



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

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In Reply Refer To:  
FWS/Region 5/ES-TE

### Memorandum

To: Assistant Regional Director, Ecological Services, Region 5

From: Chief, Division of Endangered Species, Ecological Services, Region 5

Subject: Findings and Recommendations Regarding the Incidental Take Permit to the Division of Fisheries and Wildlife, State of Massachusetts, to Allow Incidental Take of Piping Plovers Statewide in Massachusetts

LWW as acting  
7/8/2016

Pursuant to 10(a)(1)(B) of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended: 16 U.S.C. 1531, *et seq.*), the U.S. Fish and Wildlife Service (Service) proposes to issue an incidental take permit (ITP) to the Massachusetts Division of Fisheries and Wildlife (MADFW) to authorize the incidental take of the federally listed threatened piping plover (*Charadrius melodus*).

As part of its permit application, and as required by section 10(a)(2)(A) of the ESA, the MADFW submitted to the Service the "Massachusetts Division of Fisheries & Wildlife (DFW) Habitat Conservation Plan for Piping Plover" (HCP or Plan). We received the final HCP, dated June 2016, on June 27, 2016. The HCP addresses the effects of recreational activities and beach management on the piping plover in Massachusetts. The Service finds that the MADFW's application for an ITP meets the permit issuance criteria outlined in section 10(a)(2)(B) of the ESA and in 50 CFR 17.22(b)(2) as explained by the following analysis and rationale. The ITP will authorize the take of up to 7 percent of the annual piping plover population in Massachusetts each year for a 25-year period, with an additional year of permit coverage to ensure mitigation activities are fully achieved. Therefore, the total permit term will be 26 years.

Documents used in the preparation of these findings and recommendations include but are not limited to: (1) the MADFW's final HCP (MADFW 2016), (2) the Service's Environmental Assessment (EA)(Service 2016a) prepared pursuant to the National Environmental Policy Act (NEPA), and (3) the Service's biological opinion (BO) pursuant to section 7 of the ESA (Service 2016b). These documents are hereby incorporated by reference. This document provides the rationale for issuing the permit and, in doing so, summarizes key aspects of the proposed action

and its impacts. The HCP provides the MADFW's final plan, including full project description and conservation measures. The EA and BO provide the Service's analyses of the environmental impacts and the effects of implementing the HCP on listed species, respectively.

## I. Project Description

The purposes of the MADFW's HCP are to allow more flexible recreation management and beach operations on beaches with nesting piping plovers, implement management actions to benefit piping plovers and their habitats, and meet ESA and Massachusetts Endangered Species Act (MESA) permit issuance criteria to obtain an ITP. Recreational activities at Massachusetts beaches occupied by the piping plover are currently managed according to the Service's *Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act* (Service 1994)(Federal guidelines) and the MADFW's *Guidelines for Managing Recreational Use of Beaches to Protect Piping Plovers, Terns, and Their Habitats in Massachusetts* (MADFW 1993) (State guidelines) to avoid take of piping plovers. Under this HCP, the MADFW will allow deviations from these guidelines when managing recreational activities and implementing beach operations on Massachusetts beaches during the piping plover breeding season. These deviations will create the potential for take of piping plovers. A complete project description is included in the HCP.

The HCP will function as an umbrella plan to extend incidental take coverage via Certificates of Inclusion (COI) to approved landowners and beach managers that (1) engage in the covered activities described in the HCP, (2) meet the HCP eligibility and COI application requirements (section 5.2.2.3), and (3) agree to implement the HCP (sections 5.2.2.3 and 5.4.2) and ITP conditions. Incidental take coverage under the ITP will apply to these Plan participants, though the MADFW employees that engage in HCP covered activities (e.g., nest moving, take exposure on MADFW property) will also be authorized for incidental take coverage under the ITP. The ITP does not extend take coverage to the MADFW beyond the HCP's annual statewide take exposure limit. MADFW will issue the COIs for up to 3-year periods but will require Plan participants to obtain reauthorization from the MADFW on an annual basis prior to carrying out covered activities. This approach provides year-to-year certainty for the MADFW and Plan participants, but also allows MADFW to review participants' annual reports to ensure that the Plan is being implemented correctly and that participants have secured funding prior to implementing covered activities in the following year. This approach provides certainty for the Service, because the MADFW committed to strict COI review criteria in the final HCP (section 5.2.2.1), so the Service can be certain that MADFW will ensure that Plan participants properly implement the HCP.

To approve Plan participants for COI coverage under the ITP, the MADFW must approve site-specific impact avoidance and minimization plans (IAMPs) and mitigation plans that are submitted as part of the COI application process. The IAMPs provide details for which covered activities will be implemented by the Plan participants, how much take is being requested, what avoidance and minimization measures will be implemented, and what monitoring and reporting

will be completed. The mitigation plans provide details on how the Plan participants will achieve onsite or offsite mitigation. The HCP establishes the measures and criteria that must be addressed in the IAMP and mitigation plans.

The HCP and ITP will streamline the permitting process and reduce costs and uncertainty for the MADFW, Plan participants, and the Service. First, the Service will issue only one ITP, rather than a project-by-project approach in which many ITPs may be requested. Second, the HCP provides Plan participants with a ready-made plan and set of requirements to implement, rather than having to develop unique HCPs for their activities. Finally, the HCP also is intended to concurrently satisfy permitting requirements for the Massachusetts Endangered Species Act (MESA). As part of the COI application process, Plan participants will file a MESA checklist and Conservation & Management Permit (CMP) application with the MADFW, based on the requirements in the HCP. Simultaneous with approval of COI applications, the MADFW will issue a CMP to Plan participants to ensure MESA compliance. The MADFW will work with Plan participants to ensure that implementation of covered activities avoids take of state-listed species. Alternatively, Plan participants can apply for and obtain a CMP covering state-listed species as necessary to ensure MESA compliance. Any federally listed species, other than the piping plover, that may be taken by covered activities will require a separate HCP and ITP or an amendment of the current HCP and ITP.

#### Project Location; Covered Lands; Covered Activities; Permit Term

The covered lands (otherwise known as the plan area) are described in section 1.2.2 and 2.2.1 of the final HCP. The plan area (150,000 acres) includes an approximately 300-yard-wide zone along the entire coastline of Massachusetts, with the exception of one small area in Mount Hope Bay. The plan area includes approximately 43,531 acres of currently and recently occupied piping plover habitat delineated as priority habitat by the MADFW and 29,000 acres of other beach and dune areas that could support breeding piping plovers in the future. The plan area is intended to capture all currently suitable Massachusetts piping plover breeding habitat, as well as the area within which additional piping plover breeding habitat could develop in the foreseeable future.

The covered activities are described in section 1.2.1 and 3.2 of the final HCP. They include the following:

##### *Use of roads and parking lots in the vicinity of unfledged piping plover chicks*

Road and parking lot use occurs in association with summer recreational beach access. When unfledged piping plover chicks are present, roads and parking lots may be closed to avoid take of chicks or adults tending their broods. This covered activity will allow driving on improved roads and parking lots when adult plovers and unfledged chicks are present.

##### *Recreation and Beach Operations Associated with Reduced Symbolic Fencing around Nests*

The HCP will reduce the buffer to less than 50 meters for nests that significantly reduce recreational access or use. Under State and Federal guidelines to avoid adverse effects to

incubating adults from harassment by recreational users or beach operations, a minimum 50-meter buffer around piping plover nests is recommended (MADFW 1993, USFