany the adults for greater distances, up to 1/4 mile, and spend increasingly more of their time foraging along the wrack line and out into the intertidal zone.

Management

Plover chicks on Nauset Beach South may be seen foraging with adults in areas anywhere between the Bay and the ocean intertidal zones in areas where there is little vegetation to obstruct their movements. Because they may go from the ocean side to the bay side within minutes, using existing blowouts and over wash areas, they are vulnerable to vehicular travel through these areas at all times. Additionally, the ruts left by vehicles are known to trap young chicks that subsequently may be run over by another vehicle using the same ruts, or they remain trapped in the rut, may die from exhaustion, or are found in the rut by a predator.

Therefore, when unfledged plover chicks are present, vehicles should be prohibited from all dune, beach, and intertidal habitat within 100 yards of either side of a line drawn through the nest site and perpendicular to the long axis of the beach. The resulting 200 yard-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 bayside 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. If unfledged plover chicks move outside the original 200 yard-wide area of protected habitat, then the boundaries of the protected area should be adjusted to provide at least a 100 yard buffer between chicks and vehicles.

Fledging of the Young (June 28 - August 20)

Young plovers are capable of flying short distances within 30 days of their hatch date. Typically, these novice fliers remain with the adults, foraging in the same general area anywhere from a few days, to the rest of the summer. Adults may lead fledged young to more remote portions of neighboring beaches if they are disturbed by recreation or predation.

Management

Once the Monitor has determined that the young have fledged or left the beach, the area may be re-opened to vehicular traffic.

5. Least Terns

Nauset Beach South has been home to Least Tern nesting colonies.

Spring Arrival (May 7 - July 10)

Least Terns return from their winter quarters in South America to establish nesting colonies ranging in size from a dozen pairs to over 1000 pairs. Least Terns have used Nauset Beach South, and data over past years shows that colony size has varied annually.

Management

Prior to the arrival of Least Terns, potential nesting areas shall be visited by a person familiar with their habitat requirements to evaluate the natural changes that have occurred through the winter, and to identify areas of suitable nesting habitat. The suitable nesting habitat shall be posted, with endangered species nesting area signs, and delineated with symbolic fencing, prior to the arrival of the Terns to reduce the potential disturbance of this potential habitat by beachgoers. Vehicular access into or through posted areas shall be prohibited, though vehicles may pass by such areas at this time. On Nauset Beach South, it is likely that the protected area will have to be adjusted to encompass additional portions of the colony.

Laying and Incubation of Eggs (May 20 - August 5)

Most clutches of 2-3 eggs are laid in early June. The nests are simple scrapes in the sand or on bare stone between the wrack line and the toe of the dune, or in an open blow-out.

The adults incubate the eggs for 21 days after the last egg is laid. It is not uncommon for Least Terns to lose nests to storms or high tides. Least Terns will attempt to discourage mammalian, avian, or human intruders who come near their nests by attacking in unison, calling loudly, and dropping their "white wash."

Management

Incubation is the most vulnerable stage for breeding Least Terns. The presence of people, dogs, kites, and predators too close to a colony causes the entire flock of nesters to leave their nests during the disturbance. If the disturbance lasts more than 15 minutes, the eggs may be destroyed by exposure to the sun, rain, or wind-blown sand. Therefore, it is critical that the Monitor for the colony adjust the perimeter of the fence and signs to include a buffer zone wide enough to prevent disturbance to incubating adults.

Hatching of Eggs and Movement of Young (June 9- August 25)

The 2 to 3 semi-precocial young are active within 24 hours of hatching. Least Tern young are fed by the adults. Although the young are capable of running within a week of hatching, they typically do not wander more than 15 feet from their nest depression during the first 10 days. However, at ages between 10 and 28 days, they will run long distances to flee an intruder, find better locations for hiding, or await the return of adults with food. These older juveniles, over 14 days old, are often difficult to see. Their plumage is camouflaged, and they hide in vegetation and cover on the wrack line.

Management

When unfledged least tern chicks are present, vehicles should be prohibited from all dune, beach and intertidal habitat within 100 yards of either side of lines drawn through the outermost nests in the colony and perpendicular to the long axis of the beach. The resulting area of protected habitat for least tern chicks should extend from the ocean-side low water line to the bay-side low water line or the farthest extent of dune habitat if no bay-side intertidal zone exists. If unfledged chicks move outside the original protected area, then the boundaries of the protected area should be adjusted to provide at least a 100yard wide buffer between unfledged chicks and vehicles. However, vehicles may pass through any portions of the protected area considered inaccessible to least tern chicks because of distance, steep topography, dense vegetation, or other naturally-occurring obstacles. Because least tern chicks disperse from nests shorter distances and at older ages than plover chicks, under some circumstances it may be possible to allow passage of vehicles through portions of least tern chick habitat if, in the opinion of the Division of Fisheries and Wildlife, this can occur without substantially increasing threats to least tern chicks or their habitats.

Fledging of Young (July 9 - September 10)

Least Terns young are capable of weak flight about 28 days after hatching. Most young in a colony fledge in mid-to late July in Massachusetts, unless the colony has been abandoned because of by tides, storms, or predators, and the survivors re-nest. Once the young are capable fliers, they are led by the adults further from the busy colony to quieter portions of beaches and sandbars. The young will even fly out to the fishing grounds where they rest on the water and wait to be fed.

Management

The Monitor of the colony will determine when the Terns have left the nesting area. As long as Least Terns are landing in the fenced area, it is likely that they are still nesting or rearing young. Most Least Terns will have left Massachusetts by late August or early September.

6. Diamond Back Terrapins

Diamond Back Terrapins have been observed nesting during both day and night on certain portions of the Nauset Barrier Beach system. Diamond Back Terrapin nesting sites, or habitat, needs to be protected and managed. Females venture onto land to nest typically once from mid-June to mid-July.

Efforts shall be made by the Monitor to identify and take protective measures to ensure successful nesting and nest protection. Efforts shall include alerting the appropriate state agency when Terrapin tracks are located on the beach. When tracks lead to nests, nests should be reported to the appropriate state agency so that a licensed specialist can provide onsite monitoring, nest relocation and or management for nesting success.

F. MANAGEMENT AND ANNUAL REVIEW

Management of the resource areas in terms of ongoing use, use restrictions, etc. will be the primary responsibility of the Park Commission and Natural Resources Department, with provisions for annual review of management guidelines and personnel hirings to be made cooperatively with Conservation Commission input prior to April 1st.

Changes in management, in relation to Rare Species, such as waivers of ORV closure requirements, by the State and Federal Agencies, may be allowed, upon notice to the Conservation Commission (e.g. Conservation & Management Permit).

As part of the overall ORV management plan, the Park Commission will instruct the Natural Resources Department personnel to maintain the approved ORV corridors and to install posts, fencing, and signage as subsequently approved by the Conservation

Commission. Additionally, the Conservation Commission will instruct the Department of Natural Resources personnel to continue ongoing re-vegetation and nourishment efforts, if needed, as described and approved by the Conservation Commission. These actions and the overall ORV management plan will be reviewed and approved annually by the Conservation Commission, based upon the reports and recommendations resulting from the implementation of this ORV Management Plan.

G. ENFORCEMENT

The Park Commission shall require additional enforcement patrol of the Nauset Beach South ORV corridor to include expanded patrol coverage during off-peak usage, specifically weekday and pre-season periods. Should expanded patrol prove inadequate to protect the natural and wild life resources which are the subject of this ORV Management Plan, the Conservation Commission may require additional enforcement.

Overall, the enforcement and management responsibility of Nauset Beach South as described by this ORV Management Plan, is designated by state and local statutory requirements to Town of Orleans officials. In this instance, primary enforcement responsibility will be shared by the Conservation Commission, Park Commission, and their respective agents.

C. Nauset Beach Rules and Regulations for ORVs

General Rules and Regulations for ORVs

- The maximum number of ORVs allowed on the beach at any one time shall be set each year and may be changed depending on prevailing conditions and the amount of usable beach.
- Nesting Areas: No kite flying will be permitted on the beach during the Tern and Piping Plover nesting season (March 15 through September 15). Dates subject to change. Nesting areas will be fenced and signed, pedestrians and ORVs are requested to stay as far away from sites as possible. Speed limit when near nesting area is 5 mph. Vehicles and pedestrians are prohibited in symbolically fenced areas.

BEACH DRIVING TIPS

You are required to decrease tire pressure before entering the beach ORV driving corridor. Tire pressure is critical for successful oversand driving. 15p.s.i.is recommended. Friction may cause pressure to increase while you drive, making it necessary to stop and reduce pressure agein. Your beginning tire pressure should not exceed 18 p.s.i.

■ Always check tides before entering the off-road corridor. Portions of the beach may be impassable at high tide.

■ If you feel you are in danger of getting stuck, check your tire pressure and let air out if necessary; try backing up in your tracks before moving ahead. Do not spin tires - this will only cause the vehicle to dig in.

Do not speed - excessive speed endangers you, your vehicle, other beach users, and wildlife. Experienced beach drivers know that a slow, steady speed and correct tire pressure are more effective than faster speeds.

 Always be alert for wildlife when driving on the beach - tern and plover chicks may attempt to hide in vehicle tracks when frightened.

- If because of high tides or storms the designated ORV routes become obstructed, the limit of ORVs may be reduced or the beach may be temporarily closed to ORV traffic.
- 4. Driving on the foreshore of the beach is prohibited from the Friday before Memorial Day until the first Friday of November, unless otherwise directed. Refer to the Beach Terminology Diagram below. For complete list of rules, see Orleans Nauset Beach Rules and Regulations for ORVs.

NOTE: The "dog allowed areas" to the North and South of the Nauset Beach Parking Lot are only accessible by ORVs with valid permits.

Violations

Penalties for infractions of any of the above regulations shall be revocation of registration sticker, dismissal from the beach, and/or a fine of not less than Fifty Dolfars (\$50.) nor more than Three Hundred Dollars (\$300.) for each offense.

Persons whose permits have been suspended or revoked have within seven (7) days a right to appeal to the enforcing authority, who upon receipt of written request shall arrange a hearing on the appeal to the Park Commissioners.

Authority for the enforcement of the above regulations shall rest with the Orleans Natural Resources Manager and Orleans Chief of Police.

Copies of the above regulations may be obtained at the Town Offices and Police Station in Orleans and the official on duty at Nauset Beach.

These Rules & Regulations were adopted at a public hearing of the Orleans Park Commission dated 1/14/15.

Copies of changes to be posted in Orleans Town Clerk's Office.



Cape Cod National Seashore Illustration adapted for Nauset Beach

TIRE TERMINOLOGY

Minimum acceptable fire and wheel dimensions for all vehicles being registered for a permit are as follows;

Metric tire designation as shown on sidewall:



ORLEANS

Inspections for permits may be obtained: 9 am - 4 pm on all days open

> April 30 -- September 7 Thursday through Monday 139 Main Street

(former American Legion Building, lower level)

Note: No inspection/permit will be issued on July 4th.

September 8 – April 30, 2016 Weekdays **by appointment only** at Parks & Beaches Office. Call 508-240-3700 ext, 465

For information, please visit our website at www.town.orleans.ma.us

NAUSET BEACH INFORMATION

Please call the Nauset Beach Administration Bldg. for information June 13 - September 7

(508) 240-3780

CHATHAM RESIDENTS ONLY

Please visit www.town.chatham.ma.us for Sticker Sale Days end Times

For Chatham Resident Information 508-945-5176 Chatham Coastal Resources Department

	NULES & EQUIPMENT	TO REPORT AN FMFRGFNCY	Reg. # / State	Nauset Beach
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. Eujsinairappily to tille operation of an inotot taion - All sectors should be amore that the	prohibited. Human waste may be disposed of at the	When requesting an	3	
icies. All persons snowu be aware unat une o stMassachusatta Soci Balt Banulations and	Septage Treatment Plant for a fee.	emergency, please dive	Inspected by	
e ol Massachiusens seat per regulations and 1 car coat usago ara still in affact while on the	6. EQUIPMENT: Before a permit will be issued, each	specific location:	•	tor ()KVS
d car scat usage are summinenced minute on and ch and the vehicle is underway. (This simply	vehicle will be inspected to ensure that it is equipped	North End or South End of		
ut and the tender is ander may. (This simply no that if it is required on the road if is required	with the following.	Nauset Beach, Trail # and	The Size	
he Beach) Driving at reasonable speeds on the	a. SHOVEL of a heavy type equal to or better than	Vehicle Registration, Color	Snare Tire	۲ ب
beach will be permitted during the winter season	the military folding entrenching tool.	and Make.		
ween the first Friday of November and the Friday	b. TOW ROPE, chain cable or other towing device,			
ore Memorial Day. Traveling above the mean high	not less than 14 feet in length with a minimum load		dens Moi	
er mark in a ciosed area is prohibited. Headlights	strength of 1400 lbs. (Chain size γ_{18} , cable γ_{4} ,	COMMUNICATIONS	Tire Pressure	
st be on half hour after sunset until half hour	myton 74°, or polypropytene 74°, hemp 1°.) The	TO REPORT A	Eauge	
ure sunrise.	towing device will be equipped with grap incore of other suitable attaching device on hoth ends	VIOLATION	Shovel	
oneration of off mad vehicles shall be prohibited		Orieans Nauset Beach	Jack .	
operation of our road versions shall be provided a trought from the outer heach from a point 1 mile	C. JACKSUPPOHI, poarto or similar, to nave a surface	Administration Building in	Domain Old	
to a motor V mile view besit internet point in the $+$ to a motor V mile North of the National Beach	or not less than 1444 square incrites not be initial than 18 ination in Januth. Thiskappenta ha not fase	season between 9am-5pm	Sticker	
ut to a point 4 mile Norur of the Naciet Deach incletingese otherwise prosted (excent effection)	theory of the structure of the second of the second second second of the second of the second of the second s	508-240-3780		
ing localities out its wise posted (exception of gency maintenance vehicles) Access to outer heach	equal strength and durability of the standard	Nauset Beach Toll Booth in	S/C ONLY	
at nosted areas. No vehicles shall be operated	wood supports.	season between 5pm-9pm	Domental in	
signated swimming areas.	d. JACK of the standard size and type as that which	506-240-3705	Mounted Beds	A CALLER AND AND A CALLER AND A
	cornes with the vehicle.	Orleans Police off season		「「「「「「「」」」
ersons shall ride within and be seated within the	a TIRE GALIGE fraw pressuire able to register to a	508-255-0117	Self-Contained	
ines of any motor vehicle operated on the Beach,	minimum of 10 lbs. psi.	Orleans Parks off season	Water or	
the number of riders at any one time shall be	E THE CLARS. MILLING STORES FOR THE TRADE OF THE THE TRADE OF THE TRAD	508-240-3700 ext. 465	Chemical	This is a survey of the month o
ed to the normal seating capacity of the vehicles.	1. 11 11 11 21 22. WITH THE UNIT SIZE UTES TOT 10 12 120, 101 4.4" 15" and 16" # is 015. Note _ no show fires	Chatham Police	Tollet	דותא מתחלמב הסדואבו אמתמיו שדות דברובמומא
ides shall not park within 10 teet of established	will be allowed on the Beach except from	508-945-1213	Fishing Rods	area is under the joint supervision of the
ks or routes and smail not interfere with uzvening to Bortions of the Booch shaff he considered off	November 1 through April 13. (See Tire Terminology	If vou observe a Violation.		Towns of Orleans and Chatham. We hope
ic. Foruoris of the beaufisitiat be considered on s tovehiciniar fraffic when high fides force passage	in addendum.)	the following information		von as visitors to Nauset Beach will enjoy
in 15 feet of venetation and frontal dupes. Vehicles	g, SPARE TIRE, meeting same standard as other	is needed for the Beach		o de la construction de
in to root of the Reach shall have the right of way	tires required for type of vehicle in which it is carried.	Patrol to take action		the natural and recreational values of un
	SELF-CONTAINED VEHICLES. must be	against violators:		area, as well as observe the rules that have
ing of motor vehicles between the surf and the	equipped with:	 Date & time of day 		heen adonted for its protection.
or crest of the Beach and driving or walking on	h Rod and Reel for each occupant over 12 veers	Location/landmark/trail #		
ver any partially or fully covered vegetation area	of age.	 Vehicle description (license 	e plate # / color)	All applicable Federal and State law
on or across the dunes of any other closed areas	i Permanentiv Mutinfed Reds	4 Onerator/occupant descrip	otion	
spt as designated by specined routes is suicity		E Violationination description		and regulations, town py-laws, rules and
uoread. The arrving or venicles on the west of or side of the dunes is strictly prohibited.	L remains mounted ser-contained Water or Chemical Tollet	Report violations in Orleans to	to Orleans to Chatham	regulations, and fire régulations shal armiv and are enforceable.
		יוזביוזבויה ווו פוחזבוחוא ווחלבם		approximation and and and and and and and and and an

D REGULATIONS continued	 PRIVATE PROPERTY: PERSONS WHOVISITHE BEACH BY BOAT, MOTOR VEHICLE, OR ON FOOT ARE REQUIRED TO RESPECT PRIVATE PROPERTY AND TO CONFORM TO ALL REGULATIONS LISTED HEREIN. PROHIBITED VEHICLES: Two-wheel vehicles, motorcycles, minibles, mopeds, snowmobiles, ATVs, and ATCs. No towing of paragrides permitted. Except in an emergency, no airplanes or helicopters shall land and no trailers are allowed on Nauset Beach. TEMPORARY RESTRICTIONS: In addition to the lorgoling regulations, the Orleans Park Commission may from time to time and at the recommendation of the Orleans Natural Resources Manager Issue 	temporary restrictions applying to specific areas of Nauset Beach in Orleans. 17. No vehicles may park on the BackTrail between the Lower Booth to Trail #1. ATIONS until May 14 of the following year. Subsequent violations will result in the offender's Beach permit rights being revoked	 for a period of three (3) full years from the date of the volation. Operation of motor vehicle and not having passengers properly seated within the confines of the vehicle Speeding Open fire without a permit Open fire without a permit An ORV Permit Holder who receives three violations of any of the Rules and Regulations in any one season (other than operation of a motor vehicle on Nauset Beach in closed areas and off marked trails, the emptying of holding tarks and disposal of human waste and violations of habitat conservation disposal of human waste and violations of habitat conservation disposal of human waste and no ICRV Permit have his on her ORV Permit. Persons whose permits have been suspended or revoked and shall in ot be permitted on the beach for ONE YEAR from the date of the revocation of the oRV Permit. Persons whose permits have been suspended or revoked have within seven days a right to appeal to the entroreing authoritons and the Nauset Beach Partol, and Beaches Stules and Regulations and the Nauset Beach Partol, and any Orleans Police Officer function of the Orleans Park Commission dated t/14/15.
C. GENERAL RULES ANI	 WINDSURFING, SURFBOARDING permitted only in certain specified areas and separate regulations shall apply to the conduct of same. SCUBA DIVING, SKIN DIVING: All other methods of underwater swimming requiring mechanical aids shall be permitted only in specified areas, and shall be subject to separate regulations. The use of rafts, tubes, inflatables, and other similar types of SWIMMING OR BATHING DEVICES are prohibited. FISHING GEAR must be kept at waters edge at all times year round while in the act of fishing. There shall be nonce than whole (12) fishing rods per vehicle to be in used any cost final times. 	 SHELLFISH regulations of Orleans apply to the Orleans portion of the Beach. Shellffish regulations of Chatharm apply to the Chatharm portion of the Beach. D. VIOL Fines listed below may be imposed for violations of the Parks and Beaches Rules and Regulations and the Nauset Beach 	 Rules and Regulations for ORVs: Operation of a motor vehicle on Nauset Beach in closed areas and of marked trails. Fine: \$200 and Revocation of ORV Permit Emplying of holding tanks and disposals of human waste. Fine: \$200 and Revocation of ORV Permit Violations of Habitat Conservation plan (HCP) Fine: \$200 and Revocation of ORV Permit Violations of the Parks and Beaches Rules and Regulations for or Vors shall be violates any of the Parks and Beaches Rules and Regulations for ORVs shall be subject to the following penalties: First Offense: Warning Second Offense: \$100 Operation of a motor vehicle on Nauset Beach without a valid ORV permit Operation of Rust Conservation of Offense: \$100 Operation of Rust Beach Rules and Regulations for Offense: stop and Neural Conservation of the dog regulations related to dogs. In addition to any other penalties: any ordition of the dog regulations related areas due to stoper p.s.l. Violation of the dog regulations related to dogs. In addition to any other penalties: and Regulations in closed areas due to stores the offense: Beach permit rights from the ceregulations, any violation of the dog regulations and reagulations in closed areas due to stores and reagulations in closed areas due to stores the offender's Beach permit rights from the date of violation of the offender's Beach permit rights from the date of violation of the offender's Beach permit rights from the date of violation of the offender's Beach permit rights from the date of violation of the point of the dog regulations in closed areas due to stores of changes to be posting to be posting to the offender's Beach permit rights from the date of violation of the offender's Beach permit rights from the date of violation of the dog regulations in closed areas due to stores of changes to be posting to the offender's Beach permit rights from the date of violation of the dog regulations in closed areas due to
CTIVE MAY 1, 2015 TO APRIL 30, 2016	North of the parking lot are allowed on the Beach only between the hours of 6:00 a.m. and 11:00 p.m. (unless actively fishing). Fishing gear must be shown upon request. Oversand vehicles must stay off the Beach six (a) hours before returning. Self-contained vehicles will be allowed to stay on the Beach for a maximum of 96 consecutive hours and a 72-hour period must elapse before they may return to the Beach. The Natural Resources Managermay reduce the maximum stay for self-contained whicles at any time. All vehicles remaining overnight, except those vehicles used by camp lessees or their guests, shall have permanently mounted self-contained water or chemical toilet and permanently mounted sleeping accommodations sufficient for all persons in the vehicle.	3. LINITS: The number and types of vehicles allowed on the Beach at any one time shall be set each year and may be changed depending on prevaliting conditions and the amount of usable beach. All registered vehicles using the beach South of the Nauset Beach parking lot must check on and off the Beach.	 AND REGULATIONS AND REGULATIONS AND REGULATIONS And 1 through Labor Day, (This willbe a zero tolerance enforcement issue.) Dogs are prohibited from areas closed to vehicle or human traffic for Piping Plover protection. Owners are responsible for deaming up after their animals. Beach camp lessees would retain traditional use rights for their leased property. 6. SLEEPING in the open between 8:00 p.m. and 8:00 a.m. and the use of camping tents, sleeping bags, bed only, and and the use of camping tents, sleeping bags, bed all Beach areas is prohibited. 7. No open FIRES on the Beach are allowed unless premits are obtained from the Orleans Fire Chief or Natural Resources Manager. Charcoal fires in grills are permits are obtained from the Orleans Fire Chief or Natural Resources Manager. Charcoal fires in grills are permits and the applied for 48 hours in applying for such a proposed use. The group while on the Beach. Such a proposed use. The group while on the Beach. Such a proposed use. The group while on the Beach. Such a proposed use. The permit for the Orleans Natural Resources Manager, who shall designate the Beach shall be required to carry a special permit for such a proposed use. The permit for the Orleans Natural Resources Manager, who shall designate the Beach shall be required to the provision additional feel), and shall be applied for 48 hours in advinted for such a proposed use. The permit for the Orleans Natural Resources Manager, who shall designate the Beach shall be required to a strift or the Beach shall be required to a strift or the Beach. Such a proposed use. The permit for the Orleans Natural Resources Manager, who shall designate the Beach shall be required to a strift or the Beach shall be required to a strift or the Orleans Natural Resources Manager. The permit for the Orleans Natural Resources Manager, who shall be required to a party may be held.
B. VEHICLE REGISTRATION – EFFE(STICKERS: Registration shall be obtained from the Orleans Parks & Beaches and the Chatham Co as tal Resources departments. Applicants of Nauset Beach registration cards will be issued stickers that must be affibed to the stationary window on the driver's side of the vehicle. No vehicle strall operate on the Beach without a vulid registration sticker. All registration stickers are non-transferable and expire April 30 of following year. All previous years' stickers must be removed. Registration stickers issued to camp lessees; Chatham residents, nonresident self- contained, and oversand vehicles are valid only South of Nauset Beach during the season when the gate house is operational when driving South of the Nauset house is operational when driving South of the Nauset house is operational when driving South of the Nauset house is operational when driving South of the Nauset 	Beach parking lot. All other ORVs must stop at the booth and check on the Beach. The only time they will be required to check off is when the vehicle limit is at its maximum. 2. HOURS: All non-self-contained vehicles using the beach South of the parking lot and all legal residents and real estate taxpayers of Orleans using the beach TR	 ALL VEHICLES must carry a current copy of rules and regulations and tide chart in vehicles at all times. ALL VEHICLES must carry a current copy of rules and regulations and tide chart in vehicles at all times. ACCESS to the beach NOFTH of parking lot is in a residential area. Please be courteous and obey all rules and regulations when entering, leaving, and during your visit to the Beach. NO PARKING ALLOWED AT THE ACCESS ROAD AREA ON NAUSET SPIT. LESSEES, NAUSET BEACH PROPERTY (ORLEANS): All regulations listed herein shall apply while using other areas of the Beach. LESSEES, NAUSET BEACH PROPERTY (ORLEANS): Any and all motorized equipment or machines taken on the Beach. Argy and all motorized equipment or machines taken on the Beach. CHILDREN under twelve (12) years of age must be accompanied by a responsible person sisteen (16) years of age or older. No DOGS allowed North of the Nauset Beach Boundary all dogs must be on a leash of not more than 30 feet at all times, unless below the high tide mark, from

D. 5 Years of Massachusetts Shorebird Census Data for the Nauset System

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MASSACHUSETTS PIPING PLOVER CENSUS FORM

Observer(s): Elizabeth Hogan, Pat Johnson, Stephen Struble

Agency: Town of Orleans Parks & Beaches

Address: 18 Bay Ridge Lane

Orleans, MA 02653

Site Name: Nauset Spit (Heights)

Year: 2010

Town: Orleans

Ownership: Town of Orleans

all nests and any pairs that did not nest. \Rightarrow Please attach a map of this site that shows locations of

Telephone: 508-240-3775

Notes on pairs that did not nest (include dates present, activities)/Census remarks:

are difficult, as numbers were reassigned as we reevaluated potential renesting.

We estimate that two pairs were not present during the census period

List pairs not present during Index Count:

All known pairs nested. Two pairs were estimated to have arrived after the census, though exact pair numbers

E-mail: pfulcher@town.orleans.ma.us

Census Results:	Index Count ^a	Total Count ^b
No. of	19	21
Pairs		
Unpaired	0	0
Adults		

Month	Approx. # of visits to site per
	period
Apr. 1-15:	15
Apr. 16-30:	15
May 1-15:	15
May 16-31:	16
June 1-15:	15
June 16-30:	15
July 1-15:	15
July 16-31:	16

. 2

Exclosure Design	A	В	C
Shape	circular		
Diameter/Length of side	10 ft		
Size of wire mesh	2 in x 4 in		
Total Height	4 ft		
Height above ground:	3 ft 8 in		
Depth buried:	4 in		
Cover material	bird netting		
Cover spacing/Mesh size	3¼ in		

Management actions taken or needed/Remarks:

exclosed at 3 eggs once active incubation was observed. Vehicles prohibited within 0.1 mi of unfledged broods, beginning on June 6th and ending on August 18th with the full extent of closure varying within that time. Dogs prohibited on beach from March 15th through September 15th. Sites visited on daily basis throughout nesting season. Potential nesting habitat fenced using symbolic fencing prior to nesting period, Nests were

on laying or hatching dates. ^aThe Index Count should include not only pairs observed during the Index Count period (June 1-9), but also pairs later determined to have been present during that period based

^bTo be included in the Total Count, a pair must have been present at the site for ≥ 2 weeks and exhibiting courtship or territorial behavior during that period, if not actual nesting.

Site Name	:: Nauset Spit	(Heights)	Year: 2(010	Observer	(s): E. Hogan,	P. Johnson, S	. Struble		
Page 2 of .	2	No.	No. eggs	No. chicks	Date	No. eggs when	Date	Date nest		Exclosure R	eport
		eggs	hatched ^c	fledged ^d	elutch	clutch	clutch	hatched or		Design	Date
Pair No.	Nest No.	laid		>	Iound	IOUDD	compieted	1atted		(A, B)	Instatled
÷	A (NS1)		0	0	05/01	<u> </u>	N/A	05/03	z	N/A	N/A
-	B (NS23)	2	0	0	05/22	2	N/A	05/22	N	N/A	N/A
-	C (NS27)	4	4	ц	05/28	2	05/31	06/25	Ч	A	05/30
2	A (NS2)	4	0	0	05/01	<u>ل</u>	05/09	05/27	Y	A	05/07
2	B (NS31)	2	2	,	06/16	2	?	07/16	Y	A	06/20
3	A (NS3)		0	0	05/01	1	N/A	05/02	z	N/A	N/A
ω	B(NS10)	щ	0	0	05/11	1	N/A	05/13	z	N/A	N/A
4	A (NS4)	1	0	0	05/02	1	N/A	05/03	Z	N/A	N/A
4	B (NS13)	1	0	0	05/13	ы	N/A	05/20	Y	A	05/18
4	C (NS28)	4	0	0	05/28	2	06/01	06/02	Z	N/A	N/A
^c Indicate be ^d Chicks are	low the reasons considered "fle	for nest fai dged" if th	ture and egg/ck ey are ≥ 25 day	iick mortality (if k rs old or are obser	10wn) <u>and</u> the (ved in flight fo	evidence (plea r≥ 50 ft., whii	se give details), (Chever occurs fire	or "unknown." U st.	lse additic	onal pages if nece	ssary.
Nest No.		Cause of	egg mortali	ty/Evidence		Nest No.		Cause of chio	k morts	ality/Evidence	6
1A 1B 1C	Unknown. Found already All eggs hatche	abandoned, ed.	, cause unknow	n.		1A 1C	Eggs lost. Eggs lost. One chick disap	peared on 6/27. (7/3.	One chick	disappeared on 7	1/2. One chick
2A	Abandoned by adult, as a sing we have no evi	parents, ca le bird was idence	use unknown. seen in the are:	Suspected mortali a following abando	ty of one onment, but	2A	Eggs lost.				
2B	All eggs hatche	∂d,				2B	One chick disap appeared slightly disappearing.	peared on 8/3. R y underdevelopec	emaining and show	chick considered ved no signs of fl	fledged, but ight before
3A 3B	Crow tracks ne	bar scrape.				3A 3B	Eggs lost. Eggs lost.				
4A t	Unknown.					4A	Eggs lost.				
4B	Abandoned fol	lowing stor	m			4B	Eggs lost. Erms lost				
ť	CIIVIO MIT	•									

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April 200

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9A 9B 10A	8A	7B	4 4		SA	Nest No.	^c Indicate be ^d Chicks are	11	10	6	9	8	7	7	6	5	5	Pair No.	Page 3 of :
Unknown. Gu All eggs hatch Unknown.	tracks nearby. All eggs hatch	Found with 2 e	Dave service of	All eggs hatch	Unknown. All error hatch		low the reasons considered "fle	A (NS12)	A (NS11)	B (NS21)	A (NS9)	A (NS8)	B (NS33)	A (NS7)	A (NS6)	B (NS25)	A (NS5)	Nest No.	5
ll and canic ed.	ed.	eg shells a	ver fattani	g į	<u>p</u>	Cause of	for nest fat dged" if th	2	<u> </u>	ω		4	2	4	4	4	4	eggs laid	No.
d tracks in area.		и <u>g</u> миш. lready predated				f egg mortali	lture and egg/cl ey are <u>></u> 25 daj	0	0	ω	0	ω	0	0	4	4	0	hatched ^e	No. eggs
		l. Both canid and j				ity/Evidence	nick mortality (if k vs old or are obser	0	0	2	0	Ъ	0	0	2	1	0	fledged ^a	No. chicks
		possum					nown) <u>and</u> the ved in flight fo	05/11	05/11	05/20	05/05	05/04	06/19	05/04	05/02	05/23	05/02	clutch found	Date
9A 9B 10A	8A	7B		6A	5A 5B	Nest No.	evidence (plea r≥50 ft., whi	2	1		1	щ	2	11	1	1	щ	clutch found	No. eggs when
Eggs lost. One chick disap Eggs lost.	Three chicks dis	Eggs lost.	Faare Inst	Two chicks disa	Eggs lost. One chick disan		se give details), (chever occurs fir	N/A	N/A	05/25	N/A	05/10	N/A	05/11	05/10	05/30	05/10	clutch completed	Date
peared on 7/1.	appeared on 6/1		¥ 7	preared on $6/15$	peared on 7/10.	Cause of chi	or "unknown" st.	05/13	05/13	06/23	05/13	06/09	06/18	05/20	06/07	06/23	06/16	hatched or failed ^e	Date nest
	4.			-	Two more	ck mort	Use additi	Ν	Ν	Х	N	Y	N	Ч	Y	Y	Y	Y/N	
					chicks disappea	ality/Evidenc	onal pages if nec	N/A	N/A	A	N/A	A	N/A	A	A	A	A	Design (A, B)	Exclosure F
					ured on 7/11.	ë	essary.	N/A	N/A	05/25	N/A	05/10	N/A	05/11	05/10	05/27	05/07	Date installed	teport

Site Name: Nauset Spit (Heights)

Year: 2010

Observer(s): E. Hogan, P. Johnson, S. Struble

Send forms to: Scott Melvin, MassWildlife, Rte. 135, Westborough, MA 01581

111B 122A 133A 144A 144A 155A 155A 165B 165B 117A 165B 117A 165B 117A 117B 117B	Nest No.	^c Indicate <i>l</i> ^d Chicks a	18	17	17	16	16	15	14	13	12	11	Pair No.	Page 4 oj	Site Nan
All eggs hato All eggs hato Crow tracks 1 Unknown. A seen. Grackle Two eggs did Unknown. All eggs hato All eggs hato Unknown.		elow the reason e considered 'fl	A (NS20)	B (NS30)	A (NS19)	B (NS29)	A (NS18)	A (NS17)	A (NS16)	A (NS15)	A (NS14)	B (NS24)	Nest No.	· ς	ıe: Nauset Spi
ned. ned. eading to sc ll eggs appe e tracks insi not hatch. not hatch. ned. over followi hed.	Cause of	s for nest fai edged" if th	н	4	1	4	2	4	4	н	4	4	eggs laid	No.	t (Heights
rape. ar to have hatcl de exclosure. ng storm.	f egg mortal	lure and egg/c) ey are≥25 da	0	4	0	4	0	2	ω	0	4	4	hatched ^e	No. eggs	÷
1ed, but 4 chicks v	ity/Evidence	tick mortality (if k vs old or are obse	0	4	0	з	0	0	0	0	4	0	fledged ^a	No. chicks	Year: 2
<i>че</i> ге леvег		rnown) <u>and</u> the rved in flight fo	05/17	06/04	05/16	05/28	05/16	05/16	05/15	05/15	05/13	05/23	clutch found	Date	010
11B 12A 13A 14A 14A 16A 16B 16B 16B 17A 17B 17B	Nest No.	evidence (plea ɔr ≥ 50 ft., whi	1	4	· 	ω	2	1	1	1	2		clutch found	No. eggs when	Observer
One chick disap All chicks fledg Eggs lost. All chicks disap One chick disap Eggs lost. Eggs lost. All chicks fledg Eggs lost.		se give details), chever occurs fi	N/A	?	N/A	05/30	N/A	05/22	05/23	N/A	05/16	05/28	clutch completed	Date	(s): E. Hogan
ppeared on 7/9. ged. ppeared within tv ppeared on 6/25. ppeared on 7/9. ged.	Cause of chi	or "unknown." st.	05/19	06/28	05/19	06/24	05/18	06/17	06/20	05/21	06/14	06/26	hatched or failed ^c	Date nest	, P. Johnson, S
vo days of The rema	ck mort	Use additi	Ν	Ч	Z	Y	z	Ч	ү	N	Ч	Y	Ϋ́Ν		S. Struble
hatching. ining chick disap	ality/Evidenc	onal pages if nec	N/A	A	N/A	A	N/A	A	A	N/A	A	A	Design (A, B)	Exclosure R	
peared on 6/28.	e	essary.	N/A	06/04	N/A	05/28	N/A	05/21	05/22	N/A	05/14	05/26	Date installed	leport	

Send forms to: Scott Melvin, MassWildlife, Rte. 135, Westborough, MA 01581

Page 5 of 5	No.	No. eggs	No. chicks	Date	No. eggs when chutch	Date	Date nest hatched or		Exclosure]
Pair Nn Nest No.	eggs laid	hatched ^c	fledged ^d	clutch found	clutch found	clutch completed	hatched or failed ^e	N/N	(A De
18 B (NS22)	4	2	L_A	05/21	1	05/27	06/21	Ч	
19 A (NS26)	 س	0	0	05/28	2	05/30	06/22	Y	1
20 A (NS32)	3	3	0	06/18	ы	06/21	07/16	Υ	A
21 A (PB1)	4	4	.3	05/02	ω	05/03	05/29	Υ	A
^c Indicate below the reason ^d Chicks are considered "f	s for nest fa ledged" if ti	llure and egg/c vey are > 25 da	hick mortality (if k ys old or are obser	nown) <u>and</u> the ved in flight fo	evidence (plea $r \ge 50 ft.$, which	se give details), chever occurs fir	or "unknown," (st.	Jse additi	mal pag
Nest No.	Cause o	f egg mortal	ity/Evidence		Nest No.		Cause of chi	ck mort	lity/E
18B Two eggs did 19A A coyote or f 20A All eggs hatc	not hatch. òx jumped c hed.	ver wire and th	rough netting.		18B 19A 20A	One chick disar Eggs lost. One chick disar which was extra disappeared sev location the weight	peared on 7/10. peared on 7/23. mely weak and u eral hours later. ak chick had beer	On 7/24, t mable to r On 7/26, <i>i</i> ı observed	wo chick 10ve (but dead adu Adult v
21A All eggs hatc	hed.				21A	One chick disar	peared on 6/22.		

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Send forms to: Scott Melvin, MassWildlife, Rte. 135, Westborough, MA 01581

MASSACHUSETTS PIPING PLOVER CENSUS FORM

Year: 2010				Observer(s): Elizabeth Hogan, P	at Johnson, Stephen Struble
Site Name: 1	North Beach	ı Orleans (ar	eas south of Orleans ORV	Agency: Town of Orleans Parks	& Beaches
access) Town: Orlea	ns			Address: 18 Bay Ridge Lane Orieans, MA 02653	
Ownership:	Town of O	fleans			
⇒ Please a all nests an	ttach a ma d any pairs	p of this sit s that did n	e that shows locations of ot nest.	Telephone: 508-240-3775	E≁mail: pfulcher@town.orleans.ma.us
Census Results:	Index Count ^a	Total Count ^b	Notes on pairs that did no	ot nest (include dates present, activit	ties)/Census remarks:
No. of	11	11	All known pairs nested		
Pairs	-				
Unpaired Adults	0	0	List pairs <u>not</u> present du All pairs were present	ring Index Count: during index count.	
Month	Approx. #	<u>0</u>	Indicate type(s) of exclosur	e design(s) used:	
	visits to sit period	e per	Exclosure Design	A	ВС
Apr. 1-15:	15		Shape	circular	
Apr. 16-30:	15		Diameter/Length of side	10 ft	
May 1-15:	15		Size of wire mesh	2 in x 4 in	
May 16-31:	16		Total Height	4 ft	
June 1-15:	15		Height above ground:	3 ft 8 in	

Management actions taken or needed/Remarks:

June 16-30: July 1-15: July 16-31:

15 16

Cover spacing/Mesh size

3¼ in

Cover material

Depth buried:

4 in

bird netting

15

exclosed at 3 eggs once active incubation was observed. Vehicles prohibited within 0.1 mi of unfledged broods, beginning on June 1st and ending on August 8th. Dogs prohibited on beach from May 15th through Labor Day. Dogs permitted on a leash below high tide mark south of Trail #1 while ORVs allowed. Sites visited on daily basis throughout nesting season. Potential nesting habitat fenced using symbolic fencing prior to nesting period. Nests were

on laying or hatching dates. ^bTo be included in the Total Count, a pair must have been present at the site for ≥ 2 weeks and exhibiting courtship or territorial behavior during that period, if not actual nesting. *The Index Count should include not only pairs observed during the Index Count period (June 1-9), but also pairs later determined to have been present during that period based

Send forms to: Scott Melvin, Mass Wildlife, Rte. 135, Westborough, MA 01581

Site Name	: North Beac	h Orleans		Year: 20)10	Observer	(s): E. Hogan,	P. Johnson, S	. Struble	,	
Page 3 of 5		No.	No. eggs	No. chicks	Date	No. eggs when	Date	Date nest		Exclosure R	eport
		eggs	hatched ^e	fledged ^d	clutch	clutch	clutch	hatched or		Design	Date
Pair No.	Nest No.	laid			found	found	completed	failed ^e	Ϋ́Ν	(A, B)	installed
7	A (P10)	4	ω	3	80/90	2	06/13	07/07	Υ	A	06/11
8	A (PPN1)	4	4	2	05/06	1	05/12	06/07	Ч	A	05/11
9	A (PPN2)	H	0	0	05/15	1	N/A	05/18	N	N/A	N/A
9	B (PPN3)	4	ω	0	05/24	2	05/27	06/19	Y	A	05/26
10	A (NB1)	4	ω	0	05/24	ы	05/26	06/22	Y	А	05/24
11	A (NB2)	ω	ω	0	06/07	J	?	07/02	Ч	A	06/07
						-					
^c Indicate bel ^d Chicks are	ow the reasons j considered "fle	for nest fait dged" if th	ture and egg/ch ey are > 25 day	ick mortality (if kn s old or are obser	iown) <u>and</u> the ved in flight fo	evidence (plea. $r \ge 50$ ft., which	se give details), o hever occurs firs	r "unknown." l t.	Jse additic	mal pages if nece	ssary.
Nest No.		Cause of	egg mortali	ty/Evidence		Nest No.		Cause of chi	sk morts	ality/Evidence	
7A 8A	One egg did no All eggs hatche	t hatch.				7A 8A 0A	All hatched chic One chick disapp Force lost	ks fledged. beared on 6/14.	A second (chick disappeared	on 6/15.
9B 10A	One egg did no One egg did no	t hatch. t hatch. t hatch.				9B 10A	One chick disapp One chick disapp chick disappeare	peared on $6/25$. Opeared on $6/23$. d on $7/8$. One ad	The remai One chick hult disapp	ning 2 chicks disa disappeared on 7 yeared a week bef	appeared on 6/29. /4. The last bre hatching,
11A	All eggs hatche	Ă.				11A	and eggs were of One chick disapp remaining chick	then untended. C beared on 7/3. O disappeared on 7	mly one ac ne chick d 1/10.	hult was ever pres lisappeared on 7/	ent with chicks. 3. The
Courd form	n in Conti M	alvin Ma	veeW/ildlife I	2ta 125 Weeth	orniiah MA	01581		508-389	_6 345 (of	F) 508-389-78	91(fax)

Send forms to: Scott Melvin, MassWildlife, Rte. 135, Westborough, MA 01581

MASSACHUSETTS PIPING PLOVER CENSUS FORM

Year: 2011			Observer(s): S. Struble, E, Hogz	n, P. Johnson, P. Fulcher	
Site Name: Na	ıset Beach - Naus	et Spit (Heights)	Agency: Town of Orleans Parks	& Beaches Department	
Town: Orleans,	MA		Address:		
Ownership: Te ⇒ Please atta all nests and a	wn of Orleans ch a map of this ny pairs that di	site that shows locations of d not nest.	Telephone:	E-mail:	
Census In Results: C	ıdex Total ount ^a Count ^b	Notes on pairs that did no All observed pairs nested.	ot nest (include dates present, activit	ies)/Census remarks:	
No. of 22 Pairs 22	24	the census window and are	(FBZ) JOST THEIR THEIR PRIOR TO THE CENSU thus included in the index count.	s window and never refiested, they	were observed in the area during
Unpaired 0 Adults	0	List pairs <u>not</u> present dur Pair 3(NS3) and pair 7 (Ni	ring Index Count: S7) both left prior to the census windo	W	
Month A	oprox. # of	Indicate type(s) of exclosure	e design(s) used:		
pe pe	riod	Exclosure Design	A	B	C
Apr. 1-15: 1	n Un	Shape	Circular		
Apr. 16-30: 1		Diameter/Length of side	10 ft		
May 1-15: 1 May 16-31: 1	יי ע	Size of whe mesh Total Height	2x4 m 4 ft		
June 1-15: 1	5	Height above ground:	3.5 ft		
June 16-30: 1	5	Depth buried:	0.5 ft		
July 1-15: 1	υ ₁	Cover material	Mesh netting		
July 16-31: 1	6	Cover spacing/Mesh size	³ /4 in	- - -	

Management actions taken or needed/Remarks:

related to possible adult mortality is reported under the nest failure section for associated nests. 06/06/11 following suspected adult mortality related to exclosure use. Six nests were abandoned in the days prior to exclosure removal. Evidence Symbolic fencing used to provide adequate protection. Nests initially exclosed at 3-4 eggs or when complete, but all exclosures were removed on

Dogs prohibited from 03/15/11 through 09/15/11.

hatched or fledged. Offroad vehicle traffic prohibited from areas with active broods from May 31st until August 15th, with the length of the closed area changing as broods

on laying or hatching dates. "The Index Count should include not only pairs observed during the Index Count period (June 1-9), but also pairs later determined to have been present during that period based

^bTo be included in the Total Count, a pair must have been present at the site for ≥ 2 weeks and exhibiting courtship or territorial behavior during that period, if not actual nesting.

LAAvaluutprior toimmedialoss of oloss of o1B / 12BCrow - ta suspecwho bot2AAbandor2BCrow - t	Nest No.	^c Indicate below the rec ^d Chicks are considere			4 A (NS	3 A (NS	2 B (NS:	2 A (NS	1/12 B (NS	1 A (NS	Pair No. Nest N	Page 1 of 7	Site Name: Nauset
abandonmer ately followi me adult. racks leadin ted re-pairir h experience ned for unkr most immed racks leadin	Canse	isons for nest j d "fledged" if		 	34) 4	3) 2	21) 3	;2) 4	32) 3	31) 4	o. eggs	No.	: Spit (Heigh
if, and a single ing abandonme g directly to e- ig of two adult own reasons - iately. g directly to er g directly to er	of egg mortali	ailwre and egg/ct they are ≥ 25 day			0	0	0	0	0	0	hatched ^e	No. eggs	its)
adult was sporau adult was see ant. Suspect p mpty scrape. 's (from pairs 1 s (from pairs 1 pair began scr pair began scr mpty scrape. ous predator tr	ty/Evidence	iick mortality (if , is old or are obse			0	0	0	0	0	0	fledged ^d	No. chicks	Year: 2011
n scraping pssible This pair is and 12) and 12) raping acks.		known) <u>and</u> the rved in flight fo			05/02/11	05/02/11	05/31/11	04/30/11	06/19/11	04/30/11	clutch found	Date	Obs
1A 1B 2A 2B 3A 3A	Nest No.	evidence (plea r ≥ 50 ft., whi			1	<u>ы</u>	2	1	3		clutch found	No. eggs when	erver(s): S. i
Did not hatch Did not hatch Did not hatch Did not hatch Did not hatch		se give details), chever occurs fir			05/10/11	N/A	06/03/11	05/07/11	?	05/06/11	clutch completed	Date	Struble, E. Ho
· · · · · · ·	Cause of chi	or "unknown." st			06/06/11	05/05/11	06/17/11	05/22/11	06/26/11	06/01/11	hatched or failed ^e	Date nest	gan, P. Johnse
	ck mort	Use additi			Y	N	Ч	Y	z	Y	Y/N)n, P. Fu
	ality/Evidenc	onal pages if nec			A	N/A	A	A	N/A	A	Design (A, B)	Exclosure R	lcher
	œ	255 ary.			05/07/11	N/A	06/03/11	05/07/11	N/A	05/07/11	Date installed	eport	

re: Names hypt (Heights) Year: 2011 No. eggs function No. eggs function No. eggs function No. eggs function No. eggs function Date function Excloaure Report function B (NS12) 3 0 0 05/04/11 1 N/A N/A N/A N/A N/A B (NS12) 4 0 0 05/04/11 1 N/A 05/25/11 N N/A N/A N/A B (NS12) 4 0 0 05/04/11 1 N/A 05/25/11 N N/A N/A N/A B (NS12) 2 0 0 05/04/11 1 N/A 05/05/11 N N/A N/A N/A B (NS12) 2 0 0 05/04/11 1 N/A 05/05/11 N/A N/A <td< th=""><th>7A</th><th>6A 6B</th><th>5A SB</th><th>AB AB</th><th>⁶Indicate be ^d Chicks are</th><th></th><th></th><th>7</th><th>6</th><th>6</th><th>S</th><th>5</th><th>4</th><th>Pair No.</th><th>Page 2 of</th><th>Site Nam</th></td<>	7A	6A 6B	5A SB	AB AB	⁶ Indicate be ^d Chicks are			7	6	6	S	5	4	Pair No.	Page 2 of	Site Nam
Var: 2011 Observer(6): S. Struble, E. Hegan, P. Johnson, P. Fulcher No. eggs hatched [*] No. etgs found Date clutch found No. eggs clutch found Date clutch found Exclosure Report found Exclosure Report found 3 0 0 06/15/11 1 N/A 60/25/11 N/A Bate heat found Instead found Instead found <td< td=""><td>mortality for Crow - tracks</td><td>Eggs sanded Abandoned. area from 06/ may have bee though we de</td><td>Eggs sanded Coyote track assume 3 egg</td><td>Counta tran</td><td>dow the reasons; considered "fle</td><td></td><td></td><td>A (NS7)</td><td>B (NS12)</td><td>A (NS6)</td><td>B (NS13)</td><td>A (NS5)</td><td>B (NS30)</td><td>Nest No.</td><td>7</td><td>e: Nauset Spit</td></td<>	mortality for Crow - tracks	Eggs sanded Abandoned. area from 06/ may have bee though we de	Eggs sanded Coyote track assume 3 egg	Counta tran	dow the reasons; considered "fle			A (NS7)	B (NS12)	A (NS6)	B (NS13)	A (NS5)	B (NS30)	Nest No.	7	e: Nauset Spit
Vear: 2011 Observer(s): S. Struble, E. Hogan, P. Johnson, P. Fulcher No. eggs No. chicks Date found No. eggs Date found Date found Date clutch Exclosure Report found Exclosure Report 0 0 06/15/11 1 N/A 60/25/11 N/A Design N/A N/A 17 0 05/04/11 1 N/A 05/11/11 N N/A N/A 0 0 05/04/11 1 N/A 05/11/11 N N/A N/A 0 0 05/04/11 1 N/A 05/11/11 N N/A 05/25/1 0 0 05/04/11 1 N/A 05/11/1 N N/A 05/25/1 0 0 05/04/11 1 N/A 05/25/1 N/A N/A 0 0 05/04/11 1 N/A 05/25/1 N/A N/A 0 0 05/04/11 1 N/A 05/25/1 N/A N/A 0 0 05/04/11 1 N/A N/A N	this nesti leading	over duri Because /01/11 thr 2n harassi 2 not have	over duri s leading s taken b	Cause of	for nest fail dged" if the			2	4	3	4	3	ε	eggs laid	No.	t (Heights
Vear: 2011 Observer(9): S. Struble, E. Hogan, P. Johnson, P. Fulcher No. chicks thedged ⁴ Date found found found 0 No. eggs found found 0 Date found found 0 Date found 0 Exclosure Report matched 0 Exclosure Report 0 0 06/15/11 1 NA 06/25/11 N Nathed 0 V/N $A.B$ $Datefound Datefound N/A N/A N/A 0 05/04/11 1 N/A 05/25/11 N N/A N/A N/A 0 05/04/11 1 N/A 05/05/11 N N/A 05/25/1 0 05/04/11 1 N/A 05/05/11 N N/A 05/25/1 0 05/04/11$	ng pair. directly to er	ng storm wir of a series of ough 06/06/ nent of the a good evidei	ng storm wir directly to so y coyote (oc	egg mortali	'ure and egg/ch zy are ≥ 25 day			0	0	0	1?	. 0	0	hatched ^c	No. eggs	ÿ
Observer(s): S. Struble, E. Hogan, P. Johnson, P. Fulcher Date clutch clutch clutch clutch Date clutch found Date clutch found Exclosure Report Date failed ^c Exclosure Report Date failed ^c 05/04/11 1 N/A 05/27/11 N/A 05/27/11 N/A 05/25/11 N/A N/A 05/25/21 N/A 0/2 <td>npty scrape.</td> <td>id they nationed ids. abandonment 11, we suspect dults by a pred nce of actual ac</td> <td>nds. rape on 06/21. curred as eggs</td> <td>ty/Evidence</td> <td>ick mortality (if k 15 old or are obse</td> <td></td> <td></td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>fledged^d</td> <td>No. chicks</td> <td>Year: 2011</td>	npty scrape.	id they nationed ids. abandonment 11, we suspect dults by a pred nce of actual ac	nds. rape on 06/21. curred as eggs	ty/Evidence	ick mortality (if k 15 old or are obse			0	0	0	0	0	0	fledged ^d	No. chicks	Year: 2011
No. eggs Date Exclosure Report when church bate hatched or church y_{NN} $Design$ Date install 1 N/A 06/25/11 N N/A N/A 1 N/A 05/11/11 N N/A N/A 1 N/A 05/11/11 N N/A N/A 1 05/25/11 06/21/11 Y A 05/25/1 1 05/25/11 06/05/11 Y A 05/25/1 1 N/A 05/11/11 N N/A 0/A 1 05/25/11 06/05/11 Y A 05/25/1 1 N/A 05/11/11 N N/A 0/A 1 N/A 05/08/11 N N/A 0/A 1 N/A 05/08/11 N N/A 0/A 1 N/A 05/08/11 N N/A N/A 1 N/A 05/08/11 N N/A N/A 20/L, whichever occurs first. Cause of chick mortality/Evidence<). s in this there lator, hult	/11, were		nown) <u>and</u> the rved in flight fo			05/04/11	05/20/11	05/04/11	05/22/11	05/04/11	06/15/11	clutch found	Date	Obs
Struble, E. Hogan, P. Johnson, P. Fulcher Exclosure Report Date completed Date nest failed ^c Exclosure Report N/A $06/25/11$ N Design N/A $06/25/11$ N/A $06/25/11$ N N/A N/A $05/27/11$ $06/25/11$ Y A $05/25/1$ N/A $05/11/11$ N N/A N/A $05/25/11$ $06/05/11$ Y A $05/25/1$ N/A $05/08/11$ N N/A N/A $05/08/11$ N N/A N/A $05/08/11$ N N/A $05/25/1$ N/A $05/08/11$ N N/A $05/08/11$ N N/A $05/25/1$ N/A $05/08/11$ N N/A $05/25/1$ N/A $05/08/11$ N N/A $05/25/1$ N/A $05/08/11$ N N/A N/A N/A $05/08/11$ N N/A N/A $05/08/11$ N N/A N/A N/A	7A	6A 6B	5A 5B	Nest No.	evidence (plea vr ≥ 50 ft., whi			J			Ţ	н	1	clutch found	No. eggs when	erver(s): S. :
gan, P. Johnson, P. FulcherExclosure Report Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Date Design Design Design Design Design Design Design Design Cause of chick mortality/EvidenceCause of chick mortality/EvidenceCause of chick mortality/EvidenceCause of chick mortality/EvidenceCause of chick mortality/EvidenceDesign Deserved one PIPL chick and one LETE chick disappeared on ult PIPLs defending LETE chick until 06/25/11	Did not hatch	Did not hatch Did not hatch	Did not hatch Did not hatch On 06/22/11, being tended 1	Did not hotak	se give details), hever occurs fir			N/A	05/25/11	N/A	05/27/11	N/A	N/A	clutch completed	Date	Struble, E. Ho
Exclosure Report Design Date YN (A, B) install N N/A N/A Y A 05/25/ N N/A N/A Y A 05/25/ N N/A N/A Y A 05/25/ N N/A N/A Value		. mi rirrs deid	observed one by PIPL adult	Cause of chi	or "unknown." st.			05/08/11	06/05/11	05/11/11	06/21/11	05/11/11	06/25/11	hatched or failed ^c	Date nest	gan, P. Johns
Exclosure Report Design (A, B) Date install install N/A N/A N/A N/A N/A N/A 05/25/ A 05/25/ N/A N/A N/A N/A N/A N/A N/A N/A N/A 05/25/ N/A N/A State A Ity/Evidence Ity State A Ity/Evidence Ity Bity/Evidence Ity Bity/Evidence Ity State Ity A Ity Bity Ity Bity Ity		anding Li	PIPL chi s. PIPL c	ck mort	Use additic		 	z	Y	z	Ч	Z	N	N/A		on, P. Ful
e bate installe N/A N/A 05/25// N/A N/A STE chick if 06/25/11		ELE chick uni	ck and one LE chick disappea	ality/Evidence	onal pages if necu			N/A	A	N/A	A	N/A	N/A	Design (A, B)	Exclosure F	lcher
		11 06/25/11.	TE chick red on		essary,			N/A	05/25/11	N/A	05/25/11	N/A	N/A	Date installed	eport	

7A

Site Name	: Nauset Spit	: (Heights	5	Year: 2011	Ubse	rver(s): S. i	Struble, E. Ho	gan, P. Johnso	n, P. Fu	lcher	
Page 3 of	7	No.	No. eggs	No. chicks	Date	No. eggs when	Date	Date nest		Exclosure R	eport
טאייי אוא	N'art N'a	eggs	hatched ^e	fledged ^d	clutch	clutch	clutch	hatched or	VN	Design	Date
8	A (NS8)	1	0	0	05/08/11	1	N/A	05/11/11	z	N/A	N/A
8	B (NS20)	4	0	0	05/28/11	1	06/03/11	.06/06/11	Y	A	06/01/11
8	C (NS35)	4	0	0	06/25/11	4	;	06/07/11	z	N/A	N/A
9	A (NS9)	3	0	0	05/13/11		05/21/11	06/05/11	Y	A	05/21/11
6	B (NS28)	4	0	0	06/14/11	2	06/17/11	06/21/11	z	N/A	N/A
10	A (NS10)	4	0	0	05/13/11	-	06/20/11	06/02/11	Ч	A	05/19/11
										-	
						-					
^c Indicate bei ^d Chicks are	low the reasons considered "fle	for nest fai dged" if th	lure and egg/cF ey are≥25 day	iick mortality (if k s old or are obsei	nown) <u>and</u> the ved in flight fo	evidence (plea $r \geq 50 ft.$, whi	se give details), c hever occurs fir	or "unknown." l st.	Jse additio	onal pages if nece	issary.
Nest No.		Cause of	egg mortali	ty/Evidence		Nest No.		Cause of chi	ek mort:	ality/Evidence	
8A 8B	Storm tides v Crow - track	vashed th s leading	rrough area th directly to er	ne night of 05/1 mpty scrape.	0/11.	8A 8B	Did not hatch Did not hatch				
9A 9A	Crow - track Abandoned. blood in sanc	s leading Heavy c l. Suspec	directly to er row tracks ar pt adult loss.	npty scrape. ound exclosure	, possible	9A 9A	Did not hatch Did not hatch				
9B	Unknown - e possible adul	ggs gone t loss of	, no evidence the 9A pair, 1	e of predators. we suspect a re	Despite maining	9B	Did not hatch	·			
10A	adult parred v Abandoned. area from 06 may have be though we do mortality for	up with a Because /01/11 th en harass o not havy this nesti	nother bird. of a series o: rough 06/06/ ment of the <i>z</i> e good evide ing pair.	f abandonment 11, we suspect idults by a pred nce of actual ac	s in this there ator, fult	10A .	Did not hatch	·			х.
			01		······································						

Site Nam	e: Nauset Spit	(Heights	÷	Year: 2011	Obs	erver(s): S. (Struble, E. Ho	gan, P. Johnso	n, P. Ful	lcher	
Page 4 of	7	No.	No. eggs	No. chicks	Date	No. eggs when	Date	Date nest		Exclosure R	eport
Pair No.	Nest No.	eggs laid	hatched ^e	fledged ^d	clutch found	clutch found	clutch completed	hatched or failed ^c	Y/N.	Design (A, B)	Date installed
11	A (NS11)	4	0	0	05/13/11	,	05/21/11	06/02/11	Ч	A	05/21/11
12	A (NS14)	4	0	0	05/22/11	4	?	06/04/11	Ч	A	05/22/11
13	A (NS15)	ω	0	0	05/22/11	2	N/A	05/25/11	z	N/A	N/A
13	B (NS27)	4	0	0	06/10/11	1	06/15/11	06/21/11	Z	N/A	N/A
					•						
		1									
^c Indicate be ^d Chicks are	low the reasons J considered "flec	for nest fail lged" if the	ure and egg/ch by are ≥ 25 day	ick mortality (if k is old or are obser	nown) <u>and</u> the ved in flight fo	evidence (plea. $r \geq 50$ ft., whic	se give details), c hever occurs firs	r "unknown." L t	lse additic	nal pages if nece	ssary.
Nest No.		Cause of	egg mortali	ty/Evidence		Nest No.		Cause of chic	k morts	lity/Evidence	
11A	Abandoned. area from 06/ may have bee though we do mortality for	Because 01/11 thr in harassi not have this nesti	of a series of ough 06/06/ ment of the a good evider ng pair.	f abandonments 11, we suspect dults by a pred nce of actual ac	s in this there lator, lult	11A	Did not hatch.				
12A	Abandoned. blood in sand remaining adı pair 1 (See sh	Heavy cr - Suspec ult re-pain neet 1).	ow tracks an t adult loss. red with the :	ound exclosure Note that we s remaining adul	; possible uspect the t from	12A	Did not hatch.				-
13A	Unknown - sł tracke	nell fragm	ıents found ı	iear scrape, no	predator	13A	Did not hatch.				
13B	Crow - tracks	leading (lirectly to er	npty scrape.	- 	13B	Did not hatch.				

17A	16B	15B 16A	15A	14B	14A	Nest No.	^c Indicate i ^d Chicks a		17	16	16	15	15	14	14	Pair No.	Page 5 o,	Site Nat
Unknown - F	Scrape, but ti Unknown - (Scrape gone,	Gull - tracks Unknown - s	Crow - track	Crow-like tr	Crow - track fragments ne		below the reasons re considered "fle		 A (NS19)	B (NS33)	A (NS18)	B (NS29)	A (NS17)	B (NS26)	A (NS16)	Nest No.	f7	ne: Nauset Spi
oossibly c	acks seen eggs missi but it doo	leading d crape em	s leading	acks leadi	s leading arby.	Cause of	for nest fai dged" if th		4	4	4	4	4	4	2	eggs laid	No.	t (Heights
row, but trac	n to go right ng, no visib) es not appea:	irectly to sci pty, coyote t	directly to so	ng to empty	directly to e	egg mortali	ure and egg/cl ey are ≥ 25 da		0	0	0	0	0	0	0	hatched ^e	No. eggs	
ks unclear.	past nest. le predator trac r that tides was	ape. racks within 2	Jui. Jrape.	scrape, but too	mpty scrape, sl	ty/Evidence	iick mortality (if k)s old or are obse		0	0	Ō	0	0	0	0	fledged ^a	No. chicks	Year: 2011
	ks. hed over	feet of		small to	ıell		nown) <u>and</u> the rved in flight fo		05/26/11	06/20/11	05/26/11	06/15/11	05/25/11	06/10/11	05/23/11	clutch found	Date	Obse
17A	16B	15В 16А	15A	14B	14A	Nest No.	evidence (plea $r \ge 50 ft., which which the second states of the seco$		1	ω	1	2	1	1	1	clutch found	No. eggs when	erver(s): S. 1
Did not hatch	Did not hatch	Did not hatch Did not hatch	Did not hatch	Did not hatch	Did not hatch		se give details), (chever occurs fir		06/01/11	06/22/11	06/02/11	06/19/11	05/31/11	06/15/11	N/A	clutch completed	Date	Struble, E. Ho
	·	·		·	·	Cause of chi	or "unknown." st.		06/13/11	06/23/11	06/10/11	06/29/11	06/06/11	06/27/11	05/27/11	hatched or failed ^e	Date nest	gan, P. Johnse
						ck mort:	Use additic		 ү	N	Υ	N	ү	Z	z	Y/N		on, P. Ful
						ality/Evidence	onal pages if neco		A	N/A	A	N/A	A	N/A	N/A	Design (A, B)	Exclosure k	lcher
						(9	sssary.		06/01/11	N/A	06/01/11	N/A	05/30/11	N/A	N/A	Date installed	eport	

20A 21A 22A	19A 19B	17B 18A	Nest No.	^c Indicate be ^d Chicks are		22	21	20	19	19	18	17	Pair No.	Page 6 of	Site Nam
Crow - tracks Unknown - eg One egg did r	All eggs hate	Gull - tracks Crow - fresh shells on 06/1		low the reasons ; considered "fle		A (PB1)	A (NS25)	A (NS24)	B (NS34	A (NS23)	A (NS22)	B (NS31)	Nest No.	7	ie: Nauset Spi
leading c ggs missii not hatch.	ks leading hed.	leading di tracks lea [0/11.4 th	Cause of	for nest fail dged" if the		4	ω	сı	4	ώ	4	ω	eggs laid	No.	t (Heights
lirectly to en 1g, no visible	; directly to s	irectly to scr ding up to sc egg recover	egg mortalit	ure and egg/ch y are ≥ 25 day		ω	0	0	4	0	0	0	hatched	No. eggs	3)
pty scrape. tracks.	scrape.	ape. xrape and 3 brc ed by adults, b	y/Evidence	ick mortality (if k s old or are obsei		2	0	0	0	0	0	0	fledged"	No. chicks	Year: 2011
		oken egg ut gone		nown) <u>and</u> the . ved in flight fo		04/26/11	06/08/11	06/07/11	06/22/11	06/02/11	06/02/11	06/19/11	clutch found	Date	Obs
20A	19A	17B 18A	Nest No.	evidence (plea. r≥50 ft., whic		1		ω	ц	2		<u>–</u>	clutch found	No. eggs when	erver(s): S.
07/28/11. One lisappeared or confident that Did not hatch. Did not hatch. Did not hatch. Dne chick disa	Did not hatch. One chick disa	Did not hatch. Did not hatch.		se give details), c hever occurs firs		05/02/11	N/A	N/A	06/27/11	06/03/11	06/09/11	06/24/11	completed	Date	Struble, E. Ho
p chick disapp n 08/13/11 at 2 the chick fled ppeared on 00	appeared on 0'		Cause of chie	ər "unknown." l		05/30/11	06/14/11	06/08/11	07/21/11	06/15/11	06/11/11	06/28/11	hatched or failed ^e	Date nest	gan, P. Johns
eared on 24 days o ged. 5/17/11.	7/2.6/11		ck morta	Jse additio		Ч	N	N	N	Y	Z	Z	Y/N		on, P. Fu
08/05/11. Th f age, and we	One chick dis		lity/Evidence	nal pages if nece		A	N/A	N/A	N/A	A	N/A	N/A	Design (A. B)	Exclosure F	lcher
e final chick do not feel	anneared on			ssary.		04/30/11	N/A	N/A	N/A	06/04/11	N/A	N/A	Date	leport	

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Site Name: Nauset Beach - Pochet and south	Year: 2011
Agency: Town of Orleans Parks & Beaches Department	Observer(s): S. Struble, E, Hogan, P. Johnson, P. Fulche

Address:

Town: Orleans, MA

Ownership: Town of Orleans

alı	₩
nests and any pairs that did not nest.	Please attach a map of this site that shows locations of
H	-

'elephone:

Notes on pairs that did not nest (include dates present, activities)/Census remarks:

E-mail:

Adults	Unpaired 1 1	Pairs	No. of 6 8	Results: Count ^a Cou	Census Index Tot	
				unt ^b	ital -	

An unpaired adult was observed scraping and defending a territory just south of Pair 5 (P5) on and off for over a month, including several sightings at the beginning of the census window. No mate was ever observed and no nest was ever found. The bird left the area during the census window.

List pairs <u>not</u> present during Index Count: Pair 3 (P3) left prior to census window. Pair 8 (NB4) arrived after the census window

Month	Approx. # of visits to site per
	period
Apr. 1-15:	15
Apr. 16-30:	15
May 1-15:	15
May 16-31:	16
June 1-15:	15
June 16-30:	15
July 1-15:	15
July 16-31:	16

Indicate type(s) of exclosure design(s) used:

The second of the second secon	C 1100 11 (0) 1100111		
Exclosure Design	A	В	С
Shape	Circular		
Diameter/Length of side	10 ft		
Size of wire mesh	2x4 in		
Total Height	4 ft		
Height above ground:	3.5 ft		
Depth buried:	0.5 ft		
Cover material	Mesh netting		
Cover spacing/Mesh size	3/4 in		

Management actions taken or needed/Remarks:

06/06/11 following suspected adult mortality at nearby Nauset Spit related to exclosure use. Symbolic fencing used to provide adequate protection. Nests initially exclosed at 3-4 eggs or when complete, but all exclosures were removed on

hatched or fledged. Offroad vehicle traffic prohibited from areas with active broods from May 31st until August 15th, with the length of the closed area changing as broods

Dogs are prohibited from the beach from May 15th through Labor Day.

on laying or hatching dates. The Index Count should include not only pairs observed during the Index Count period (June 1-9), but also pairs later determined to have been present during that period based

^bTo be included in the Total Count, a pair must have been present at the site for ≥ 2 weeks and exhibiting courtship or territorial behavior during that period, if not actual nesting.

5A	3A 4A	2B 2C	1A 2A	Nest No.	^c Indicate be ^d Chicks are			ъ	4	3	2	2	2	1	Pair No.	Page 1 of .	Site Nam
All eggs hate	Eggs sanded 2 eggs missi 1 more egg n	again annosc Coyote - trac All eggs hatc	All eggs hate Abandoned f		low the reasons considered "fle			A (P5)	A (P4)	A (P3)	C (P7)	B (P6)	A (P2)	A (P1)	Nest No.	2	e: Pochet
bed.	over duri ng on 6/6 nissing or	ks leadin hed.	or unkno	Cause of	for nest fait dged" if the			4	4	- 2	4	4	4	3	eggs laid	No.	
	ng storm wir with crow tr 1 6/7 with mo	g directly to	wn reasons -	egg mortali	ture and egg/ch ey are <u>></u> 25 day			4	0	0	4	0	0	. 3	hatched ^c	No. eggs	Year: 2
icha icauilly to	ids. acks leading to are crow tracks	empty scrape.	pair began scr	ty/Evidence	ick mortality (if k s old or are obse		₩.a. brances	4	0	0	0	0	0	2	fledged ^d	No. chicks	011
sviajue.	scrape. Final		aping		nown) <u>and</u> the . rved in flight fo			05/26/11	05/13/11	05/09/11	06/21/11	06/05/11	05/09/11	05/03/11	clutch found	Date	Observer(s)
5A	3A 4A	2B 2C	1A 2A	Nest No.	evidence (plea r≥50 ft., whi			1	F		2	2	,	2	clutch found	No. eggs when	: S. Struble,
All chicks flee	Did not hatch Did not hatch	Did not hatch. One chick dis.	One chick dis Did not hatch		se give details), (chever occurs fir			05/31/11	05/22/11	N/A	06/25/11	06/08/11	05/17/11	05/06/11	clutch completed	Date	E. Hogan, P.
lged,		appeared on 0	appeared on 0	Cause of chi	or "unknown," (st.			06/25/11	06/09/11	05/11/11	07/19/11	06/13/11	05/22/11	06/08/11	hatched or failed ^e	Date nest .	Johnson, P. Fi
	ısappear	7/25/11.	6/23/11.	ck morta	Jse additic			Y	Y	z	Z	N	Ч	Y	N/X		alcher
		Two chicks d		ulity/Evidence	nal pages if nece			A	A	N/A	N/A	N/A	A	A	Design (A, B)	Exclosure R	
		isappeared on			ssary.			05/29/11	05/22/11	N/A	N/A	N/A	05/15/11	05/06/11	Date installed	leport	

Site Name	: Pochet		Year: 2	011	Observer(s):	S. Struble,	E. Hogan, P.	ohnson, P. Fu	lcher		
Page 2 of 2		N	No page	No chicks	Date	No. eggs when	Date	Date nest		Exclosure R	eport
		eggs	hatched ^c	fledged ^d	clutch	clutch	clutch	hatched or failed ^c	Y/N	Design (A, B)	Date
Fair Nu.	A (NB1)	4	0	0	05/12/11	4	?	06/07/11	Ч	A	05/13/11
6	B (NB5)	2	2	0.	06/25/11	2	?	07/21/11	z	N/A	N/A
7	A (NB2)	4	0	0	05/24/11	,	05/29/11	06/08/11	Y	A	05/28/11
7	B (NB3)	4	0	0	06/15/11	2	06/20/11	07/07/11	z	N/A	N/A
8	A (NB4)	3	0	0	06/18/11	2	06/20/11	06/27/11	Z	N/A	N/A
				-							
^c Indicate be ^d Chicks are	low the reasons considered "fle	for nest fa dged" if ti	$\frac{ }{ }$ it lure and egg/cl hey are $\geq 25 da$	nick mortality (if ws old or are obse	known) <u>and</u> the erved in flight fo	$r \ge 50$ ft., whi	use give details), chever occurs fir	or "unknown." st.	Jse additi	onal pages if nec	essary.
Next No.		Cause o	f egg mortali	tv/Evidence		Nest No.		Cause of chi	ck mort	ality/Evidence	e
6A 6B	Crow - track All eggs hat	s leading	y directly to s	rape.		6А 6В	Did not hatch One chick dis disappeared c	appeared on C n 08/11/11.	8/08/11.	. The second c	hick
7A	Crow - track	s leading	g directly to s	crape, shell fra	agments	7A	Did not hatch				
7B 8A	found nearby Unknown - 6 Crow - track	y. empty sc s leading	rape, no clear directly to e	tracks of any mpty scrape.	predators.	7B 8A	Did not hatch Did not hatch	<u> </u>			
		·									

MASSACHUSETTS]	PIPIN	G PLOVE	CENSUS -	SHORT F	ORM
Date: 7/21/11 Name: Town	of Orlea	ns Parks & Be	aches	Telephone: 50	18-240-3700 ext 465
	No. F	airs	No. chicks		
Site Name	Index count	Total count	Fledged	Still unfledged	No. pairs with productivity data ^a
1. Nauset Spit (north of parking lot)	22	24	2	0	24
2. Pochet and Nauset Beach (south of parking lot)	6	8	6	0	8
3. Skaket Beach	0	0	0	0	0
4.					
5.					
6					
7.					
9.					
10					
Includes all pairs for which you were able to deten for at least 2 weeks but did not nest, and pairs that	nine nu failed to	mber of chicks hatch any egg	fledged, includi s or fledge any c	ng pairs that we hicks.	re present

MASSACHUSETTS PIPING PLOVER CENSUS FORM

Page 1 of 4

Year: 2012

Site Name: Nauset Spit (Heights)

Town: Orleans

Ownership: Town of Orleans

⇒ Please attach a map of this site that shows locations of all nests and any pairs that did not nest.

Orleans, MA 02653

Address: 139 Main Street

Agency: Town of Orleans Parks & Beaches

Observer(s): Elizabeth Hogan, Pat Johnson, Stephen Struble

Telephone: 508-240-3775

E-mail: pfulcher@town.orleans.ma.us

0 11 Coun

List pairs <u>not</u> present during Index Count period: Pair 11 is believed to have left prior to the Index Count period. All other pairs that disappeared before or during the Index Count
reported courtship behavior and scraping from 5/12-5/31 and likely missed a nesting attempt. A later nest in this area was attributed to this pair. Thus, this pair was included in the Index Count. Pair 3 first nested on Nauset Snit and later renested on nearby New Island. This pair is included in the Nauset Snit Index Count.
Census remarks (include notes on pairs that did not nest [dates present, behavior]: All known pairs nested during the census period. Pair 10 did not have a known nest during the census period; however, monitors

Month	Approx. # of visits to site
	per period
Apr. 1-15:	15
Apr. 16-30:	15
May 1-15:	15
May 16-31:	16
June 1-15:	15
June 16-30:	15
July 1-15:	15
July 16-31:	16

Federate Design	Report specifications of
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period were connected to later nests as much as possible for a conservative estimate of numbers

Exclosure Design	Α	В	С
Shape	circular		
Diameter/Length of side	10 ft		
Size of wire mesh	$2 \operatorname{in} x 4 \operatorname{in}$		
Total Height	4 ft		
Height above ground:	3 ft 8 in		
Depth buried:	4 in		
Cover material	bird netting		
Cover spacing/Mesh size	3⁄4 in		

Management actions taken or needed/Remarks:

utilized given issues in the previous season, though three nests at the end of the season were exclosed. Nests were exclosed at 3 eggs once active incubation was observed. Vehicles prohibited within 0.1 mi of unfledged broods. Dogs prohibited on beach from April 15th through September 15th. Sites visited on daily basis throughout nesting season. Potential nesting habitat fenced using symbolic fencing prior to nesting period. Exclosures were largely not

^b Pairs included in the **Total Count** must have been present at the site for ≥ 2 weeks and exhibited courtship or territorial behavior during that period, if not actual nesting. ^a The Index Count includes pairs observed during the June 1-9 count period, and pairs determined to have been present during that period based on laying or hatching dates.

Site Name	: Nauset Spit	(Heights)	_	Year: 2012	Obse	rver(s): Eliz	abeth Hogan, P	at Johnson, Ste	phen Stru	ıble	
Page 2 of	4	No. eggs	No. eggs	No. chicks	Date clutch	No. eggs when	Date clutch	Date nest hatched or		Exclosure Ro	eport
Pair No.	Nest No.	laid	hatched	fledged ^e	found	clutch found	completed (if known)	failed	Y/N	Design (A, B)	Date installed
1	A (NS1)	1	0	0	04/30	1	N/A	05/03	N	N/A	N/A
	B (NS2)	3	0	0	05/08	щ	N/A	05/23	Z	N/A	N/A
, P	C (NS14)	2	0	0	60/90	2	?	06/15	z	N/A	N/A
1	D (NS23)	ω	2	2	06/17	н	06/20	07/16	Y	A	06/27
- 2	A (NS3)	2	0	0	05/11		N/A	05/13	z	N/A	N/A
2	B (NS9)	4	0	0	05/26	2	05/30	06/03	z	N/A	N/A
ω	A (NS4)	4	0	0	05/12	1	05/19	05/24	Z	N/A	N/A
ω	B (NI1)	3	0	0	06/21	ω	į	07/11	z	N/A	N/A
4	A (NS5)	4	0	0	05/12	щ	05/19	06/05	z	N/A	N/A
4	B (NS17)	1	0	0	06/12	1	N/A	06/12	Z	N/A	N/A
c Chicks are	considered "fle	dged" if the	ev are > 25 da	vs old or are obser	rved in flight fo	r > 50 ft., whi	chever occurs fir	st.			

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Nest No.	Cause of egg mortality/supporting evidence ^d	Nest No.	Cause of chick mortality/supporting evidence ^d
1A	Unknown. Eggs missing on 05/03. No predator tracks near scrape.	1A	Did not hatch.
1B .	Unknown. Eggs missing on 05/23. Coyote tracks 10' away, but not	1B	Did not hatch.
	leading to scrape.		
1C	Unknown. Eggs missing on 06/15. Coyote tracks 10' away, but not	1C	Did not hatch.
	definitively leading to scrape.		
1D	One egg did not hatch.	IJ	Both chicks survived to 25 days of age.
2A	Unknown. Both crow and mammalian tracks around scrape.	2A	Did not hatch.
2B	Unknown. Eggs missing on 06/03. No predator tracks near scrape.	2B	Did not hatch.
3A	Crow tracks leading directly to empty scrape on 05/24.	3A	Did not hatch.
3B	Unknown. Eggs missing on 07/11.	3B	Did not hatch.
4A	Nest lost to storm tides on 06/04 or 06/05.	4A	Did not hatch.
4B	Egg shell found already depredated on 06/12. Crow tracks in area.	4B	Did not hatch.
-			

^a Give cause of egg or chick loss for each nest or brood, if known or strongly suspected; please provide details of supporting evidence. Use additional pages if necessary.

Send to: Scott Melvin, MassWildlife, One Rabbit Hill Rd., Westborough, MA 01581 scott.melvin@state.ma.us 508-389-6345 (off.)

April 2012

Site Nam	e: Nauset Spit	(Heights)		Year: 2012	Obse	ver(s): Eliz	abeth Hogan, P	at Johnson, Stej	phen Stru	ıble	
Page 3 of	4	No. eggs	No. eggs	No. chicks	Date clutch	No. eggs when	Date clutch	Date nest hatched or		Exclosure Re	port
Pair No.	Nest No.	laid	hatched	fledged ^c	found	clutch found	completed (if known)	failed	Y/N	Design (A, B)	Date installed
4	C (NS19)	ε	0	0	06/15	1	81/90	06/23	Z	N/A	N/A
δ	A (NS6)	4	0	0	05/15	<u> </u>	05/22	05/23	z	N/A	N/A
s	B (NS20)	2	0	0	06/17	ы	N/A	06/19	z	N/A	N/A
6	A (NS7)	2	0	0	05/19	1	N/A	05/22	z	N/A	N/A
6	B (NS15)	з	0	0	06/10	ы	N/A	06/19	z	N/A	N/A
Т	A (PB2)	Ι.	0	0	05/06	1	N/A	05/07	z	N/A	N/A
7	B (NS8)	2	0	0	05/20	2	N/A	05/22	z	N/A	N/A
Τ	C (NS11)	1	0	0	05/28	H	N/A	05/28	Z	N/A	N/A
Γ	D (NS18)	з	0	0	06/15	ь	06/19	06/28	z	N/A	N/A
8	A (NS10)	1	0	0	05/27	1	N/A	05/28	Z	N/A	N/A
^c Chicks a	re considered "fle	dged" if th	ey are > 25 da	ys old or are obsei	ved in flight fo	r > 50 ft., whic	chever occurs fir.	st.			

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Nest No.	Cause of egg mortality/supporting evidence ^d	Nest No.	Cause of chick mortality/supporting evidence ^d
4C	On 06/20, one egg in each of two different scrapes. One egg missing	4C	Did not hatch.
	with coyote tracks leading up to original scrape. Remaining two eggs		
	recovered to original scrape. On 06/23, both remaining eggs were		
	missing with coyote tracks up to the empty scrape.		
5A	Crow tracks leading to empty scrape on 05/23.	5A	Did not hatch.
5B	Crow tracks leading to empty scrape on 06/19.	SB	Did not hatch.
6A	Unknown. Eggs missing on 05/22. No predator tracks near scrape.	6A	Did not hatch.
6B	Crow tracks leading to empty scrape on 06/19.	6B	Did not hatch.
7A	Tide washed over nest on 05/07.	7A	Did not hatch.
7B	Crow tracks leading to empty scrape on 05/22.	7B	Did not hatch.
7C	Egg shell found already depredated on 05/28. Crow tracks in area.	7C	Did not hatch.
7D	Coyote tracks leading to empty scrape on 06/28.	7D	Did not hatch.
8A	Egg untended beginning 05/28, considered abandoned.	8A	Did not hatch.
-			

^d Give cause of egg or chick loss for each nest or brood, if known or strongly suspected; please provide details of supporting evidence. Use additional pages if necessary.

Send to: Scott Melvin, MassWildlife, One Rabbit Hill Rd., Westborough, MA 01581 scott.melvin@state.ma.us 508-389-6345 (off.) April 2012

Site Name	: Nauset Spit	(Heights)		' ear: 2012	Obse	erver(s): Eliz	abeth Hogan, Pi	at Johnson, Stej	phen Stru	ıble	
Page 4 of	4	No.	No. eggs	No. chicks	Date	No. eggs when	Date clutch	Date nest hatched or		Exclosure R	eport
Pair No.	Nest No.	laid	hatched	fledged ^c	found	clutch found	completed (if known)	failed	Ϋ́Ν	Design (A, B)	Date installed
8	B (NS12)	4	0	0	05/31	2	06/04	06/05	z	N/A	N/A
8	C (NS16)	1	0	0	06/12		N/A	06/14	z	N/A	N/A
8	D (NS22)	3	ω	2	06/17		06/21	07/15	Y	A	06/27
9	A (NS13)	ы	0	0	05/31	<u> </u>	N/A	06/05	z	N/A	N/A
10	A (NS21)	3	0	0	06/17	2	06/18	07/10	Y	A	06/29
11	A (PB1)	2	0	0	05/02		N/A	05/05	Z	N/A	N/A
11	B (PB3)	4	0	0	05/12		05/18	05/19	z	N/A	N/A
^c Chicks are	? considered "fle	dged" if th	ey are $\geq 25 da$	vs old or are obser	ved in flight f	$or \geq 50 ft., whi$	chever occurs fir	st.			
Nest No.	Cause	of egg m	ortality/sup	porting eviden	ce ^d	Nest No.	Cause	of chick mor	tality/su	pporting evid	ence ^d
80 88 80 88	Nest lost to stor Unknown. Egg	m tides on s missing c	06/04 or 06/05 n 06/14. No pi	redator tracks near	scrape.	8B 8C	Did not hatch. Did not hatch.				
9A U8	All eggs hatche Nest lost to stor	d. m tides on	06/04 or 06/05.	-		9A 9	One chick disapp Did not hatch.	eared on 07/30 a	it 14 days	of age.	
10A	No adults obser	ved beginn	ing 07/10. Cor	nsidered abandoned	d. No clear	10A	Did not hatch.				
11A	Gull tracks lead	ling to emp	ty scrape on 05	10 Change insta</td <td></td> <td>11A</td> <td>Did not hatch.</td> <td></td> <td></td> <td></td> <td></td>		11A	Did not hatch.				
	scavenging regu this pair leaving	alarly in this	s area, and it is e Index Count.	believed this cont	ributed to						

^d Give cause of egg or chick loss for each nest or brood, if known or strongly suspected; please provide details of supporting evidence. Use additional pages if necessary.

Send to: Scott Melvin, MassWildlife, One Rabbit Hill Rd., Westborough, MA 01581 scott.melvin@state.ma.us 508-389-6345 (off.)

April 2012
MASSACHUSETTS PIPING PLOVER CENSUS FORM

Page 1 of 3

Year: 2012

Site Name: North Beach, Orleans

Town: Orleans

Ownership: Town of Orleans

all nests and any pairs that did not nest. \Rightarrow Please attach a map of this site that shows locations of

> Telephone: 508-240-3775 Orleans, MA 02653

Address: 139 Main Street

Agency: Town of Orleans Parks & Beaches

Observer(s): Elizabeth Hogan, Pat Johnson, Stephen Struble

E-mail: pfulcher@town.orleans.ma.us

Pairs No. of Census Adults Unpaired **Results:** Count^a 0 ∞ Index 0 10 Count Total

> All pairs present during the Index Count period nested. Census remarks (include notes on pairs that did not nest [dates present, behavior]:

List pairs <u>not</u> present during Index Count period:

Pairs 9 and 10 are not known to have been present during the Index Count. Pair 9 refers to a single chick brood found on 07/13 in an area infrequently visited by monitors. The chick was estimated at 3-5 days of age and monitored for at least 25 days.

Month	Approx. # of visits to site
	per period
Apr. 1-15:	15
Apr. 16-30:	15
May 1-15:	15
May 16-31:	16
June 1-15:	15
June 16-30:	15
July 1-15:	15
July 16-31:	16

Report specifications of p	redator exclosures used:		
Exclosure Design	A	В	С
Shape	circular		
Diameter/Length of side	10 ft		
Size of wire mesh	2 in x 4 in		
Total Height	4 ft		
Height above ground:	3 ft 8 in		
Depth buried:	4 in		
Cover material	bird netting		
Cover spacing/Mesh size	3/ in		

Management actions taken or needed/Remarks:

 \sim

May 15th through Labor Day. eggs once active incubation was observed. Vehicles prohibited from beach access when active piping plover broods were present. Dogs prohibited on beach from Sites visited on daily basis throughout nesting season. Potential nesting habitat fenced using symbolic fencing prior to nesting period. Nests were exclosed at 3

^b Pairs included in the **Total Count** must have been present at the site for ≥ 2 weeks and exhibited courtship or territorial behavior during that period, if not actual nesting. ^a The Index Count includes pairs observed during the June 1-9 count period, and pairs determined to have been present during that period based on laying or hatching dates.

Site Name	: North Beac	h Orleans		Year: 2012	Obse	rver(s): Eliz	abeth Hogan, P	at Johnson, Ste	phen Stru	ıble	
Page 2 of	دى ا	No. eggs	No. eggs	No. chicks	Date clutch	No. eggs when	Date clutch	Date nest hatched or		Exclosure R	eport
Pair No.	Nest No.	laid	hatched	fledged ^c	found	clutch found	completed (if known)	failed	Y/N	Design (A, B…)	Date installed
I	A (P1)	4	0	0	04/25	1	05/01	05/21	Z	N/A	N/A
1	B (P8)	4	0	0	05/30	щ	06/03	06/05	Y	A	06/03
H	C (P11)	ы	з		06/15	ω	;	07/13	Ч	A	06/17
2	A (P2)	з	0	0	04/28	Ц	N/A	05/04	Z	N/A	N/A
2	B (P5)	4	4	. 4	05/07	Ц	05/16	06/10	Υ	A	05/17
З	A (P3)	4	4	2	04/30	<u>⊢</u>	05/07	06/03	Y	A	05/14
4	A (P4)	1	0	0	05/06	1	N/A	05/07	Z	N/A	N/A
4	B (P7)	4	0	0	05/26	1	05/31	06/05	Ч	A	05/30
4	C (P10)	3 .	3	2	06/11	1	06/15	07/11	Ч	A	06/17
5	A (P6)	4	0	0	05/14	3	05/15	06/01	Ч	A	05/16
^c Chicks ar	e considered "fle	edged" if th	ey are ≥ 25 da	ys old or are obser	ved in flight fo	$r \geq 50$ ft., which	chever occurs fir	st.			

Nest No.	Cause of egg mortality/supporting evidence ^d	Nest No.	Cause of chick mortality/supporting evidence ^d
1A	Crow tracks leading to empty scrape on 05/21.	IA	Did not hatch.
1 B	Nest lost to storm tides on 06/04 or 06/05.	IB	Did not hatch.
1C	All eggs hatched.	1C	One chick disappeared 07/27. One chick disappeared on 07/31.
2A	Gull tracks leading to empty scrape on 05/04.	2A	Did not hatch.
2B	All eggs hatched.	2B	All chicks fledged.
3A	All eggs hatched	3A	Four chicks seen on morning of 06/03. One hour later, crow spotted circling
			exclosure. Two chicks missing following crow's departure.
4A	Tide washed past nest on 05/07.	4A	Did not hatch.
4B	Nest lost to storm tides on 06/04 or 06/05.	4B	Did not hatch.
4C	All eggs hatched.	4C	One chick disappeared on 07/26.
5A	Tide washed past nest on 06/01.	SA	Did not hatch.
	ş		

^d Give cause of egg or chick loss for each nest or brood, if known or strongly suspected; please provide details of supporting evidence. Use additional pages if necessary.

April 2012

SHE NAI	ne: North Beac	n Orleans		rear: 2012	Ubse	rver(s): Eliz	zabeth Hogan, P	at Johnson, Ste	phen Stru	ıble	
Page 3 (of 3	No.	No. eggs	No. chicks	Date	No. eggs when	Date clutch	Date nest hatched or		Exclosure R	eport
Pair No	. Nest No.	laid	hatched	fledged ^c	found	clutch found	completed (if known)	failed	Y/N	Design (A, B)	Date installed
S	B (P9)	4	ω	, 	06/09	1	06/13	07/07	Y	A	06/16
6	A (NB1)	5	0	0	05/05	2	05/11	06/05	Y	A	05/14
6	B (NB5)	4	4	0	06/18	4	?	07/13	Y	A	06/18
7	A (NB2)	4	0	0	05/23		05/29	06/05	Y	A	05/27
7	B (NB4)	4	ω	<u>г</u>	06/14		06/20	07/17	Y	A	06/20
8	A (NB3)	з	з	2	05/28	ы	06/01	06/27	Ч	A	06/01
9	A (NB6)	;	;	⊢	;	;	?	;	Z	N/A	N/A
10	A (PP1)		<u></u>	<u> </u>	06/20	1	• •	07/20	Ч	A	06/28
		-							-		
c Chicks	are considered "fl	edged" if th	they are $\geq 25 da$	ys old or are obser	ved in flight f	$br \geq 50 ft, wh$	ichever occurs fir	st.			
Nest No	• Cause	of egg m	ortality/sup	porting eviden	ce ^d	Nest No.	Cause	of chick mor	tality/su	pporting evid	lence ^d
5B	One egg did nc	ot hatch.				5B	One chick disapped anticipated to be fledged	peared on 07/20. 25 days of age, a	One chicl ind we car	k disappeared on mot confirm the	07/31 when missing chick
6A 6B	Nest lost to sto All eggs hatche	rm tides on ∍d.	1 06/04 or 06/05			6A 6B	Did not hatch. One chick disappeare chick disappeare age and is not co hunting in the ar	beared on 07/29. d on 08/04. Fina nsidered to have	One chicl I chick dia fledged.	k disappeared on sappeared on 08/ A harrier had bee	07/31. One 08 at 24 days of n observed
7A 7B	Nest lost to sto One egg did nc	rm tides on ot hatch.	06/04 or 06/05	- · ·		7A 7B	Did not hatch. One chick missir	ig since hatching	. One chi	ck disanneared o	1 07/28
8A	All eggs hatche	эd.				8A	One chick disapp for 24 days of ag	beared on 07/20 z	und had be dered lost	en noticeably un to have fledged.	derdeveloped
9A	Nest was never	found. Or	ne mystery chic	k estimated at 3-5	days of age	9A	Only known chic	k fledged.		,	
10A	Pair only laid c	ne egg, wh	ich hatched.	у шошютэ.		10A	Chick fledged.				

^d Give cause of egg or chick loss for each nest or brood, if known or strongly suspected; please provide details of supporting evidence. Use additional pages if necessary.

10A

Send to: Scott Melvin, MassWildlife, One Rabbit Hill Rd., Westborough, MA 01581 scott.melvin@state.ma.us 508-389-6345 (off.) April 2012

MASSACHUSETTS PIPING PLOVER CENSUS FORM

Page 1 of 2

Observer(s): Elizabeth Hogan, Pat Johnson, Stephen Struble

Agency: Town of Orleans Parks & Beaches

Address: 139 Main Street Orleans, MA 02653

Telephone: 508-240-3775

E-mail: pfulcher@town.orleans.ma.us

⇒ Please attach a map of this site that shows locations of all nests and any pairs that did not nest.

Ownership: Town of Orleans

Site Name: Skaket Beach

Year: 2012

Town: Orleans

CensusIndexTotalResults:Count^aCount^bNo. of11Pairs00Unpaired00

Census remarks (include notes on pairs that did not nest [dates present, behavior]: loss of their nest. All pairs present during the Index Count period nested. Though present during the Index Count, this pair disappeared following the

List pairs not present during Index Count period:

Report specifications of pr	edator exclosures used:		
Exclosure Design	A	B	С
Shape			
Diameter/Length of side			
Size of wire mesh			
Total Height			
Height above ground:			
Depth buried:			
Cover material			
Cover spacing/Mesh size			

Management actions taken or needed/Remarks:

Sites visited on daily basis throughout first half of nesting season. Potential nesting habitat fenced using symbolic fencing.

^b Pairs included in the **Total Count** must have been present at the site for ≥ 2 weeks and exhibited courtship or territorial behavior during that period, if not actual nesting. ^a The Index Count includes pairs observed during the June 1-9 count period, and pairs determined to have been present during that period based on laying or hatching dates.

Pair No. Nest No. A (SB1) 4 0	Page 2 of 2	No. eggs laid	No. eggs hatched	No. chicks fledged ^c	Date clutch found	No. eggs when clutch	Date clutch completed	ha D	ate nest tched or failed	ate nest tched or failed	ate nest Exclosure R tched or Design
1 A (SB1) 4 0 0 05/14 Image: Second Second Second Information	Pair No. Nest No	o. laid	hatched	fledged ^c	found	clut fou	nd h	nd (if known)	rch completed failed nd (if known)	rch completed failed nd (if known) Y/N	rch completed failed Design nd (if known) Y/N (A, B)
c Chicks are considered "fledged" if they are ≥ 25 days old or are observed in flight for Nest No. Cause of egg mortality/supporting evidence d IA Nest lost to storm tides on 06/04 or 06/05.	1 A (SB	1) 4	0	0	05/14		2	2 05/19	2 05/19 06/05	2 05/19 06/05 N	2 05/19 06/05 N N/A
c Chicks are considered "fledged" if they are ≥ 25 days old or are observed in flight for Nest No. Cause of egg mortality/supporting evidence ^d IA Nest lost to storm tides on 06/04 or 06/05.											
c Chicks are considered "fledged" if they are ≥ 25 days old or are observed in flight for Nest No. Cause of egg mortality/supporting evidence d 1A Nest lost to storm tides on 06/04 or 06/05.											
c Chicks are considered "fledged" if they are ≥ 25 days old or are observed in flight for Nest No. Cause of egg mortality/supporting evidence d IA Nest lost to storm tides on 06/04 or 06/05.											
c Chicks are considered "fledged" if they are \geq 25 days old or are observed in flight for Nest No. Cause of egg mortality/supporting evidence d N 1A Nest lost to storm tides on 06/04 or 06/05. 1											
^c Chicks are considered "fledged" if they are ≥ 25 days old or are observed in flight for Nest No. Cause of egg mortality/supporting evidence d N 1A Nest lost to storm tides on 06/04 or 06/05. 14 14											
Nest No. Cause of egg mortality/supporting evidence d N 1A Nest lost to storm tides on 06/04 or 06/05. 1/ 1A Nest lost to storm tides on 06/04 or 06/05. 1/	^c Chicks are considered	l "fledged" if 1	hey are $\geq 25 d$	rys old or are obse	rved in flight fc	? r ∨	50 ft., whi	50 ft., whichever occurs firs	50 ft., whichever occurs first.	50 ft., whichever occurs first.	50 ft., whichever occurs first.
1A Nest lost to storm tides on 06/04 or 06/05. 1,	Nest No. Ca	use of egg n	nortality/suj	porting evider	ice ^d	Ne	st No.	st No. Cause	st No. Cause of chick mort	st No. Cause of chick mortality/su	st No. Cause of chick mortality/supporting evid
	1A Nest lost to	o storm tides o	n 06/04 or 06/0	5.		1A		Did not hatch.	Did not hatch.	Did not hatch.	Did not hatch.
			· .								

Send to: Scott Melvin, MassWildlife, One Rabbit Hill Rd., Westborough, MA 01581 scott.melvin@state.ma.us 508-389-6345 (off.)

April 2012

Page 1 of 6

MASSACHUSETTS PIPING PLOVER CENSUS FORM

Year: 2013

on public beach to Aspinet Road. Town: Orleans thereafter by National Park Service monitor. Also includes nests includes Skaket Public Beach (separate public beach off site) with as Areas 1, 2, 3, 4, 5, 6, 7, 8, 9, to the tip of Nauset (Spit). Also north of the public parking lot and public beach and designated Site Name: Nauset Spit (Heights) includes all of the area Park Service jurisdiction, was monitored by Town until 6/24/13, 1 single nest. Also includes New Island, which is under National

Ownership: Town of Orleans

SITE MAPS ATTACHED on 8 1/2 X 11 sheets. all nests and any pairs that did not nest. GIS NEST ⇒ Please attach a map of this site that shows locations of

Observer(s): Paul Wightman, Pat Johnson, Nathan Lake

Orleans, MA 02653 Agency: Dawson L. Farber IV Town of Orleans, MA Harbormaster/Shellfish Constable Natural Resources Manager 19 School Rd.

F: (508)240-3388 P: (508)240-3755

dfarber @town.orleans.ma.us Shorebird Monitor: Paul Wightman Email lawwight2003@yahoo.com Telephone: 508-240-3775 Email: Dawson Farber IV, Natural Resources Manager.

Unpaired Adults	No. of Pairs	Census Decentre:
-	16	Index
1	16	Total

periods. Monitoring at dawn and dusk periods was also applied with unfledged chicks, attending adults and their primary habitus. . and dusk during census period. Monitoring was increased to dawn and dusk during mating, nesting, egg laying and incubation Nest Names Designations: "NS" stands for Nauset Heights and includes all area including the public beach and north of the main Nest A1 & A2 located on public beach and NO ORV traffic and was included with Nauset Heights index count for short and long Census remarks (include notes on pairs that did not nest [dates present, behavior]: Monitoring was undertaken primarily at dawn torm.

pairs that were counted during index remained to establish nests due to use of enclosures and no late spring or early summer storms town line between Chatham and Orleans. The NS2 nest may be re-nest from New Island which was predated with 1 egg before the Pair P11 located at the (Pochet Washout) was a re-nest late season, counted during Index count period. Pair SB2 was present allowed. "No evidence of re-nest. List pairs not present during Index Count period: North Beach but no solid evidence. Although New Island is under NPS jurisdiction it was counted during census period. All other during census count, but lost nest due to predation by Gull just prior to enclosure and is believed to have re-nested just south of the parking area, including all nests designated as "A" which stands for Aspinet Road at the public beach area where no ORV traffic is

Send to: Scott Melvin, Mass Wildlife, One Rabbit Hill Rd., Westborough, MA 01581 scott.melvin@state.ma.us 508-389-6345 (off.)

List pairs not present during Index Count period: All present during count (excepting New Island). This area NPS jurisdiction.

resulting in stable conditions for nesting.

April 2013 ^c Chicks are considered "fledged" if they are \geq 25 days old or are observed in flight for \geq 50 ft., whichever occurs first.

Page	
2	
Сf	
6	

Month	Approx. # of
	visits to site
	per period
Apr. 1-15:	15
Apr. 16-30:	15
May 1-15:	15
May 16-31:	15
June 1-15:	15 -30
June 16-30:	15-30
July 1-15:	15-30
July 16-31:	15 30

Report specifications of p	redator enclosures used:		
Enclosure Design	A	В	С
Shape	circular	Not utilized	Not utilized
Diameter/Length of side	10 ft		
Size of wire mesh	2 in x 4 in		
Total Height	4 ft		
Height above ground:	3 ft 8 in		
Depth buried:	4 -6 inc		
Cover material	bird netting		
Cover spacing/Mesh size	3/4 in		

h

Management actions taken or needed/Remarks:

symbolic fencing, erected prior to nesting period and adjusted and increased buffer areas based on nest sites. Standard Type "A" enclosures were utilized on the predation was high due to the number of predators frequenting the nest sites daily and nightly and hunting in nest area habitats and foraging habitats predation and/or adult predation or abandonment of nests by adults, may have been higher due to the exceedingly high number of predators observed. Chick stable period for incubation to occur by adults. While there were several nests abandoned due to predator harassment of adults, without the use of enclosures, egg enclosing nest with type "A" predator control device. The use of enclosures is believed to have created protection from predation of eggs as well as resulting in a Nests were enclosed immediately if found with 4 eggs. When enclosures were used, incubation resumed and was observed by adults within 5-10 minutes of adults. Monitoring was always conducted from a distance with field glasses and enclosures were inspected daily. No predator control methods have been nest would not be abandoned if enclosed. Although some nest abandonment did take place, it was primarily observed as being due to mammal harassment of majority of nests after 3 eggs had been laid by adults. Enclosures placed where adult attachment to the nest site was observed and rated as a "high confidence" that were laid monitoring occurred each day at dawn and dusk, including all period when unfledged chicks hatched. Potential nesting habitat was fenced using Monitoring of nests occurred primarily at dawn during index count with periodic dusk counting and observations at dusk. Once nest were established and eggs implemented on habitat for many years, therefore predators, primarily American Black Crow, Red Fox and Coyotes were the main predators of eggs and chicks.

23, 2013. Nauset Heights was gradually opened moving north to the Spit as chicks fledged. It was not fully opened to ORV traffic until August. 15, 2013. remained closed due to the proximity of one nest "A2" based on projected hatch date. The ORV trail and traffic remained closed until the chicks fledged on July found 100 yards south of Pole number 4. This prevented ORV traffic north of the barricade. All of Nauset Heights was closed to ORV traffic on June 21, 2013 and No spring storms occurred so there was minimal loss due to storm surge 2013 due to a 4 egg nest found just north of Area 3. A barricade was immediately erected well in excess of the 200 yard guideline to protect NS4 a 4 egg nest Vehicle Restrictions for Unfledged Chicks and nest sites at Nauset Heights: The Director closed ORV traffic from Area 3to Area 9 at the (Spit) on May 26,

^b Pairs included in the **Total Count** must have been present at the site for ≥ 2 weeks and exhibited courtship or territorial behavior during that period, if not actual nesting. ^a The Index Count includes pairs observed during the June 1-9 count period, and pairs determined to have been present during that period based on laying or hatching dates. Site Name: Nauset Spit (Heights) Year: 2013 Observer(s): Paul Wightman, Pat Johnson, Nathan Lake

Page 3 of (No.	No. eggs	No. chicks	Date clutch	No. eggs when	Date	Date nest hatched		Enclosure Re	eport
		laid	hatched	fledged	found	clutch	completed	(H) or		Design	Date
Pair No.	Nest No.		•			found	(if known)	failed	Y/N	(A)	installed
1	A-1	4	3	2-3	05/18/13	4	Unknown	6/15/13	Y	Α	5/18/13
	Public							Η			
	Beach										
2	A-2	4	4	ω	5/30/13	4	Unknown	6/23/13	Y	A	5/30/13
	Public							Η			
	Beach										
3	NS 1	4	0	0.	5/18/13	ш	5/20/13	06/07/13	Y	Α	5/18/13
	Area 8							Abandoned			
4	NS 2	2	0	0	5/17/13	<u> </u>	06/20	5/19/13	Z	N/A	N/A
	Area 8			-				Predated			-
S	NS 3	2	0	0	05/25/13	ω	5/27/13	6/1/13	Υ	А	5/25/13
	Area 7							Abandoned			
6	NS 4	4	4	0	05/26/13	4	05/26 based	6/23/13	Ϋ́	Α	5/26/13
	Area 3	-					on hatch date	Η			
7	NS 5	1	0	0	5/28/13	1	N/A	N/A	Z	N/A	N/A
	Area 8										
8	NS 6	4	2	2	5/30/13	2	6/3/13	6/30/13	Y	A	6/1/13
	Area 6										
9	NS 7	1	0	0	6/1/13	<u> </u>	N/A	6/2/13	Z	N/A	N/A
	Area 8							Failed			
10	8 SN	4	0	0	6/3/13	1	6/8/13	06/12	Z	A	6/6/13
	Area 4										
C Other and	and the second second	7+ 75 " "	~. ~. < . <		and in Alacht for	- < < 0 4					

Chicks are considered "fielded" if they are ≥ 25 *days old or are observed in flight for* ≥ 50 *ft., whichever occurs first.*

^a The Index Count includes pairs observed during the June 1-9 count period, and pairs determined to have been present during that period based on laying or hatching dates. ^b Pairs included in the **Total Count** must have been present at the site for ≥ 2 weeks and exhibited courtship or territorial behavior during that period, if not actual nesting. Site Name: Nauset Spit (Heights) Year: 2013 Observer(s): Paul Wightman, Pat Johnson, Nathan Lake

Page 4 of 6

Nest No.	Cause of egg mortality/supporting evidence ^d	Nest No.	Cause of chick mortality/supporting evidence ^d
NS 1	Unknown. Nest Abandoned after predator harassment. Fox tracks	NS 1	No Chicks
	positively identified at base of enclosure circling enclosure. Monitored		
	6/6/13 still incubating. On morning of 6/7/13 monitoring revealed nest abandoned. Red fox tracks and prints outside enclosure and at base.		
	Digging in several spots at base of enclosure. Mammal harassment probable cause of abandonment.		
NS 2	American Black Crow. Crow predation of nest two egg nest found on 5/15/2 eggs, predated by American Black Crow on 5/19/13. Fresh	NS 2	No Chicks
	Crow tracks at nest site and on top of nest. NS2 re-nested new nest named NS3.		
NS 3	Nest found on 5/25/13 with 3 eggs. Compete on 5/27/13. Nest enclosed		
	in vicinity of enclosure. No evidence of adult predation found.	C CN	NO CHIERS
NS 4	Four eggs hatched on 6/2313. Chicks disappeared on 6/25/13. Reason		
	not known but f ox tracks observed at enclosure base and foraging	NS 4	Red fox tracks observed at nest within 3'-5' site nightly.
NS 5	1 egg nest found on 5/28/13 predated on 6/1/13 by American Black		
	Crow tracks positively identified at nest site on to of nest.	NS 5	American Black Crow tracks on top of and running over nest site.
NG 7	1 egg and not nation.	NICA	1 Chick induced
NS 8	Nest found 6/3/13 abandoned 7/14/13 Coyote and Red Fox tracks at	D CNI	
	base of enclosure and digging Nest were abandoned and adults not	NS 7	No Chicks
	observed again.	NS 8	Coyote tracks at nest site.
			TRACKS OBSEVED WITHIN 2-5' of nests and covered the ground over the entire foraging habitat daily. Can not speculate as to chick mortality.

^b Pairs included in the **Total Count** must have been present at the site for ≥ 2 weeks and exhibited courtship or territorial behavior during that period, if not actual nesting. ^a The Index Count includes pairs observed during the June 1-9 count period, and pairs determined to have been present during that period based on laying or hatching dates. ^d Give cause of egg or chick loss for each nest or brood, if known or strongly suspected; please provide details of supporting evidence. Use additional pages if necessary. Site Name: Nauset Spit (Heights) Year: 2013 Observer(s): Paul Wightman, Pat Johnson, Nathan Lake

No. eggs laid	No. eggs hatche d	No. chicks fledged ^c	Date clutch found	No. eggs when clutch found	Date clutch complet ed (if known)	Date nest hatched or failed		Enclo	sure Report	
Nest No.								N/A	Design (A, B)	Date installed
6SN	2	0	0	06/14/13	1	N/A	6/6/13	Ν	N/A	N/A
Area 8										
NS10	4	υ	0	6/16/13	2	6/20/13	7/13/13	Υ	A	6/18/13
Area 7							Hatched			
NS11	4	ω	0	6/20/13	<u> </u>	N/A	06/19/13	Z	N/A	N/A
Area 9										
NS12	щ	0	0	6/21/13	1	N/A	6/30/13	Ν	N/A	N/A
Area 8							Predated			
SK1		0	0	06/10	<u>ш</u>	N/A	06/19	Υ	N/A	5/16/13
Skaket							High tide			
Beach										
NI- 1	4	0	0	6/6/13	ယ	6/10/13	Between	Ζ	N/A	N/A
New							6/25/13/			
Island							and 7/7/13			
NPS							Note: Not			
Jurisdiction			_,				between these			
							dates Re: NPS iurisdiction.			
					:					
^c Chicks are	considered	"fledged" if th	ey are $\geq 25 \ days \ c$	old or are obser	ved in flight fo	$r \geq 50 ft.$, which	hever occurs firs.	: -		
^a Give cause	of egg or ch	ick loss for eac	h nest or brood, if	known or stron	ngly suspected,	: please provide	details of suppo	ting evide	ence. Use additio	nal pages if necess
The Index (ount includ	tes pairs obser	ved during the Jui	ne 1-9 count pe	riod, and pair.	s determined to	have been preser	tt during t	hat period based	on laying or hatch.

Site Name: Nauset Spit (Heights) Pairs included in the Total Count must have been present at the site for ≥ 2 weeks and exhibited courtship or territorial behavior during that period, if not actual nesting. Year: 2013 Observer(s): Paul Wightman, Pat Johnson, Nathan Lake iing dates. sary. Page 5 of 6

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	NS 9 2 eggs lost reason unknown. NS 10 3 chicks lost within 19 days, Red Fox tracks at nest site nightly.	NS 92 eggs lost reason unknown.NS103 chicks lost within 19 days, Red Fox tracks at nest site nightly.NS124 eggs lost reason unknown.4 eggs lost reason unknown.NS103 chicks lost within 16 days. Red Fox tracks at nest site nightly as follows:NL-1Reason for egg loss unknown. NOT COUNTED IN CENSUS NPSNS11RED FOX TRACKS OBSERVED WITHIN 2-3' of nests and covered the entire foraging habitat nightly and observed by Monitors daily.NL-1Jurisdiction.CROW TRACKS walked over the nest where eggs missing and when chicks missing the crow tracks were observed within several feet of the nest and over much of the foraging habitat and intermingled with plover tracks of chicks and adults. Can not speculate as to cause of egg	NS 9 2 eggs lost reason unknown. NS10 3 chicks lost within 19 days, Red Fox tracks at nest site nightly. NS12 4 eggs lost reason unknown. NS11 3 chicks lost within 19 days, Red Fox tracks at nest site nightly. NS11 4 eggs lost reason unknown. NOT COUNTED IN CENSUS NPS NS11 3 chicks lost within 16 days. Red Fox tracks at nest site nightly as follows: NI-1 Reason for egg loss unknown. NOT COUNTED IN CENSUS NPS NS11 3 chicks lost within 16 days. Red Fox tracks at nest site nightly as follows: NI-1 RED FOX TRACKS OBSERVED WITHIN 2-3' of nests and covered the entire foraging habitat nightly and observed by Monitors daily. CROW TRACKS walked over the nest where eggs missing and when chicks missing the crow tracks were observed within several feet of the nest and over much of the foraging habitat and intermingled with plover tracks of chicks and adults. Can not speculate as to cause of egg or chick mortality.	Nest N	• Cause of egg mortality/supporting evidence ^d	Nest No.	Cause of chick mortality/supporting evidence ^d
NS Y 2 eggs lost reason unknown.		 NS12 4 eggs lost reason unknown. SK 1 4 eggs lost to high tide. NI-1 NI-1 Reason for egg loss unknown. NOT COUNTED IN CENSUS NPS Jurisdiction. Jurisdiction. NOT COUNTED IN CENSUS NPS Introduction. Introduction.	 NS12 4 eggs lost reason unknown. NI-1 NI-1 Reason for egg loss unknown. NOT COUNTED IN CENSUS NPS Jurisdiction. NOT COUNTED IN CENSUS NPS NI-1 SK 1 A eggs lost to high tide. RED FOX TRACKS OBSERVED WITHIN 2-3' of nests and covered the entire foraging habitat nightly and observed by Monitors daily. CROW TRACKS walked over the nest where eggs missing and when chicks missing the crow tracks were observed within several feet of the nest and over much of the foraging habitat and intermingled with plover tracks of chicks and adults. Can not speculate as to cause of egg or chick mortality. 	9 SN	2 eggs lost reason unknown.	NS10	3 chicks lost within 19 days, Red Fox tracks at nest site nightly.
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 Send to:
 Scott Melvin, Mass Wildlife, One Rabbit Hill Rd., Westborough, MA 01581
 scott.melvin@state.ma.us
 508-389-6345 (off.)

 Site Name:
 Nauset Spit (Heights)
 Year: 2013
 Observer(s): Paul Wightman, Pat Johnson, Nathan Lake

Page 1 of 4

MASSACHUSETTS PIPING PLOVER CENSUS FORM

Year 2013

designated as areas between Cut 1, 2, 3, 4, 5, to Chatham Town South of the main public parking lot and public beach and Site Name: North Beach: Includes all of the area Line. Cut 6 is Chatham.

Harbormaster/Shellfish Constable, Town of Orleans, MA Natural Resources Manager Agency: Dawson L. Farber IV, P: (508)240-3755 F: (508)240-3388 19 School Rd, Orleans, MA 02653 Observer(s): Paul Wightman, Pat Johnson, Nathan Lake

Telephone: (508) 240-3775 Email: dfarber@town.orleans.mau.us.

Ownership: Town of Orleans Town: Orleans

all nests and any pairs that did not nest. GIS NEST SITE MAPS ATTACHED on 8 1/2 X 11 sheets. ⇒ Please attach a map of this site that shows locations of

Unpaired Adults	No. of Pairs	Census Results:
1	16	Index Count ^a
÷	16	Total Count ^b

over on the west side of the ORV trail adjacent to Cut 1. "SB" stands for South Beach and includes all of the area north of storms. 1 pair SB2 lost their 3 egg nest due to predation by a Black Back Gull. The pair subsequently re-nested on the Chatham side also includes the new wash over area recently created in 2013 by a winter storms with a large breach of the dune system and wash over area and includes the mud flats west of the frontal beach adjacent to a tributary of Broad Creek and Pochet Island. The area of the town line approximately 50' north of the area designated as Cut 6. Nest Name Designations: "P" stands for Pochet Washout Area. This area includes a large storm wash over area running from the frontal beach to the west side of breach and wash the census period. All pairs present and listed during the index count period nested due to good weather conditions and no spring Census remarks (include notes on pairs that did not nest [dates present, behavior]: 17 pairs were identified and observed during List pairs <u>not</u> present during Index Count period: All pairs were present during the census period. The SB2 pair established a nest Chatham Town line. All ORV trails and Cuts were closed in accordance with the regulations.

Techore about the month of b	i viaivi viivivaita uavu.		
Enclosure Design	A	B	С
Shape	circular		
Diameter/Length of side	10 ft		
Size of wire mesh	2 in x 4 in		
Total Height	4 ft		
Height above ground:	3 ft 8 in		
Depth buried:	4 in to 8 in		
Cover material	bird netting		
Cover spacing/Mesh size	3% in		

July 1-15: June 16-30:

15 - 30

July 16-31:

16-30

May 16-31: May 1-15:

15

June 1-15:

15-30 15 - 30 Apr.

1-15:

15

Apr. 16-30:

Month

visits to site

per period

Page 2 of 4
Management actions taken or needed/Remarks: Sites were monitored on daily basis throughout nesting season. Potential nesting habitat was fenced off with symbolic fencing well before the nesting periods and
arrival of Piping Plovers. The new large wash over area created by the severe 2013 winter storms located adjacent to Cut 1,on the west side of the ORV trail, was fenced off with symbolic fencing shortly after the breach and wash over was created, and prior to the pair establishing a nest and using the wash over area as foraging habitat. Vehicles were prohibited from beach access when active piping plover broods were present. Dogs prohibited on beach from May 15 th through
August 24, 2013 at which point the last of the unfledged chicks at nest P9 chicks fledged. Monitoring of nests took place at both dawn and dusk throughout nesting season once chicks hatched and during the census period. As monitoring progressed, symbolic fencing was adjusted with increased buffer areas where it
was determined that additional protection was necessary to protect a nest site. The Standard Type "A" exclosures were utilized on the majority of nest after 3 eggs had been laid by adults, and the Monitors were confident that the adults had established a strong attachment to their nest sites with all Monitors required to be in
agreement that a high rate of attachment to the nest had occurred, thus decreasing adult abandonment of the nest. Monitoring was always conducted from a distance, in the early morning or late afternoon and not during excessively hot days. Three people were always used when possible to enclose a nest within 20
minutes time. Field glasses were used to monitor nests and enclosures from a distance of 100 feet, to insure the exclosures were intact, and the adults could move freely in and out on all sides and that they had accepted the enclosure with minimum stress being observed. Due to the fact that no predator control methods have
been implemented on entire nabilat for many years enclosures provided protection from the nigh number of predators observed, Crows, ked Fox, and Coyotes. Nests were enclosed if found with 4 eggs immediately. Adults resumed incubation within 5-10 minutes of completion of enclosures. The use of exclosures is
believed to have created protection from predation of eggs as well as creating a stable period and environment for incubation to occur by adults. While there were some nests abandoned due to predator harassment of adults, there was justification for the use of enclosures with high historical rates of predation of eggs.
Large flocks of crows were observed daily monitoring, ked rox tracks observed highly within several feet of nest sites. Tracks of ked rox and coyoles were Observed covering chick foraging habitat areas. Without speculating, the high rate of chick disappearance could not be documented with solid evidence. However, hese were the primary predators in 2013.
Vehicle Restrictions for Unfledged Chicks at nest sites at North Beach. North Beach (all of the habitat south of the parking lot to Chatham Town Line was closed to ORV traffic on June 3, 2013 and did not re-open until August 23, 2013 when the 2 chicks hatched at the P9 nest were reported as fledged by Monitors.
All Federal & State Guidelines were strictly adhered to. Dogs were prohibited on main beach from April 15 ^m through September 15 ^m . The main predators observed and were, American Black Crows by day, Red Fox, Coyotes, by night. During dawn monitoring each day, weather permitting, Red Fox and Coyote tracks were observed at nest sites and in foraging habitats. No spring storms occurred so there was minimal loss of nests due to storm surge. The P 9 nest was located in the
primary dune at the frontal beach at Cut 1. This was a 4 egg nest which hatched out 2 chicks. Two eggs did not hatch for unknown reasons. The entire ORV trail from the access gate to the Chatham town line was closed once the chicks hatched and opened when they fledged. Their habitat was primarily the "new habitat from 2013 storm wash over on the west side of the ORV trail in the new wash over area feeding primarily in the mud flats at low tide adjacent to the access road to Pochet Island.
¹ The Index Count includes pairs observed during the June 1-9 count period, and pairs determined to have been present during that period based on laying or hatching dates.
$^{-}$ Pairs included in the Total Count must have been present at the site for ≥ 2 weeks and exhibited courtship or territorial behavior during that period, if not actual nesting.

Site Name: North Beach Orleans Year: 2013 Observer(s): Paul Wightman, Pat Johnson, Nathan Lake J د) •

Page 3 of 4 Pair No. 11 12	P2 P2	A 4 4 laid	No. eggs hatched 3 2	No. chicks fledged ^c 1 2	Date clutch found 5/5/13 5/5/13	No. eggs when clutch found 2 1	Date clutch completed (if known) 5/10/13 5/12/13	Date nest hatched or failed 6/5/13 6/8/13	V Y Y Y	Enclosure R Design (A, B) A A	eport Ins 5/1
12	P2	4	2	2	5/5/13		5/12/13	6/8/13	Y	A	
13	Р3	4	2	0	5/7/13	1	5/14/13	6/15/13	Υ	A	
14	P4	4	4	4	5/19/13	<u> </u>	5/15/13	6/12/13	Υ	A	
15	P5								Υ	A	
		4	0	0	5/16/13	<u> </u>	5/17/13	5/30/13			
16	P6	2	0	0	6/4/13	2	N/A	6/15/13	Y	А	
17	P7	4	0	0	6/10/13	Ц	7/15/13	7/5/13	Υ	A	
18	P8	2	0	0	6/13/13	2	N/A	6/14/13	Z	A	
19	P9	4	2	2	6/17/13	2	6/24/13	7/21/13	Υ	A	
20	P10		0	0	6/22/13	1	N/A	6/24/13	Z	N/A	
21	P11	3 1egg lost to tide re-nest	2	0	6/24/13	1	2	7/22/13	Z	N/A	
22	SB1	4	4	2	5/6/13		5/12/13	6/8/13	Y	A	
Site Name	: North Beac	h Yea	r: 2013	Observe	er(s): Paul W	'ightman, Pa	at Johnson, Na	than Lake			

Page 4 of 4		No. eggs	No. eggs	No. chicks	Date clutch	No. eggs when	Date clutch	Date nest hatched or		Exclosure Re	sport
		laid	hatched	fledged ^c	found	clutch	completed	failed		Design	Date
Pair No.	Nest No.					found	(if known)		YN	(A, B)	installed
23	SB2	ε	0	0	5/11/13	1	Predated	5/14/13	Ν	N/A	N/A
24	SB3	4	ω	0	5/17/13	4	Unknown	6/8/13	Y	A	5/17/13
25	SB4	4	0	0	5/13/13	щ	6/6/13	6/9/13	Υ	A	6/4/13
26	SB5	1	0	0	6/16/13	щ	Unknown	6/26/13	Y	A	6/19/13
27	SB6	4	4	1	6/17/13	4	Unknown	7/11/13	Z	A	N/A
						-					
^c Chicks are c	onsidered "fle	dged" if th	ev are > 25 da	vs old or are obsei	wed in flight foi	r > 50 ft., whic	chever occurs fire	it.			

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Nest No.	Cause of egg mortality/supporting evidence ^d	Nest No.	Cause of chick mortality/supporting evidence d
P1	Unknown 2eggs did not hatch.	P1	1 chick missing 3 days after hatch.
P2	Unknown 2 eggs did not hatch.	P3	2 chicks missing 2 days after hatch reason unknown.
P3	Unknown 2 eggs did not hatch.	PH	2 chicks missing 9 days after hatch reason unknown.
P5	Nest abandoned predation of 1 adult by unknown predator. Remains	SB1	4 eggs hatched 2 chicks missing 8 days after hatch reason unknown.
	collected stored in freezer. Predation of adult nest abandoned. 2 eggs.	SB6	3 chicks missing after 13 days after hatch reason unknown.
P6	Abandoned. Reason unknown. No evidence re-nests.		-
P8	Lost to high tide.		Note: Only evidence of possible chick loss is Coyote tracks and Red Fox
P9	2 eggs did not hatch reason unknown.		tracks at nest sites within 3' of nest and covering entire foraging habitat.
P10	Nest lost to high tide 1 egg.		
P 11	Re-nest of P10 no egg loss 2 eggs laid		
SB2	1 egg did not hatch reason unknown.		
SB3	4 eggs lost to high tide.		
SB4	3 eggs abandoned an in nest. Red Fox Tracks nearby within 3 feet.		
SB5	Abandoned 3 eggs remained in enclosure. Red Fox tracks digging at		
	base of enclosure.		

^d Give cause of egg or chick loss for each nest or brood, if known or strongly suspected; please provide details of supporting evidence. Use additional pages if necessary.

Site Name: Nauset Spit (Heights) Send to: Scott Melvin, Mass Wildlife, One Rabbit Hill Rd., Westborough, MA 01581 scott.melvin@state.ma.us 508-389-6345 (off.) Year: 2013 Observer(s): Paul Wightman, Pat Johnson, Nathan Lake

NOTE: Of the 27 pairs of Plovers which nested only 21 chicks fledged.

nested on Nauset Spit. Nauset staff was informed at the outset of the season and census collecting period that this area was within the jurisdiction of high tide. NPS and would be monitored by their staff and Nauset Staff only monitored infrequently thereafter. No new nests observed on N1-1 failed due to however due to infrequent monitoring of New Island which was under NPS jurisdiction it was impossible to determine if the pair on New Island re-NOTE: Nest were not assigned "a" or "b" for re-nests originating on new Island or re-nesting on Nauset Spit. One possible pair was involved

The chicks were missing after several days from hatch. No evidence for the loss of 2 chicks could be determined. The only positively identified re-nest was P11. This pair's first nest P10 was lost to a high tide and laid 2 more eggs in the P11 nest which hatched.

E. Town of Orleans OSV HCP User Guide/ Procedures and Conditions

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TOWN OF ORLEANS HABITAT CONSERVATION PLAN

HCP

OSV USER GUIDE

PROCEDURES & CONDITIONS



Piping plover chick 1 day old in the Pochet Wash - July of 2014

Basic Introduction: In the past 9 years OSV access has been precluded to Nauset South due to unfledged piping plover chicks located in an area north of Trail 1 known as the Pochet wash. Piping plovers are listed as threatened species under both the U. S. Endangered Species Act and the Massachusetts Endangered Species Act.

To regain access to the area, the Town of Orleans successfully applied for Incidental Take Permits under the Acts. Required by the permits, the Town of Orleans developed a Habitat Conservation Plan (HCP). The HCP allows up to 180 over-sand vehicles per day to pass through the Pochet wash where up to 8 unfledged piping plover chicks and 4 adult parents are living on or after July 15.

Piping plover chicks leave the nest about two hours after hatching and are able to feed themselves within a few hours of being out of the nest. Piping plovers eat a variety of aquatic and terrestrial invertebrates such as worms and amphipods. They move from one tidal area to another, multiple times per day, crossing the OSV Trail to feed on the east and west side of the Trail. Chicks blend into their surroundings very effectively because of their camouflaged plumage. They are highly mobile, very fast, and can be observed feeding over large areas of the habitat. When disturbed they may run in spurts, stop, and hide in dune grass or a small depression in the sand.

To lessen the impact from OSV running over chicks and help us implement a successful program, the town adopted a "<u>self-</u><u>escorting</u>" procedure. It is critical that you adhere to the self-escorting procedure to insure that the HCP is successful. This means you must have a person with you at least 16 years of age or older that can walk 15 feet in soft sand in front of the OSV looking for chicks and or adults in the OSV corridor. OSV that are unable to provide a competent self-escorter over the age of 16 will be denied access. The areas where you will be self-escorting are called "<u>self-escort zones</u>." The self-escort zones will be clearly marked with signs giving you notice when to BEGIN and END the self-escorting.

It will be a requirement for all OSVs to contain a copy of the Nauset Beach Rules and Regulations for ORVs as well as a signed copy of this document by the vehicle driver. Both copies will <u>be required to be produced by the OSV operator at the time of check in</u>. In the event that the OSV operator cannot produce either, then he/she shall be provided with a copy at the entrance booth. By signing the copy of the HCP Procedures and Conditions, the operator acknowledges that he/she has read and understands the HCP requirements.

IMPORTANT READ ! Medical or Family Emergencies: When the permit is in effect, access to and from Nauset South <u>outside of the self-escort windows shall be strictly prohibited</u>. In the event of a life-threatening medical emergency, the staff of the Nauset Beach Administration Building and/or emergency responders should be notified. Contact telephone numbers are provided in the Nauset Beach Rules and Regulations for OSV. Essential vehicles will assist in escorting the vehicle off of the beach. Your stay on the beach could be as long as 10 hours with a MINIMUM REQUIRED STAY OF 6 HOURS. Please plan for less than ideal conditions, e.g. flying insects, rainy, cold conditions.

<u>Self-Contained Vehicles</u> - All self-contained vehicles will be required to commit to and reserve their day of departure when they check in. All other self-contained check in procedures and maximum stay restrictions <u>remain unchanged</u> while the permits are in effect.

OSV Access Date and Times:

Start Date: Beginning on or after July 15, annually. (start date dependent on # of un-fledged chicks present)
Morning Session: 8:00 a.m. - 10:00a.m.*
Afternoon Session: 4:00 p.m. - 6:00 p.m.*

*Times may be flexible within one (1) hour of each side of the access windows due to inclement weather or chick location.

Natural Resource Manager or Beach Director will have the independent authority to close the trail at any time for any reason.

The HCP OSV PROTOCOLS:

STEP 1: <u>Accessing Nauset South & Staging</u>. All OSV must stage in the pre-determined area of the Nauset Beach parking lot shown below in (Figure 1). Line up in a single row. Air down; check all your gear and safety equipment and supplies. Access will be granted on first come first serve basis.



Figure 1. Entrance to HCP Staging area & Gate

<u>STEP 2:</u> From Nauset South Gate (lower lot) to the self-escort zones.

When shorebird monitors have established the locations of the chicks, they will notify staff stationed at the entrance gate and the gate will be opened. The over-sand vehicles will then proceed through the entrance gate at **10 M.P.H.** until they <u>arrive at the self-escort</u> <u>zone</u>. Each self-escort zone will be marked with signs as shown below indicating where the self-escort zone <u>begins</u> and <u>ends</u>. **BE ON THE LOOK OUT AT ALL TIMES for these signs. Remember the locations of the signs may change daily due to the chick's locations. When you arrive at a self-escort zone, stop your OSV, have your escort person exit the OSV and walk 15 feet in front of the OSV. The OSV will follow behind the escort person at WALKING SPEED. It is <u>your responsibility</u> to identify the SELF-ESCORT BEGINS & ENDS SIGNS.**

THE ESCORT ZONE SIGNS YOU WILL ENCOUNTER ARE SHOWN BELOW



OSV SELF-ESCORT ZONE BEGINS HERE

Self-Escort OSV Designee MUST Exit OSV & Walk in front of OSV through HCP Area

Watch for Piping Plover Chicks

Figure 2 represents examples of the location of two (2) separate self-escort zones. While you proceed through the self-escort zone be aware that piping plovers are very territorial. Consequently the broods may be separated, <u>so each escort-zone may contain 1 brood with up to 4 chicks and 2 adult plovers</u>. If they are close together there will only be 1 self-escort zone. **Plovers may be moving throughout the habitat area as you are walking and driving through the self-escort zones. They can appear at ANY TIME and ANYWHERE**.

Figure 2. Example showing two (2) self- escort zones





<u>STEP 3</u>: <u>Moving through the Self-Escort Zones.</u>

While walking and driving through the self-escort zones you should be focused on looking for chicks and/or adults in the OSV corridor. Walk slowly; keep your attention and eyes on the OSV corridor in front of you. Also use your peripheral vision to look for chicks near the edge of the corridor that may dart out. Chicks may also hide in small depressions in the sand including the tire ruts or in dune grass. They rely on blending in with their surrounding habitat. When unfledged chicks are close, the adult parent plover will often get excited and move directly into your path. They may also pretend their wing is broken and cannot fly; they may flap their wing on the ground while moving away from you. This biological defense behavior is commonly referred to as the "broken wing display." If you see this, the adults are attempting to draw attention to themselves and away from the chicks. You may hear the parent adult sounding an alarm call before you see the chicks. The call sounds like "peep-peep" repeated rapidly.

If the escort person or OSV driver sees a chick and/or adult in the OSV corridor or within 100 feet of the self-escort corridor, they **MUST signal the vehicle behind them to IMMEDIATELY STOP. The signal for this is: the self-escort designee raises his/her right arm and then shouts "STOP." The OSV operator must safely stop the vehicle. The driver will then honk his horn in three (3) short bursts. Monitors will make their way to you. No herding of chicks or adults will be permitted. The Monitor will sweep the area and then determine when the corridor is clear to travel. They will speak through a megaphone, "IT IS SAFE TO PROCEED."** OSVs may then proceed. You should proceed with the understanding that chicks may reappear, at any time in the corridor. Chicks tend to travel close together, especially in the first 10 days after they hatch.

Below are photos of chicks and adult plovers' acting out the feigned or broken wing display.



<u>STEP 4</u>: <u>South Beach Exiting Protocols</u>:

OSVs will be expected to begin preparing at least 1 hour before planning to exit the beach during the 4:00 p.m. to 6:00 p.m.



Figure 3 above Exiting gate Staging Area near Trail

to be clear of the self-escort zones by 6:00 p.m. In order to alleviate traffic congestion, management recommends that OSV begin preparation at 3:00 p.m. for their 4:00 p.m. departure. **OSV are required** to be at the Trail 1 gate by no later than 5:30 p.m. At approximately 1.5 hours before the 6:00 p.m. closure, Beach Ranger staff will sweep the beach in a patrol vehicle with flashing strobe lights on. Starting in the south and working north, this final drivethrough is a directive for all non-self-contained OSV to begin preparations to be at the Trail 1 gate by 5:30 p.m. and clear of the self-escorting corridor and the beach by 6:00 p.m.

access window. All OSV are

Due to varying high tides, changing beach conditions and additional plover related closures outside of the self-escorting corridors, portions of Nauset South may be closed to OSV traffic. Therefore OSV should anticipate having to use a combination of frontal beach and back trails (as we have in the past) to exit the beach. As mentioned, there will be a gate located near Trail 1 staffed with an attendant. The OSV exiting the beach shall line up in a row when approaching the gate. No OSV or their self-escort designee are to pass by the gate prior to 4:00 p.m. At 4:00 p.m., the gate attendant will open it once the shorebird monitors have determined that the corridor is open and it is safe to proceed. **The 4:00 p.m. opening may be delayed up to 1 hour due to location of the chicks in the self-escort zone.** OSV will proceed at no more than 10 mph driving speed until they reach the boundary of the self-escort gate. Here, you will be required to repeat the same procedure from when you accessed the beach. **Once again, all self-escorting protocols discussed earlier will remain in-effect during the exiting window**. **Your cooperation with the required protocols will help to promote an enjoyable experience for you and your fellow permit holders.** Use good judgment in planning your day, especially if it is one in which there are many vehicles remaining on beach between 4 and 5 p.m. A congested OSV corridor when leaving will not contribute to an enjoyable experience.

On occasion there could be as many as 180 vehicles attempting to exit during the 4:00 p.m. to 6:00 p.m. window. <u>If everyone</u> waits until the last minute to leave, the Town of Orleans will be unable to meet their legal requirements and conditions of the <u>Permits</u>. Plan your stay accordingly and enjoy.

Airing Stations: As always there may be a line waiting to use the two air supply lines at the Orleans air station. If you choose to wait and use the Orleans air station, be patient. During times of intense traffic congestion, management may close down the air station in order to move along traffic and keep the corridor open. Please have a backup plan for airing up.

VIOLATIONS: Any violations of the aforementioned protocol <u>will not be tolerated</u>. Violators of the escort protocols and HCP Conditions and Procedures shall be subject to OSV sticker revocation, and shall have their rights to operate an OSV on Nauset Beach suspended immediately for a period of one year from the date of the violation. <u>A ZERO TOLERANCE</u> <u>POLICY WILL BE IN EFFECT AT ALL TIMES on all rules regarding the HCP</u>. The cooperation of the general public in complying with the conditions and regulatory requirements of the Permits will be critical in determining the success of the HCP Program. You should all consider yourselves as <u>active stakeholders</u> in the entire HCP process and its successful implementation. Enjoy your day at Nauset.

Remember Staff is here to help you. They are also responsible for making sure the permit conditions are met.

Question: Will the HCP be in effect this year and for how long?

Answer: The HCP will be implemented when there are no more than 2 broods and 8 unfledged chicks remaining in the Pochet Wash area on/ after July 15 annually. There is **NO GUARANTEE** or definitive start date for when this scenario will occur.

The Natural Resource Manager, Beach Director or their designee, will monitor weather forecasts on a daily basis. In the event that a storm warning is predicted by the National Weather Service, or any other weather warning that could jeopardize public safety within a 24-hour period, the OSV trail shall be closed for the duration of the hazard or the start time may be moved one hour later or earlier. The OSV trail may not reopen until the Natural Resource Manager, Beach Director or their designee has given the all clear. The OSV sticker purchaser and any operator of the OSV agree to use the Nauset Beach South during the time the HCP is in effect at their own risk and have been advised in writing of the HCP Shelter in Place Condition. Exiting escorts will not take place due to unpredicted weather. The OSV Permit purchaser and any operator of the inclement weather has passed, or scheduled exiting escorts have begun.

Each person operating the OSV must read the HCP Procedures & Conditions and sign this Acknowledgment before access to Nauset Beach South will be allowed when the HCP is in effect regardless of whose name the OSV Permit is in.

ACKNOWLEDGEMENT OF HCP PROCEDURES AND CONDITIONS

I, (Print Name & OSV Permit #) (*fill in below*), have read the HCP Procedures and Conditions contained herein. By signing this HCP Acknowledgment, I acknowledge that I understand and agree to fully comply with the HCP Procedures & Conditions. I understand that if I or any of my occupants fail to comply with or violate any of the HCP Procedures & Conditions, it shall result in a \$200.00 fine and immediate revocation of the OSV Permit. I also understand that the Town has adopted a <u>ZERO TOLERANCE POLICY for violations of the HCP Procedures and Conditions</u>. I further agree that when requested to do so by Town of Orleans Staff, I will produce this signed copy.

<u>Please keep a copy of the HCP Conditions and Procedures in the OSV at all times.</u>

Print Name & Permit #	Sign & Date:
Print Name & Permit #	Sign & Date:
Print Name & Permit #	Sign & Date:
Print Name & Permit #	Sign & Date:
Print Name & Permit #	Sign & Date:

F. Town of Orleans Non-Lethal Predator Control Program for the Protection of Federally Endangered Piping Plovers at Nauset Beach

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The Town of Orleans Habitat Conservation Plan

Non-Lethal Predator Control Program for the Protection of Federally Endangered Piping Plovers at Nauset Beach



Submitted by: Nathan Sears, Natural Resources Manager, Town of Orleans, Ma Paul C. Wightman, Town of Orleans Endangered Species Shorebird Specialist

U.S. Fish & Wildlife Service Massachusetts Division of Marine Fisheries & Wildlife

INTRODUCTION

In 2015, the Department of Natural Resources, Town of Orleans, initiated a Non-Lethal Predator Control Program for the protection of federally endangered species Piping Plovers (*Charadrius melodus*) at Nauset Beach. The non-lethal mitigation program is being implemented in a two (2) stage *phased strategy*.

1. PROJECT GOALS & OBJECTIVES

- To identify the primary predators of piping plovers at Nauset Beach
- To introduce behavior modification of canine omnivores via nonlethal methods
- To promote early and first time adult nesting attempts
- To decrease the high rate of historical abandonment of adult incubation
- To decrease re-nesting due to nest failure
- To increase piping plover productivity

The Habitat & Primary Predators

Nauset Beach is a large unique and diverse barrier beach system, comprised of Nauset Beach South and Nauset Spit. It is ideal shorebird breeding and foraging habitat. It is also ideal habitat for predators such as red fox, eastern coyotes, American black crows, and fishers. It comprises a diverse range of coastal resources along its 7 mile area. The beach is owned and managed by the Town of Orleans. The barrier beach is bisected by a large public beach and parking area (Nauset Public Beach). Plover habitat has increased on Nauset Beach South due to episodic winter storm events which have leveled dunes and created huge areas of washover areas.

Nauset Spit lies just north of the main parking lot at the Nauset Public Beach. It is adjacent to Nauset Heights, an area of upland containing residential homes and providing denning habitat for foxes on southerly facing slopes. The Nauset Spit is approximately 2.1 miles in length. The Spit contains coastal beaches, coastal dunes, coastal banks, tidal creeks, and a navigational channel connecting to the Atlantic Ocean just south of Coast Guard Beach. The Spit has been slowly accreting northward into the Town of Eastham. It has also been subject to regular washovers and periodic breaches during severe storms. Nauset Beach South is comprised of marshes, tidal creeks, barrier beach and large relatively unpopulated islands and tracks of land with fresh water supplies. Both Nauset Spit and Nauset Beach South contain ideal habitat for eastern coyotes who first appeared in the area more than two decades ago and whose numbers have steadily increased from year to year. Recently fishers have been observed on the beach as well.

It is consistently observed and documented in annual plover and tern reports provided to MADFW that red foxes, eastern coyotes and American black crows are the primary predators of adult piping plovers, their eggs, and chicks at Nauset Beach.

For years, piping plover monitors working for the Town have been recording and observing these predators foraging on the north and south barrier beaches in daylight hours. During daily nest checks and throughout the entire breeding season for piping plovers, red fox and Eastern coyote tracks literally cover the ground over the entire beach. Their tracks have been observed with close encounter circling and digging at the base of the predator exclosures. The circling and digging usually results in the abandonment of a plover nests by the adults as soon as one day after a circling and digging event. American black crows are seen in the dawn hours and throughout the day. Flocks of up to 25-50 have been observed over the course of the plover breeding season. Their numbers increase starting in the first week of June when chicks begin to hatch.

Red fox, eastern coyote and black crow tracks have frequently been documented at unexclosed nest bowls which have been predated. Although these predators are rarely successful at gaining entry into the exclosures, their presence is suspected in adult predation and/or abandonment.

Over the years, these predators have adapted to the use of exclosures which are used to protect incubating adults and their nests from predation. The MADFW authorizes the implementation of exclosures and provides guidance on when and where to use them. Nauset Beach managers have had to reduce the use of exclosures in certain areas and now use them selectively to protect incubating plovers. However, due to the intense predator pressure and presence of large numbers of these predators, under some circumstances, their use is an essential tool in protecting nests from predation. These predators have become "*smart predators*" who key in on the exclosures which are associated with a "food *reward*." This can be described as a learned response, reinforced over many plover breeding seasons. We have identified the primary target predators for which non-lethal controls are necessary as the following:

• Red Fox (*Vulpes vulpes*)

- Coyote (*Canis latrans* var.)
- American black Crow (*Corvus disambiguation*).
- Fisher (*Martes pennanti*)

Red fox reacting to electric shock at Electrified Exclosure Nauset Spit



Eastern Coyote visiting Electrified Exclosure North Spit







Fisher digging and Tracks at Electrified Exclosure, Pochet Washover.

The photo of the fisher digging at base of the decoy exclosure was captured on April 30, 2015. The fisher tracks and digging terminate at the base of the exclosure at the point of the electrified wire. Note the fisher did not gain entry into the exclosure, the bait was intact. The yellow line shows where the electric wire is connected to plastic insulators. These digging tracks were positively identified as that of a fisher.

When the fisher came into contact with the electrified wire it backed away. There were no further visits or fisher tracks observed at any of the exclosures after this event. No entry was gained into the exclosure and the bait remained intact (a fresh salmon fish head). No further evidence was observed that the predator returned to the exclosure, or any other exclosures, electrified or non-electrified. Suggesting that the shock it received had resulted in a learned negative association with the exclosures. Fisher tracks can be seen to the right of the digging. This was the first time a fisher was positively identified as a predator on Nauset Spit.



American black crow at Electrified Exclosure Pochet Washover.

Crows perching on exclosures is common. Since the introduction of electrified exclosures there have been fewer crow chick predation events as evidenced by a 3.0 fledge rate in the Pochet Washover (the study area) which is where most of the crow flocks are observed from June- August annually. Over the past 10 years, crows have been the leading cause of egg predation without the use of exclosures. Crows are often observed perching on the 4' stakes and 7' posts which are used to support the symbolic fencing. They perch very close to nest sites and chick and adult foraging habitat. By heavily nailing the tops of the stakes and posts and using fewer posts and more stakes to support the symbolic fencing, we can further reduce the perching ability of crows and raptors.



The electric exclosures have been designed to prevent electric shock to crows. The crows must be grounded to receive a shock.

The Primary Goals and Objectives of the Orleans Non-Lethal Predator Control Program

The primary goal of the Nauset Non-lethal Predator Control Program is to comply with the statutes and Guidelines which govern the management of piping plovers and their habitat as set forth in The Massachusetts Endangered Species Act, G.L. c, 131A; the U.S. Endangered Species Act of 1973 ESA; 16 U.S.C. § 1531; and the Massachusetts Wetlands Protection Act, G.L. c. 131 § 40; 310 CMR 10.37, 10.58(4) (b), and 10.59) 310 CMR 10.5 and the Atlantic Coast Piping Plover Recovery Program for the Northeast, and the Habitat Conservation Plan and Permit issued to Orleans.

In carrying out their statutory mandate and the conditions of the HCP, Nauset Managers decided to deploy the non-lethal predator control program ahead of schedule. The stated non-lethal predator control program goals are: (1) to promote early and first time successful adult nesting attempts; (2) to decrease the high rate of historical abandonment of nests which are exclosed; (3) to decrease renesting events due to nest loss by predation events; (4) to increase piping plover productivity.

To accomplish these goals, a practical and novel approach to non-lethal predator control was devised which focused on *behavior modification* of the primary predators.

Red fox and Eastern coyotes are essentially canines. Canines can be trained to change *their behavior* based on the introduction of positive and negative associations with the exclosures. It is not likely that the predators at Nauset have ever encountered electric shocks. Therefore the shocks deeply imprint with the omnivores in a very dramatic, significant, and negative way. Specifically, we attempted to change the way they viewed the exclosures, by introducing a negative stimulus rather than a food reward.

Determining what type of Predator Behavior we Are Attempting to Modify

A true predator can commonly be known as one that kills and eats another living thing. Whereas other types of predator all harm their prey in some way which may lead to mortality.¹ Predators may hunt actively for prey, or sit and wait for prey to approach within striking distance, as with ambush predators. A close symbiosis between piping plovers and their main predators has been occurring for several decades. The main predators are well established at Nauset and they have adapted to nearly every effort by managers to modify their predation behavior in hopes of protecting nesting plovers and their chicks. By far the single greatest predator event effecting plover productivity at Nauset since 1991², is successive rates of abandonment of nest exclosures following harassment by red fox and coyotes.

Piping plover's productivity at Nauset is effected by three (4) types of predator behavior as follows³:

1. Chance predation: Small, recurring, accidental losses –as a predator just happens to come across a nest. The predator may not repeat the performance.

¹ Encyclopedia of Wikipedia "Predation" 2015

² In 1991 the Massachusetts Department of Environmental Protection issued an Order stating that the ORV activity on Nauset spit required a Beach Management Plan and Order of Conditions sufficient to protect the rare and endangered species habitat at Nauset Spit. Enclosures have been used to protect nests since the Order issued and the Plan was developed (24 years to date.)

³ Leopold, Game Management, p22.

- 2. Habitual Predation: The predator discovers a nest by chance and may develop the ability to find more nests, and become habitual predators at plover nest sites.
- 3. Harassment: This may affect the welfare of the prey species and induce starvation, failed nest attempts, exposure, resulting in a killing of the species.
- 4. Social learning: This type predation involves the transferring information from a more experienced individual (adult) to a naive one such as a kit or coyote pup ⁴. It can be carried over from one generation to the next and closely resembles habitual predation. Once learned by the young they will repeat the predatory behavior, visit the locations in which they learned where a meal can be obtained, such as nest location area or an exclosure.

We concluded that it was possible to target all 4 of the above –referenced predator behaviors and that these behaviors were being exhibited by the primary predators.

METHODS ADOPTED TO ACHIEVE GOALS & OBJECTIVES WITH THE NON-LETHAL PROGRAM

- Non-lethal management implemented
- Location, dates, and days implemented
- Prototype developed to accomplish non-lethal program
- Research

Non-Lethal Behavior Modification

One important factor with our program is that we did not introduce "controls" into the program. The main reason is that it was simply not practical, feasible, and affordable. We determined that so called controls would yield little results which could be relied upon. Our rationale is best stated in the following logic. "When analyzing large scale and long-term observational studies, one cannot adequately control for all inherent but unmeasured site differences that may be influencing the dependent variable⁵. The Nauset Beach habitat is large and

⁴ Laland, Kevin N. (2008). "Animal cultures". *Current Biology* **18** (9): R366–70

⁵ Evidence-based decisions on the use of predator exclosures, Brooke Maslo *, Julie L. Lockwood, August 2009

diverse. The number of predators, and their individual behavior, from predation event to event, can be influenced by unforeseen or unknown factors which occur nightly and vary to such a degree that drawing any conclusions from the introduction of controls would be virtually impossible. Moreover, if we introduced a control into the program, (such as not electrifying wire at a baited exclosures), we ran the enormous and unacceptable risk that the predator would gain entry into the non-electrified exclosures and receive a reward.

We elected to test our behavior modification theory *by specific daily observations and meticulously documenting our observations*. We recorded track evidence daily. Photographs of tracks were taken through a set of established consistent criteria. This criterion was provided to us by the Massachusetts Division of Fisheries & Wildlife.

The data collection and photographs are attached to a folder with this report identifying the date and tracks that they were observed. It is attached as "Exclosure Data" with a "Folder of Photographs" that can be linked to specific exclosures, dates, and times.

The Pochet Washover Area



The Pochet Washover Area

Map showing location of electrified exclosures (\bigcirc) and non-electrified exclosures which were incubating active plover nests (\bigcirc) located in the primary study area of the Pochet Washover.


The Nauset Spit

Map showing location of electrified exclosures (•) and non-electrified exclosures which were incubating active plover nests (•) located on the North Spit.

Research on Electric Fence Prior to Deployment

Through research we determined that the minimum voltage suggested to repel predators is over 4,000 volts. However, joule output is the best indicator to use when purchasing a fence controller. To exclude predators, a minimum joule output of 1 is suggested. The prototype emitted just less than 1 joule and was within the range of 4000 to 6000 volts. This range is recommended so not to injure the animal but enough to repel. Electric fencing used to repel predators must emit enough of a shock to imprint the predator strongly.

PROTOTYPE & SPECFICATIONS

The electrified decoy exclosures use the standard design specifications approved by the U.S. Fish & Wildlife Service in Appendix "F" for Exclosures. The prototype is designed to electrify the wire outside the exclosure cage at 3 levels. The decoy electrified exclosures were designed to replicate the non-electrified exclosures used on active nests. Changes in the design could lead to smart predators such as red fox and eastern coyotes differentiating between the decoy and live nest exclosures. The first experimental electrified exclosures was deployed on Nauset Spit on 3/29/15. It was placed on an active red fox and eastern coyote game trail at the head of Nauset Heights where the omnivores enter before reaching the habitat of the plovers. As the season progressed we deployed a total of six (6) decoy electrified exclosures with the same design and specifications. The specifications for the electrified design are as follows: (1) B10 Energizer Unit, (shown below) is attached to a stake, which is also nailed to prevent perching. Three (3) steel ground rods are placed in the sand to a depth of at least three (3) feet and connected to the main ground leading from the B10 Energizer. By using a 14 gage wire which connects all the rods to the lead grounding wire of the B10 Unit. A current of 6000-7000 volts can be achieved with three (3) ground rods. It is important to use at least three (3) rods made of gallized steel or an alloy sufficient to provide the grounding effect. The electrical current should be tested daily with a digital voltage reader. This will provide the most accurate reading. If properly installed the 6000+ volts can be achieved at all three (3) wire levels. This is not enough electric current to injure the predator, but leaves a lasting impression with the predator who may have encountered the electric current for the first time in its life

The B10 Energizer



B10 Energizer with 3 levels of electrified wire emitting 6000 volts on 3 second intervals. Unit operates on 6 D-cell batteries for 30+/- days.



Fully deployed electrified Exclosure setup at the entrance to a game trail off of little

All decoy exclosures were baited with fresh fish to attract the predators. The purpose in baiting the exclosures was to draw the predators in close enough to receive the electrical shock. It should be noted that we also made a determination that the placement of the baited exclosures would not attract predators into the habitat based on the fact that the predators were already witnessed foraging in the habitat nightly. When a predator came into contact with the electric wire, a shock of 6000 volts was received. We field tested the electric wires at all three levels daily with a digital voltage meter which provided a very accurate voltage reading as shown in the photograph below.



Photo showing 6.56 volts of electricity being emitted from lower electric wire at decoy exclosures

Each time a live plover nest was exclosed, we mimicked the design of the decoy exclosures including the 3 levels of wire and insulators. When a foraging predator encountered the exclosures it would see the wire. We assembled much of the exclosures outside the area of the actual nest and then carried a partially assembled exclosures to the nest site. Our average time for installing an exclosure over a nest was 10 minutes or less. The incubating nests looked exactly the same as the decoy except it did not contain a B10 Energizer Unit.

EVALUATION OF NON-LETHAL PREDATOR CONTROL PROGRAM YEAR 1

- Number of exclosures deployed & nests impacted
- Impact of electrified exclosures when introduced.
- Number nest(s) hatched, number chicks fledged in areas where nonlethal predator management was implemented

Number of Electrified Exclosures Deployed & Nests Impacted

Beginning in early April approximately six (6) decoy excloures were deployed. Three (3) were deployed on Nauset South in the area of the Pochet Washover, and three (3) were deployed on the North Spit. They were moved periodically to ensure that the predators did not associate the negative stimulus with a certain location. They were baited as needed with fresh fish (salmon, bluefish and tuna fish) to maintain predator interest in the exclosures.

Seventeen pairs of plovers nested as follows:

- Ten nests were established on Nauset South in the Pochet Washover
- Five pairs established nests on the North Spit.
- Two pairs established nests on the Nauset South between Trail 2-4.

The Pochet Washover nests had a fledge rate of 3.1. There was an additional nest which was the HCP nest. An individual report on the HCP nest was generated. The fledge rate on the North Spit was 1.4.

Impact of Electrified Decoy Exclosures

The first decoy electrified exclosure was deployed in the field in mid-April of 2015. The remaining decoys were deployed in April to mid- May. Within 72 hours a red fox attempted to dig at the base of the exclosure in an attempt to retrieve the bait reward. It was shocked and did not return to the exclosure. All electrified exclosures received digging attempts within the first 10 days of their deployment. However, none of the red fox, eastern coyote, or fishers made any further attempts at digging on the decoy exclosures once the initial contact with the electric wire was made. The Nauset Natural Resource Manager contacted MADFW seeking input and guidance on setting criteria to record and document the program.

The MADFW suggested a set of criteria which was developed for daily field observations at each of the electrified exclosures. Tracks were measured, recorded and photographed daily during the plover breeding and nesting season. The criteria measured the amount of track coverage on the ground by %. These tracks were measured from the base of the exclosures out to a distance of 15'. It is shown in the Spreadsheet entitled "**Electrified Exclosures Data**" which appears in a separate attachment to this Report.

A predator pattern soon emerged

Daily recording indicated that close encounter circling ceased almost immediately after the initial digging attempts which led to predator contact with the electric wire surrounding the exclosures. In days following the initial visits which resulted in electric shocks, predator tracks were documented leading right up to the wire then backing away. Monitors began to observe that predator tracks also began to <u>pass by</u> the exclosures with no circling. What became apparent from the daily recordings and photographs was that the predators were passing by the exclosures at a distance of 5-15' or more or not visiting the exclosures at all.

Impact of Non-Electrified Incubating Exclosures

There was a measured result achieved with all the non-electrified exclosures strategically placed near the electrified decoy exclosures. All of the incubating nests in the Pochet Washover were closely monitored for predator activity. The only digging event that occurred on incubating nests near electrified decoy exclosures is shown in the photo below. The photo shows digging well outside of the perimeter of the decoy electric wire. This strongly suggests that the predator, a coyote, was wary of the wire and had experienced a negative response when it approached the electrified baited decoy and attempted to obtain the food reward. Note: the wire is very thin and cannot be seen in the size of the photo inserted below due to formatting issues. The yellow arrows show the approximate location of the wire. Each nest exclosed was carefully retrofitted with the same wire (but not energized), in the same location, with the same design as the electrified exclosures.



Pochet Washover (P7Nest) Track Photos, Showing Predator Digging outside the Perimeter of Incubating Nest on a Non-Electrified Exclosure. This nest hatched out all 4 eggs, 4 chicks fledged. Electric wire is difficult to see as it is only 200m in width. It is located on the outside stakes at 3 levels. Date: 6/10/15 Time 6:45 A.M. TAKEN BY HAND HELD CAMERA by Monitor.

In the Pochet Washover area, not one nest was abandoned due to predator harassment by close encounter circling or digging at the base of the exclosures.

However, on the North Spit there were two (2) abandonments of two (2) nests in close proximity to one another on the outer Spit. Nests NSE1 and NSE 2 were abandoned in June after they were exclosed. Close encounter circling and digging at the base of the exclosures occurred after the exclosures were placed on

the nests. It is possible that the presence of exclosures in this scenario may have led to the abandonment.

The circling occurred during one night. The tracks were positively identified at the base of the exclosures as red fox. The pairs attempted re-nests after the abandonment. At this time, there were no electrified decoy exclosures in proximity to the nests because of delays in shipping the B10 Units. The mere fact that the nests were subject to close encounter circling, even for one evening, was enough to cause the abandonments. A decision was then made not to exclose any other nests on the Spit because of the nature of the intense red fox predator behavior and the fact that the red fox may not have come into contact with the single electrified decoy exclosure which was placed more than 1 mile south of the abandoned nests. It is our belief, that if the incubating plover nest exclosures were surrounded by energized wire, then the fox would have received a shock and forfeited the attempt.

PHASE TWO- 2016

ON-SITE MITIGATION

In 2016, we plan to implement Phase Two of the Non-Lethal Predator Control Program. In March 2016, all the decoy electrified baited exclosures will be installed and regularly baited. It is imperative that the decoy exclosures are deployed in the early spring to ensure that the modified behavior (avoidance of exclosures) is transferred from the adults to the offspring in the social learning behavior.

In its first year the non-lethal predator control program at Nauset generated strong public support and success. The results of using electrified decoy exclosures suggest that they may modify the behavior of the on-site predators. One of the highest fledge rates recorded at Nauset Beach and in the region occurred during the year that the decoy electrified exclosures were introduced. The behavior modification theory has merit and needs to be implemented for multiple seasons.

OFF-SITE MITIGATION

In accordance with the HCP requirements, the Town of Orleans provided \$10,000.00 to MADFW to be used for off-site mitigation. The funds will be used for the 2016 selective predator management at Duxbury Beach (pending final written approval from USFWS). The USDA APHIS work plan has a total budget of \$12,500 so mitigation funds will account for 80% of the cost. In 2015 there were 25 breeding pairs of piping plovers at Duxbury Beach. After the 2016 season MADFW will provide USFWS with a 2016 breeding pair count for inclusion in next year's report.

G. Town of Orleans and Chatham Annual Beach Agreement

file w/ multigear contracts original

NAUSET BEACH AGREEMENT

This agreement made this 8th day of <u>April</u>, 2015 by and between the Town of Orleans ("Orleans") and the Town of Chatham ("Chatham") pursuant to the provisions of M.G.L. c. 40 §§4 and 4A, and every other power which they may have, acting by their respective Boards of Selectmen.

WHEREAS, Nauset Beach is a unique conservation and recreation area located in the Town of Orleans and the Town of Chatham;

WHEREAS, the parties desire to provide for the joint patrol and management of Nauset Beach, including, but not limited to, beach patrol, fire protection, rescue services and endangered shore bird monitoring, within the Town of Orleans and the Town of Chatham from a point south of the Nauset Beach Parking lot to the Chatham Inlet;

NOW THEREFORE, in consideration of the foregoing and the mutual promises and agreements contained herein, the parties agree as follows:

I. <u>Responsibilities.</u>

upply and maintain a vehicle(s) and fied personnel to adequately patrol the ons portion of Nauset Beach, considering ong seasonal demands and any reasonably ngency which may arise. Make good faith efforts to patrol the nam portion of Nauset Beach subject to vailability of resources and personnel.
force the Rules and Regulations of Nauset in the Orleans portion of Nauset n. Make good faith efforts to enforce the and Regulations of Nauset Beach in the nam portion of Nauset Beach.
gistration related procedures: pect all registered O.R.V.s, except those gistered in Chatham, for compliance with nost recently adopted <i>Nauset Beach Rules</i> <i>Regulations for O.R.V.s</i> ; llect registration fees for O.R.V.s, except nose vehicles registered in Chatham, and ant for such fees collected; laintain accurate records of vehicles

d. Provide an educational movie on the use and management of Nauset Beach for showing to all O.R.V.s registered to Chatham residents,	respective owners; d. Provide an educational movie on the use and management of Nauset Beach for showing to all O.R.V. operators and Orleans Camp Licensees;
 Supply and install signs, string, posts, wire fencing, and other necessary equipment, materials, and personnel, as may be reasonably necessary, to mark trails, delineate O.R.V. corridors, protect vegetation, and protect shorebird species that are listed as Threatened, Endangered, or of Special Concern in the Chatham portion of Nauset Beach. Provide protection for shorebird species that are listed as Threatened, Endangered, or of Special Concern in the Chatham portion of Nauset Beach. Provide protection for shorebird species that are listed as Threatened, Endangered, or of Special Concern in the Chatham portion of Nauset Beach, and monitor the protection measures implemented, including, but not limited to, the following: Cause a qualified person(s) to monitor the Chatham section of Nauset Beach if shorebird species listed as Threatened, Endangered, or of Special Concern are determined to be present, as well as provide required protective measures for the birds and information to the Town of Chatham in case vehicle closures are needed; Supply the Massachusetts Division of Fisheries and Wildlife with available data and year-end reports on shorebird protection on the Chatham portion of Nauset Beach; Supply and maintain All Terrain Vehicle(s) ("A.T.V.") and/or O.R.V. (s) for the monitoring of shorebirds in the Chatham portion of Nauset Beach. 	 4. Supply and install signs, string, posts, wire fencing, and other necessary equipment, materials, and personnel, as may be reasonably necessary, to mark trails, delineate O.R.V. corridors, protect vegetation, and protect shorebird species that are listed as Threatened, Endangered, or of Special Concern in the Orleans portion of Nauset Beach. 5. Provide protection for shorebirds species that are listed as Threatened, Endangered, Endangered or of Special Concern in the Orleans portion of Nauset Beach. 5. Provide protection for shorebirds species that are listed as Threatened, Endangered or of Special Concern in the Orleans portion of Nauset Beach, and monitor the protection measures implemented, including, but not limited to, the following: a. Cause a qualified person(s) to monitor the Orleans section of Nauset Beach if shorebird species listed as Threatened, Endangered, or of Special Concern are determined to be present, as well as provide required protective measures for the birds and information to the Town of Orleans in case vehicle closures are needed; b. Supply the Massachusetts Division of Fisheries and Wildlife with available data and year-end reports on shorebird protection in the Orleans portion of Nauset Beach.
	6. Provide, maintain, operate, and staff a check booth in the Orleans portion of Nauset Beach, as needed.
	7. Provide printed regulations, applications, permits, stickers, and educational material for both Towns to provide to residents and other users of the beach

8. Provide a trash dumpster(s) at the gate of
Nauset Beach in Orleans for the use of all
O.R.V. operators, except for use by Orleans
Camp Licensees, and provide for disposal of
the trash collected. Without limiting the
generality of the foregoing sentence, the camp
Licensees are expressly prohibited from using
the dumpster(s) to dispose of any bulky waste,
including but not limited to, household trash,
propane tanks, building debris, furniture, or
the like.
9. Maintain informational signs at the parking
lot of Nauset Beach in Orleans regarding the
appropriate use of Nauset Beach south of the
parking lot.

<u>General</u>

- 1. All O.R.V.s, including those of Orleans Camp Licensees, must check "on" or "off" upon entering or leaving Nauset Beach at the check booth provided for in section I.6. above during the season when the check booth is open South of the Nauset Beach parking lot.
- 2. All persons, including residents, non-residents and Orleans Camp Licensees, who seek to register vehicles to use Nauset Beach shall yearly submit complete registration forms and all applicable registration fees, as well as view the educational movie, referred to herein on the use and management of Nauset Beach.
- 3. In the event that Nauset Beach is full, visitors to camps may only access the beach provided the Orleans Camp Licensees has delivered a "visitor pass" form, signed by the Orleans camp Licensees (on a form approved by the Orleans Park Department), to the Orleans gate at least 8 hours in advance. A camp visitor pass will allow vehicle access to the specific camp only. Vehicle access to other areas of the beach is not permitted.
- II. <u>Cross Jurisdiction Patrols</u>. Chatham hereby specifically authorizes the Town of Orleans personnel to carry out supplemental patrols and to enforce the Rules and Regulations of Nauset Beach in the Chatham portion of Nauset Beach. Chatham, as a result of not maintaining a vehicle to patrol their section of the beach, agrees to hold harmless and, to the extent permitted by law, indemnify the Town of Orleans, its agents, officials, servants, and employees from and against any and all liabilities, actions, suits, proceedings, demands, or claims, of any nature brought by or on behalf of a third party against the Town of Orleans, which arise out of Orleans' vehicular patrols on the Chatham portion of the Nauset Beach. Chatham shall not be required to indemnify in the event that the liabilities, suits, damages, or actions arise out of Orleans patrols that: (1) are outside of the scope this agreement; or (2) constitute a violation of a Federal or State law or statute; or (3) constitute gross negligence. Should Chatham be required to indemnify Orleans, the choice of counsel and scope of indemnification shall be at the sole discretion of Chatham. To this end,

Chatham may, at its sole discretion, make decisions regarding litigation or settlement. Should Orleans refuse to honor the decisions of Chatham in this regard, indemnification shall be deemed waived.

- III. <u>Annual Review</u>. The Orleans and Chatham Boards of Selectmen shall meet annually to review this Agreement, related fees, and rules and regulations governing Nauset Beach. They may, if deemed appropriate, adopt new fees and/or rules and regulations, revise the provisions contained herein concerning the Responsibilities of each Town (Section I) and Beach Management (Section VIII), and take any other action consistent with this Agreement. Any amendments to this agreement must be expressed in writing and executed by the Boards of Selectmen from both towns.
- IV. <u>Termination</u>. Notwithstanding anything contained herein to the contrary, each Town shall have the right to terminate this Agreement by thirty (30) days prior written notice, at any time during the period from November 1 to February 1 of any year the Agreement is in effect, for any of the following:
 - 1. Material breach by the other Town of any of the provisions contained in this Agreement.
 - Lack of appropriation of funds necessary to fulfill the Town's responsibilities set forth in this Agreement.
 - 3. Physical changes in Nauset Beach resulting in the Town being unable to fulfill its responsibilities set forth in this Agreement.
 - 4. The issuance of a Decision, Order, or Directive from a governmental agency of competent jurisdiction, the effect of which is to prevent the Town from carrying out its responsibilities under this Agreement.
- V. <u>Employee Status.</u> Employees of the Town of Orleans and employees of the Town of Chatham shall, while acting pursuant to the provisions of this Agreement, be deemed to be employees of their respective Towns even though they may be working, under the terms of this Agreement, on a portion of Nauset Beach owned by the other Town.
- VI. <u>Term/ Duration of Agreement.</u> Unless otherwise terminated under the provisions of Section IV of this Agreement, above, the Agreement shall run for a period of three (2) years from May 1, 2015 to April 30, 2017.
- VII. <u>Revenue Distribution</u>. Revenue will be retained as follows: Chatham keeps fees charged to Chatham residents and property owners. Orleans keeps fees charged to Orleans residents and camp licensees. Out of town sticker fees shall be kept 100% by Orleans. Orleans shall be under no obligation to provide special escort services for Chatham property owners.
- VIII. Beach Management.
 - 1. The Town of Chatham has previously adopted a plan to manage that portion of Nauset Beach located in Chatham, which plan is entitled *"TOWN OF CHATHAM MANAGEMENT PLAN FOR OFF ROAD VEHICLE (ORV) ACCESS TO NAUSET (NORTH) BEACH FOR THE PROTECTION OF SHOREBIRD SPECIES LISTED AS THREATENED, ENDANGERED, OR SPECIAL CONCERN,"* dated January 26, 2007 ("Chatham Management Plan").

- 2. Management of that portion of Nauset Beach located in Orleans shall be as set out in Order of Conditions, DEP SE 54-2246, issued June 25, 2014, and recorded in the Barnstable Registry of Deeds in Book 28280 Page 185 ("Orleans Order of Conditions"). The provisions of the Orleans Order of Conditions are incorporated fully herein by reference.
- 3. To the extent that the Chatham Management Plan or the Orleans Order of Conditions is inconsistent with this Agreement, the provisions of the Chatham Management Plan or the Orleans Order of Conditions shall control.
- 4. To the extent permitted by "Guidelines For Managing Recreational Use Of Beaches To Protect Piping Plovers, Terns, And Their Habitats In Massachusetts," (1993) issued by the Massachusetts Division of Fisheries and Wildlife, the entirety of Nauset Beach will be managed to remain open to all O.R.V. traffic, taking into consideration tide and erosion.
- 5. <u>Vehicle Management</u>. The following provisions in VIII.5 below, appear as an Addendum to the Chatham Management Plan, entitled therein and hereinafter as "Vehicle Management," and are specifically made part of this Agreement:
- a. <u>RECREATIONAL AND GENERAL PUBLIC VEHICULAR ACCESS</u> Recreational and general public access of vehicles shall be permitted only in authorized areas and trails of the beach as posted.

When a Piping Plover or Least Tern nesting habitat is located and identified, it should be clearly marked with symbolic fencing and warning signs.¹ Plover or tern nests that are located and identified shall be mapped by qualified monitors, and the information shall be shared between the Towns as soon as possible.

When vehicular access infringes upon the nesting habitat, vehicle traffic and parking shall be rerouted, or altered, around the outside edge of the nesting habitat for as long as the nesting habitat is active, to ensure the safety of the plovers or terns. Marking and posting of the habitat shall be performed in accordance with the guidelines set forth in the Management Plan.

As long as adequate provisions have been made to alter the traffic pattern around the habitat area, vehicular access may be continued. However, if no viable rerouting of traffic is possible due to the location of the nesting habitat, vehicles shall be prohibited through, or into the delineated nesting habitat area. Vehicular access shall be prohibited for as long as necessary to ensure the proper fledging of the plovers and terns as set forth in this beach management plan.

¹ Each Town agrees to install such referenced symbolic fencing and signs in accordance with the plan attached as Exhibit A (on file), which plan shall be revised annually by each Town's respective parks and beach authority.

Only essential vehicles, described below, shall be permitted to have access into or through the nesting habitat area, and only under the conditions described below.

All vehicular access restrictions, and conditions of access, will be consistent with the Massachusetts Division of Fisheries and Wildlife document, known as, "Guidelines For Managing Recreational Use Of Beaches To Protect Piping Plovers, Terns, And Their Habitats In Massachusetts" (1993), utilizing signage, symbolic fencing, use of monitors, and methods that are designed to protect the plover and tern nesting habitat.

b. DEFINITIONS OF ESSENTIAL VEHICLES

Essential Vehicles (Category 1): Public Safety Vehicles used for emergency service purposes belonging to a municipality, county, state, or federal entity for a police agency, fire service or rescue service; vehicles belonging to parks, beaches, and public works of the Towns of Orleans or Chatham providing necessary services or maintenance, and vehicles operated for species monitoring and management.

Essential Vehicles (Categary 2): Vehicles bearing an Orleans Camp Licensees sticker and belonging to Licensees of "camps" (structural dwellings), their immediate family members and contractors providing emergency repair.

c. ACCESS OF ESSENTIAL VEHICLES

Under restricted conditions, as outlined below, essential vehicles may be permitted to have access into and through a nesting habitat area containing unfledged chicks. Access will take place only during daylight hours, with the exception of emergency situations involving imminent threat to public health and/or safety. Open, 3 or 4-wheel all-terrain vehicles (ATVs) shall be used whenever possible for monitoring and law enforcement because of the improved visibility afforded the operator.

The access of essential vehicles (Category 1) shall be limited by utilizing monitor(s), who, after determining the location of unfledged chicks, shall accompany and walk in front of the vehicle operating at a speed of five (5) miles per hour proceeding through plover or tern nesting habitat. These essential vehicles (Category 1) will be restricted to operate in this manner, through a plover or tern nesting habitat, on a public safety, need-only basis, and will limit the number of trips through the identified area to only the minimum necessary to accomplish the necessary objective.

Town of Chatham public safety essential vehicles operating through the Orleans portion of Nauset Beach will operate in the above described manner, and additionally, shall be required to notify the Town of Orleans Parks and Beaches Department, in advance, to make arrangements for access through the Orleans section of Nauset Beach.

Emergency situations may require access without prior notice or other provisional arrangements, but will be conducted as closely to this manner as possible.

Vehicular access for essential vehicles (Category 2) shall be required to make arrangements, notifying Orleans in advance, utilizing the above described method. In addition, essential vehicles (Category 2) shall be required to have the Orleans Parks and

Beaches personnel on scene to supervise the method of vehicular access. It is anticipated that such vehicular access will be limited to 1-2 times per day, and limited to one camp owner pass per day, subject to the availability of personnel. It is further anticipated that any escort service will require the hiring of additional personnel. An operator of an essential vehicle (Category 2) shall be responsible for all incremental escort costs, and shall reimburse the Towns as applicable, incurred and associated with accessing the camps.

Any decision as to providing vehicular access for essential vehicles (Category 2) to restricted areas of the Beach shall be discussed, reviewed and approved by the Orleans Natural Resources Manager prior to access being granted, subject to the availability of personnel.

There shall be no vehicular access other than the methods described above, and shall be consistent with the document, "Guidelines For Managing Recreational Use Of Beaches To Protect Piping Plovers, Terns, And Their Habitats In Massachusetts," (1993) issued by the Massachusetts Division of Fisheries and Wildlife.

- IX. Hold Harmless. Each Town agrees to hold harmless and to the extent permitted by law indemnify the other Town and its representatives, employees and agents, from and against any and all liability, suits, claims, losses, injuries or expenses (including reasonable attorneys' fees) brought by a third party, with respect to activities referenced in, related to and arising out of this Agreement.
- X. Representations. Each Town warrants and represents that its Board of Selectmen is duly authorized to enter into this Agreement.

This agreement is binding upon on the respective towns as well as their various boards, commissions, departments and officers.

Executed as of the day and the year first above written.

TOWN OF CHATHAM Board of Selectmen

TOWN OF ORLEANS Board of Selectmen alline

H. Least Tern Aging Guide

Least Tern Chick Aging Guide

Prepared by MassAudubon for use by MassAudubon Coastal Waterbird Program Staff



Age Class 1-5 days

About 2 Days Old

Tern chicks in Age Class 1-5 Days are distinguished by:

A. entirely downy

B. yellow coloration with brown spots

C. often will be found in or near the nest bowl

D. quite small in size compared to other ages and will be more difficult to find

Age Class 6-10 days



About 9 Days Old

Tern chicks in Age Class 6-10 Days are distinguished by:

- A. coloration is still yellowish with brown mottles
- B. feather development seen on the wings
- C. at age 10 days, chick is about 1/2 the size of an adult
- D. will be spending more time in vegetation

Age Class 11-15 days



About 11 Days Old

Tern chicks in Age Class 11-15 Days are distinguished by:

A. coloration on the top will change from yellow to brownish-gray mottle

- B. primaries continue to develop and elon-gate
- C. at age 15 days, chick is about 2/3 the size of an adult
- D. majority of time will be spent in vegeta-tion hiding
- E. when running, will resemble a bowling pin, head will be erect

Age Class 16-20 days



About 18 Days Old

Tern chicks in Age Class 16-20 Days are distinguished by:

A. similar in size and shape to adult, but a bit smaller and not fully feathered

- B. will be more visible and will spend more time near shoreline
- C. cannot fly

Age Class 21+ days - Fledged



A. similar in size and shape to an adult

B. forehead and top of head brownish gray

C. black markings around eyes and the back of the head

- D. capable of sustained flight
- E. may still be fed by an adult



I. Mitigation Escrow Agreement Orleans

ESCROW AGREEMENT ORLEANS CONSERVATION & MANAGEMENT PERMIT

This ESCROW AGREEMENT (this "<u>Agreement</u>") is entered into as of this _____ day of _____, ____ by and between the Massachusetts Division of Fisheries and Wildlife, by and through the Natural Heritage and Endangered Species Program, having a principal place of business at 1 Rabbit Hill Road, Westborough, MA, 01581 ("<u>NHESP</u>"); the Town of Orleans, MA ("Town") (proponent) having a principal place of business at 19 School Road, Orleans, MA 02653; and Michael D. Ford, having a principal place of business at 72 Main Street (Route 28), West Harwich, MA 02671 ("<u>Escrow Agent</u>"). NHESP, Town of Orleans, and Escrow Agent are referred to herein collectively as the "<u>Parties</u>".

1. <u>Recitals</u>

The Conservation and Management Permit No. 016- .DFW ("Permit") a. issued by NHESP to the Town contains financial assurance provisions in paragraph of the Special Conditions section requiring that funds are available in the sum of up to three annual payments of \$11,600.00, the final amount of funding to be determined as set forth in the Permit (the "Funds"), to carry out educational outreach, increased law enforcement, and selective predator management activities for the benefit of Piping Plover populations in Massachusetts. These payments will also contribute to satisfying the requirement of Certificate of Inclusion No. 16-___, issued by the Division to the Town pursuant to United States Fish and Wildlife Service . During 2016, the Permit requires the Town to deposit Incidental Take Permit \$11,600.00 into the escrow account, prior to carrying out the covered activities authorized by the permit. In accordance with the terms of the Permit, the Town shall make additional deposits of up to \$11,600.00 per year in 2017 and 2018, each annual deposit to occur by February 15 of the year in question. Therefore, as set forth in the Permit, the Town shall deposit a minimum of \$11,600.00 and up to \$34,800.00 into the escrow account over the course of the three year Permit Term, depending on the actual number of Piping Plover broods, nests, or territories exposed to the covered activities.

b. The Parties agree the Funds shall be paid by the Town to the Escrow Agent and held in an interest bearing escrow account ("<u>Escrow Account</u>") (further defined in 2 below) and expended pursuant to the terms and conditions described below to mitigate for OSV-related impacts associated with the OSV escorting program (the "<u>Project</u>"), located in Orleans, Massachusetts.

The Parties enter into this Agreement for the purpose of defining the terms and conditions under which the Funds shall be held and disbursed.

NOW THEREFORE, after consideration of the above recitals, the Town, NHESP and the Escrow Agent hereby covenant and agree as follows:

2. Escrow Account

a. The Town of Orleans shall deliver the Funds to the Escrow Agent in the amounts, schedule and manner set forth in paragraphs _____ of the Permit and as further described in the Habitat Conservation Plan referenced therein.

b. All funds delivered by the Town to the Escrow Agent shall be deposited by

the Escrow Agent in an interest bearing account or held in obligations by the US Government at one or more banks ("<u>Depository Bank</u>"), said accounts to be at all times insured by the Federal Deposit Insurance Corporation and which shall pay interest on the Funds at a reasonable rate. The Depository Bank shall be entitled to charge the Town directly for services related to maintenance of the Escrow Account at a rate not exceeding the Bank's standard charges to other customers for similar services. Alternatively, the Town may supplement the Funds identified in paragraphs 1 and 2 with a contribution of an additional amount sufficient to cover anticipated fees.

c. The Escrow Account shall be opened by the Escrow Agent and funds may be withdrawn only by the Escrow Agent and no other person. Disbursements shall be made from the Escrow Account only in accordance with the terms of this Agreement.

d. The Escrow Agent shall maintain a record of all deposits, income, disbursements, and other transactions of the Escrow Account. Upon request, the Escrow Agent shall provide to any of the Parties a written accounting of all transactions. The Parties shall have the right to inspect all books and records of the Escrow Agent relating to the Escrow Account at reasonable times upon request. Escrow Agent's computation of the Funds shall be deemed to be correct in the absence of manifest error.

e. The Escrow Agent shall keep possession of the book(s) and bank statements of the Escrow Account until such time as it is terminated in accordance with the terms of this Agreement, or until a successor Escrow Agent is appointed as provided herein.

3. <u>Disbursements</u>

From time to time, NHESP may, on or before the date which is five (5) years from the date of this Agreement, request in writing the Escrow Agent to deliver all or portions of the Funds, plus any interest thereon, for selective predator management, to provide a net-benefit to the Piping Plover in Massachusetts. Upon receipt of such written request, the Escrow Agent shall deliver the requested portion of the Funds to NHESP or any party designated in writing by NHESP. Delivery of the Funds in accordance with the terms of this Agreement shall be made by cashier's check, or by federal funds wire transfer, at the option of the payee.

a. The Escrow Agent may make disbursements to the Depository Bank for services rendered in maintaining said account, consistent with paragraph 2b.

b. If, at the end of five (5) years from the date of this Agreement, any portion of the Funds is still held in escrow under this Agreement, then NHESP shall, within six (6) months after such five (5) year date, develop a plan for the use of any remaining Funds by NHESP or any party designated in writing by NHESP for further management for the benefit of the Piping Plover in Massachusetts.

c. The Escrow Agent shall release any remaining Funds to NHESP or any party designated in writing by NHESP in accordance with such plan.

4. <u>Termination of Agreement</u>

This Escrow Agreement shall terminate, and the Escrow Agent shall be relieved of all liability,

after all funds in the Escrow Account have been properly disbursed in accordance with the terms and conditions of this Agreement. When the Escrow Account is terminated, the Escrow Agent shall provide a final accounting of all transactions hereunder to the Parties.

5. <u>Duties and Liabilities of Escrow Agent</u>

a. The sole duty of the Escrow Agent under this Agreement is to receive funds from the Town and to hold the funds for disbursement according to Section 3 above. The Escrow Agent shall be under no duty to pass upon the adequacy of any documents, to determine whether any of the Parties are complying with the terms and provisions of this Escrow Agreement, or to determine the identity or authority of any person purporting to be a signatory authorized by the Town or NHESP.

The Escrow Agent may conclusively rely upon, and shall be protected in b. acting on, a statement, certificate, notice, requisition, order, approval, or other document believed by the Escrow Agent to be genuine and to have been given, signed and presented by a duly authorized agent of the Town or NHESP. The Escrow Agent shall have no duty or liability to verify any statement, certificate, notice, request, requisition, consent, order, approval or other document, and its sole responsibility shall be to act only as expressly set forth in this Agreement. The Escrow Agent shall not incur liability for following the instructions contemplated by this Agreement or expressly provided for in this Agreement or other written instructions given to the Escrow Agent by the Parties. The Escrow Agent shall be under no obligation to institute or defend any action, suit or proceeding in connection with this Escrow Agreement, unless first indemnified to its satisfaction. The Escrow Agent may consult with counsel of its choice including shareholders, directors, and employees of the Escrow Agent, with respect to any question arising under or in connection with this Agreement, and shall not be liable for any action taken, suffered or omitted in good faith. The Escrow Agent shall be liable solely for its own willful misconduct.

c. The Escrow Agent may refrain from taking any action, other than keeping all property held by it in escrow if the Escrow Agent: (i) is uncertain about its duties or rights under this Escrow Agreement; (ii) receives instructions that, in its opinion, are in conflict with any of the terms and provisions of this Agreement, until it has resolved the conflict to its satisfaction, received a final judgment by a court of competent jurisdiction (if it deems such action necessary or advisable), or it has received instructions executed by both the Town and NHESP.

d. Escrow Agent is acting, and may continue to act, as counsel to the Town in connection with the subject transaction, whether or not the Funds are being held by Escrow Agent or have been delivered to a substitute impartial party or a court of competent jurisdiction.

e. Each of the Parties admits, acknowledges and represents to each of the other Parties that it has had the opportunity to consult with and be represented by independent counsel of such party's choice in connection with the negotiation and execution of this Agreement. Each of the Parties further admits, acknowledges and represents to the other Parties that it has not relied on any representation or statement made by the other Parties or by any of their attorneys or representatives with regard to the subject matter, basis or effect of this Agreement.

6. <u>Escrow Agent's Fee</u>

a. The Escrow Agent shall be entitled to compensation from the Town for its basic services under this Escrow Agreement. The Escrow Agent may bill the Town directly for such services in accordance with the fee schedule attached to this Escrow Agreement as Exhibit B. Payments for services provided by Escrow Agent shall not be made from Escrow Funds.

7. <u>Investment Risk</u>

a. In no event shall the Escrow Agent have any liability as a result of any loss occasioned by the financial difficulty or failure of any institution, including Depository Bank, or which holds United States Treasury Bills, or other securities, or for failure of any banking institution, including Depository Bank, to follow the instructions of the Escrow Agent. Without limiting the generality of the foregoing, in no event shall the Escrow Agent incur any liability as the result of any claim or allegation that the Escrow Agent should have invested the escrow funds in United States Treasury Bills rather than hold same on deposit at the Depository Bank, or vice versa.

8. <u>Notices</u>

a. All notices permitted or required by this Agreement shall be in writing and shall be deemed duly provided when deposited in the United States mail, postage prepaid, certified or registered mail, return receipt requested, to the other Parties at the addresses set forth in the first paragraph of this Agreement. The Party providing notice may choose alternate methods, including hand delivery, Federal Express, or other recognized overnight courier. Notices provided by hand delivery; Federal Express or other recognized overnight courier shall be deemed duly provided when received at the addresses set forth in the first paragraph of this Agreement.

b. All notices, certification, authorizations, requests or other communications required, or permitted to be made under this Escrow Agreement shall be delivered as follows:

To the NHESP:

Assistant Director Natural Heritage and Endangered Species Program ATTN: Regulatory Review, CMP No. 014-244.DFW Division of Fisheries and Wildlife 1 Rabbit Hill Road, North Drive Westborough, MA 01581

To the Town of Orleans:

Town Administrator Town Hall 19 School Road Orleans, MA 02653

To the Escrow Agent:

Attorney Michael D. Ford 72 Main Street (Route 28) West Harwich, MA 02671

or to such other place or to the attention of such other individual as a Party from time to time may designate by written notice to all other Parties.

9. <u>Resignation, Removal, or Successor Escrow Agent</u>

If, for any reason, the Escrow Agent is unable or unwilling to continue to act a. as Escrow Agent, he/she shall give written notice to the other Parties of his/her inability or unwillingness to continue as Escrow Agent. The parties shall agree upon a successor agent, formally appoint the successor agent, and provide written notification to the Escrow Agent of the subsequent appointment within ten (10) business days. The Escrow Agent shall then, within three (3) business days after receiving notice of subsequent appointment, deliver to the successor escrow agent all cash and other property held by the Escrow Agent under this Escrow Agreement. Upon such delivery, all obligations of the Escrow Agent under this Escrow Agreement shall automatically cease and terminate. If no successor escrow agent is designated within the prescribed ten (10) day period, or if notice of subsequent appointment is not received within such period, then the Escrow Agent may, at its option at any time thereafter, deposit the funds and any documents then being held by it in escrow into any court having appropriate jurisdiction, and upon making such deposit, shall thereupon be relieved of and discharged and released from any and all liability hereunder, including without limitation any liability arising from the Funds, or any portion thereof so deposited.

b. The Escrow Agent may be removed at any time by a written instrument or concurrent instruments signed by the NHESP and the Town and delivered to the Escrow Agent.

c. If at any time hereafter, the Escrow Agent shall resign, be removed, be dissolved, or otherwise become incapable of acting, or the position of the Escrow Agent shall become vacant for any of the foregoing reasons or for any other reason, the Parties hereto shall promptly appoint a successor Escrow Agent. Upon appointment, such successor Escrow Agent shall execute and deliver to his/her predecessor and to the Parties hereto an instrument in writing accepting such appointment hereunder. Thereupon, without further act, such successor Escrow Agent shall be fully vested with all the rights, immunities, and powers, and shall be subject to all the duties and obligations of his/her predecessor, and the predecessor Escrow Agent shall promptly deliver all books, records, and, other property and monies held by him/her hereunder to such successor Escrow Agent.

10. <u>Interest</u>

a. All interest income accrued on funds in the Escrow Account shall become part of the Escrow Account and shall remain in the Escrow Account. The Escrow Agent may disburse funds to the Town to pay federal and state taxes on accrued interest. Said disbursement may be made by the Escrow Agent only after receiving a written confirmation from the Town, with a copy sent to the NHESP, of all itemized federal and state tax liabilities incurred by interest accrued on the Escrow Account.

11. <u>Miscellaneous</u>

a. This Escrow Agreement shall be binding upon, and shall inure to the benefit of the respective Parties hereto and their successors and assigns.

b. This Agreement shall be governed by and be construed in accordance with the laws of the Commonwealth of Massachusetts.

c. This Agreement shall be interpreted as an instrument under seal.

d. This Agreement may be executed in any number of counterparts, each of which shall constitute an original, and all counterparts shall constitute one Agreement.

e. This Escrow Agreement may not be amended, altered, or modified except by written instrument duly executed by all of the Parties hereto.

f. If the term, condition or provision of this Agreement, or the application thereof to any circumstances or party hereto, ever shall be held to be invalid or unenforceable, then in each such event the remainder of this Agreement or the application of such term, condition, or provision to any other circumstance or party hereto (other than those as to which it shall be invalid or unenforceable) shall not be thereby affected, and each term, condition and provision hereof shall remain valid and enforceable to the fullest extent permitted by law.

g. Each individual and entity executing this Agreement hereby represents and warrants that he, she or it has the capacity set forth on the signature pages hereof with full power and authority to bind the party on whose behalf he, she or it is executing this Agreement to the terms hereof.

12. <u>Effective Date</u>

a. This Agreement shall take effect on the latest date of execution by the NHESP, the Town, or Escrow Agent.

[SIGNATURE PAGES FOLLOW]

IN WITNESS WHEREOF, the parties have caused this Escrow Agreement to be duly executed as of the day and year first written above.

FOR THE MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE:

Name: Title:

COMMONWEALTH OF MASSACHUSETTS

_____, SS

_____, 2015

On this ___ day of ____, 2015, before me, the undersigned notary public, personally appeared ______, and proved to me through satisfactory evidence of identification, which were ______, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public My commission expires:

FOR TOWN OF ORLEANS:

Name: Title: STATE OF _____

_____, ss _____, 2015

On this ___ day of ____, 2015, before me, the undersigned notary public, personally appeared ______, and proved to me through satisfactory evidence of identification, which were ______, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public My commission expires:

FOR THE ESCROW AGENT:

Company Name

By: ___

Name: Title:

COMMONWEALTH OF MASSACHUSETTS

_____ SS.

_____, 2015

On this ___ day of ____, 2015, before me, the undersigned notary public, personally appeared ______, and proved to me through satisfactory evidence of identification, which were ______, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public My commission expires: J. Proof of Ownership: Assessor's Map of Beach Parcels



Assessor's Maps for Beach



ATTACHMENT B

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ESCROW AGREEMENT ORLEANS CONSERVATION & MANAGEMENT PERMIT

This ESCROW AGREEMENT (this "<u>Agreement</u>") is entered into as of this 8th day of July, 2016 by and between the Massachusetts Division of Fisheries and Wildlife, by and through the Natural Heritage and Endangered Species Program, having a principal place of business at 1 Rabbit Hill Road, Westborough, MA, 01581 ("<u>NHESP</u>"); the Town of Orleans, MA ("Town") (proponent) having a principal place of business at 19 School Road, Orleans, MA 02653; and Michael D. Ford, having a principal place of business at 72 Main Street (Route 28), West Harwich, MA 02671 ("<u>Escrow Agent</u>"). NHESP, Town of Orleans, and Escrow Agent are referred to herein collectively as the "<u>Parties</u>".

1. <u>Recitals</u>

The Conservation and Management Permit No. 016-283. DFW ("Permit") a. issued by NHESP to the Town contains financial assurance provisions in paragraph 13 of the Conditions section requiring that funds are available in the sum of up to three annual payments of \$11,600.00, the final amount of funding to be determined as set forth in the Permit (the "Funds"), to carry out educational outreach, increased law enforcement, habitat management and selective predator management activities for the benefit of Piping Plover populations in Massachusetts. These payments will also contribute to satisfying the requirement of Certificate of Inclusion, issued to the Town of Orleans by the Division to the Town pursuant to United States Fish and Wildlife Service Incidental Take Permit TE01281C-0. During 2016, the Permit requires the Town to deposit \$11,600.00 into the escrow account, prior to carrying out the covered activities authorized by the permit. In accordance with the terms of the Permit, the Town shall make additional deposits of up to \$11,600.00 per year in 2017 and 2018, each annual deposit to occur by February 15 of the year in question. Therefore, as set forth in the Permit, the Town shall deposit a minimum of \$11,600.00 and up to \$34,800.00 into the escrow account over the course of the three year Permit Term, depending on the actual number of Piping Plover broods, nests, or territories exposed to the covered activities.

b. The Parties agree the Funds shall be paid by the Town to the Escrow Agent and held in an interest bearing escrow account ("<u>Escrow Account</u>") (further defined in 2 below) and expended pursuant to the terms and conditions described below to mitigate for OSV-related impacts associated with the OSV escorting program (the "<u>Project</u>"), located in Orleans, Massachusetts.

c. The Parties acknowledge that the prior Escrow Agreement entered into by the Parties and dated July 7, 2015 pursuant to which the Escrow Agent is holding Funds now totaling \$10,010.09 in an Escrow Account in The Cooperative Bank of Cape Cod Account #6085000880 is being terminated and replaced with this new Escrow Agreement and that the Funds required under this new Escrow Agreement shall also be held in The Cooperative Bank of Cape Cod Account #6085000880 as the Depository Bank pursuant to the terms of this new Escrow Agreement together with the funds now in said Escrow Account in the sum of \$10,010.09.

The Parties enter into this Agreement for the purpose of defining the terms and conditions under which the Funds shall be held and disbursed.

NOW THEREFORE, after consideration of the above recitals, the Town, NHESP and the Escrow Agent hereby covenant and agree as follows:

2. <u>Escrow Account</u>

a. The Town of Orleans shall deliver the Funds to the Escrow Agent in the amounts, schedule and manner set forth in paragraphs 13 of the Permit and as further described in the Habitat Conservation Plan referenced therein.

b. All funds delivered by the Town to the Escrow Agent shall be deposited by the Escrow Agent in an interest bearing account or held in obligations by the US Government at one or more banks ("Depository Bank"), said accounts to be at all times insured by the Federal Deposit Insurance Corporation and which shall pay interest on the Funds at a reasonable rate. The Depository Bank shall be entitled to charge the Town directly for services related to maintenance of the Escrow Account at a rate not exceeding the Bank's standard charges to other customers for similar services. Alternatively, the Town may supplement the Funds identified in paragraphs 1 and 2 with a contribution of an additional amount sufficient to cover anticipated fees.

c. The Escrow Account shall be opened by the Escrow Agent and funds may be withdrawn only by the Escrow Agent and no other person. Disbursements shall be made from the Escrow Account only in accordance with the terms of this Agreement.

d. The Escrow Agent shall maintain a record of all deposits, income, disbursements, and other transactions of the Escrow Account. Upon request, the Escrow Agent shall provide to any of the Parties a written accounting of all transactions. The Parties shall have the right to inspect all books and records of the Escrow Agent relating to the Escrow Account at reasonable times upon request. Escrow Agent's computation of the Funds shall be deemed to be correct in the absence of manifest error.

e. The Escrow Agent shall keep possession of the book(s) and bank statements of the Escrow Account until such time as it is terminated in accordance with the terms of this Agreement, or until a successor Escrow Agent is appointed as provided herein.

3. <u>Disbursements</u>

From time to time, NHESP may, on or before the date which is five (5) years from the date of this Agreement, request in writing the Escrow Agent to deliver all or portions of the Funds, plus any interest thereon, for selective predator management, increased law enforcement, education, outreach, and or habitat management to provide a net-benefit to the Piping Plover in Massachusetts. Upon receipt of such written request, the Escrow Agent shall deliver the requested portion of the Funds to NHESP or any party designated in writing by NHESP. Delivery of the Funds in accordance with the terms of this Agreement shall be made by cashier's check, or by federal funds wire transfer, at the option of the payee.

a. The Escrow Agent may make disbursements to the Depository Bank for services rendered in maintaining said account, consistent with paragraph 2b.

b. If, at the end of five (5) years from the date of this Agreement, any portion of

the Funds is still held in escrow under this Agreement, then NHESP shall, within six (6) months after such five (5) year date, develop a plan for the use of any remaining Funds by NHESP or any party designated in writing by NHESP for further management for the benefit of the Piping Plover in Massachusetts.

c. The Escrow Agent shall release any remaining Funds to NHESP or any party designated in writing by NHESP in accordance with such plan.

4. <u>Termination of Agreement</u>

This Escrow Agreement shall terminate, and the Escrow Agent shall be relieved of all liability, after all funds in the Escrow Account have been properly disbursed in accordance with the terms and conditions of this Agreement. When the Escrow Account is terminated, the Escrow Agent shall provide a final accounting of all transactions hereunder to the Parties.

5. <u>Duties and Liabilities of Escrow Agent</u>

a. The sole duty of the Escrow Agent under this Agreement is to receive funds from the Town and to hold the funds for disbursement according to Section 3 above. The Escrow Agent shall be under no duty to pass upon the adequacy of any documents, to determine whether any of the Parties are complying with the terms and provisions of this Escrow Agreement, or to determine the identity or authority of any person purporting to be a signatory authorized by the Town or NHESP.

b. The Escrow Agent may conclusively rely upon, and shall be protected in acting on, a statement, certificate, notice, requisition, order, approval, or other document believed by the Escrow Agent to be genuine and to have been given, signed and presented by a duly authorized agent of the Town or NHESP. The Escrow Agent shall have no duty or liability to verify any statement, certificate, notice, request, requisition, consent, order, approval or other document, and its sole responsibility shall be to act only as expressly set forth in this Agreement. The Escrow Agent shall not incur liability for following the instructions contemplated by this Agreement or expressly provided for in this Agreement or other written instructions given to the Escrow Agent by the Parties. The Escrow Agent shall be under no obligation to institute or defend any action, suit or proceeding in connection with this Escrow Agreement, unless first indemnified to its satisfaction. The Escrow Agent may consult with counsel of its choice including shareholders, directors, and employees of the Escrow Agent, with respect to any question arising under or in connection with this Agreement, and shall not be liable for any action taken, suffered or omitted in good faith. The Escrow Agent shall be liable solely for its own willful misconduct.

c. The Escrow Agent may refrain from taking any action, other than keeping all property held by it in escrow if the Escrow Agent: (i) is uncertain about its duties or rights under this Escrow Agreement; (ii) receives instructions that, in its opinion, are in conflict with any of the terms and provisions of this Agreement, until it has resolved the conflict to its satisfaction, received a final judgment by a court of competent jurisdiction (if it deems such action necessary or advisable), or it has received instructions executed by both the Town and NHESP.

d. Escrow Agent is acting, and may continue to act, as counsel to the Town in
connection with the subject transaction, whether or not the Funds are being held by Escrow Agent or have been delivered to a substitute impartial party or a court of competent jurisdiction.

e. Each of the Parties admits, acknowledges and represents to each of the other Parties that it has had the opportunity to consult with and be represented by independent counsel of such party's choice in connection with the negotiation and execution of this Agreement. Each of the Parties further admits, acknowledges and represents to the other Parties that it has not relied on any representation or statement made by the other Parties or by any of their attorneys or representatives with regard to the subject matter, basis or effect of this Agreement.

6. <u>Escrow Agent's Fee</u>

a. The Escrow Agent shall be entitled to compensation from the Town for its basic services under this Escrow Agreement. The Escrow Agent may bill the Town directly for such services in accordance with the fee schedule attached to this Escrow Agreement as Exhibit B. Payments for services provided by Escrow Agent shall not be made from Escrow Funds.

7. <u>Investment Risk</u>

a. In no event shall the Escrow Agent have any liability as a result of any loss occasioned by the financial difficulty or failure of any institution, including Depository Bank, or which holds United States Treasury Bills, or other securities, or for failure of any banking institution, including Depository Bank, to follow the instructions of the Escrow Agent. Without limiting the generality of the foregoing, in no event shall the Escrow Agent incur any liability as the result of any claim or allegation that the Escrow Agent should have invested the escrow funds in United States Treasury Bills rather than hold same on deposit at the Depository Bank, or vice versa.

8. <u>Notices</u>

a. All notices permitted or required by this Agreement shall be in writing and shall be deemed duly provided when deposited in the United States mail, postage prepaid, certified or registered mail, return receipt requested, to the other Parties at the addresses set forth in the first paragraph of this Agreement. The Party providing notice may choose alternate methods, including hand delivery, Federal Express, or other recognized overnight courier. Notices provided by hand delivery; Federal Express or other recognized overnight courier shall be deemed duly provided when received at the addresses set forth in the first paragraph of this Agreement.

b. All notices, certification, authorizations, requests or other communications required, or permitted to be made under this Escrow Agreement shall be delivered as follows:

To the NHESP:

Assistant Director

Natural Heritage and Endangered Species Program ATTN: Regulatory Review, CMP No. 014-244.DFW Division of Fisheries and Wildlife 1 Rabbit Hill Road, North Drive Westborough, MA 01581

To the Town of Orleans:

Town Administrator Town Hall 19 School Road Orleans, MA 02653

To the Escrow Agent:

Attorney Michael D. Ford 72 Main Street (Route 28) West Harwich, MA 02671

or to such other place or to the attention of such other individual as a Party from time to time may designate by written notice to all other Parties.

9. <u>Resignation, Removal, or Successor Escrow Agent</u>

If, for any reason, the Escrow Agent is unable or unwilling to continue to act a. as Escrow Agent, he/she shall give written notice to the other Parties of his/her inability or unwillingness to continue as Escrow Agent. The parties shall agree upon a successor agent, formally appoint the successor agent, and provide written notification to the Escrow Agent of the subsequent appointment within ten (10) business days. The Escrow Agent shall then, within three (3) business days after receiving notice of subsequent appointment, deliver to the successor escrow agent all cash and other property held by the Escrow Agent under this Escrow Agreement. Upon such delivery, all obligations of the Escrow Agent under this Escrow Agreement shall automatically cease and terminate. If no successor escrow agent is designated within the prescribed ten (10) day period, or if notice of subsequent appointment is not received within such period, then the Escrow Agent may, at its option at any time thereafter, deposit the funds and any documents then being held by it in escrow into any court having appropriate jurisdiction, and upon making such deposit, shall thereupon be relieved of and discharged and released from any and all liability hereunder, including without limitation any liability arising from the Funds, or any portion thereof so deposited.

b. The Escrow Agent may be removed at any time by a written instrument or concurrent instruments signed by the NHESP and the Town and delivered to the Escrow Agent.

c. If at any time hereafter, the Escrow Agent shall resign, be removed, be dissolved, or otherwise become incapable of acting, or the position of the Escrow Agent shall become vacant for any of the foregoing reasons or for any other reason, the Parties hereto

shall promptly appoint a successor Escrow Agent. Upon appointment, such successor Escrow Agent shall execute and deliver to his/her predecessor and to the Parties hereto an instrument in writing accepting such appointment hereunder. Thereupon, without further act, such successor Escrow Agent shall be fully vested with all the rights, immunities, and powers, and shall be subject to all the duties and obligations of his/her predecessor, and the predecessor Escrow Agent shall promptly deliver all books, records, and, other property and monies held by him/her hereunder to such successor Escrow Agent.

10. <u>Interest</u>

a. All interest income accrued on funds in the Escrow Account shall become part of the Escrow Account and shall remain in the Escrow Account. The Escrow Agent may disburse funds to the Town to pay federal and state taxes on accrued interest. Said disbursement may be made by the Escrow Agent only after receiving a written confirmation from the Town, with a copy sent to the NHESP, of all itemized federal and state tax liabilities incurred by interest accrued on the Escrow Account.

11. <u>Miscellaneous</u>

a. This Escrow Agreement shall be binding upon, and shall inure to the benefit of the respective Parties hereto and their successors and assigns.

b. This Agreement shall be governed by and be construed in accordance with the laws of the Commonwealth of Massachusetts.

c. This Agreement shall be interpreted as an instrument under seal.

d. This Agreement may be executed in any number of counterparts, each of which shall constitute an original, and all counterparts shall constitute one Agreement.

e. This Escrow Agreement may not be amended, altered, or modified except by written instrument duly executed by all of the Parties hereto.

f. If the term, condition or provision of this Agreement, or the application thereof to any circumstances or party hereto, ever shall be held to be invalid or unenforceable, then in each such event the remainder of this Agreement or the application of such term, condition, or provision to any other circumstance or party hereto (other than those as to which it shall be invalid or unenforceable) shall not be thereby affected, and each term, condition and provision hereof shall remain valid and enforceable to the fullest extent permitted by law.

g. Each individual and entity executing this Agreement hereby represents and warrants that he, she or it has the capacity set forth on the signature pages hereof with full power and authority to bind the party on whose behalf he, she or it is executing this Agreement to the terms hereof.

12. <u>Effective Date</u>

a. This Agreement shall take effect on the latest date of execution by the

NHESP, the Town, or Escrow Agent.

[SIGNATURE PAGES FOLLOW]

IN WITNESS WHEREOF, the parties have caused this Escrow Agreement to be duly executed as of the day and year first written above.

FOR THE MASSACHUSETTS DIVISION OF FISHERIES AND WILDLIFE: Name Jack Buckley Title: Director



COMMONWEALTH OF MASSACHUSETTS

Novcester, ss

July 8, 2016

On this day of 2016, before me, the undersigned notary public, personally appeared act Buckley, and proved to me through satisfactory evidence of identification, which were rsonal knowledg to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

KulyUlissa Geb Notary Public) My commission expires: July 28, 2017

FOR TOWN OF ORLEANS:

Name: John F. Kelley Title: Town Administrator STATE OF ______

_____, SS

______, 2016

On this ____day of ____, 2015, before me, the undersigned notary public, personally appeared ______, and proved to me through satisfactory evidence of identification, which were ______, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public My commission expires:

FOR THE ESCROW AGENT:

Law Offices of Michael D. Ford

By:	
Name: Michael D. Ford, Esq.	
Title: Attorney	

COMMONWEALTH OF MASSACHUSETTS

______SS.

 	2016

On this _____day of _____, 2015, before me, the undersigned notary public, personally appeared _______, and proved to me through satisfactory evidence of identification, which were _______, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he/she signed it voluntarily for its stated purpose.

Notary Public My commission expires: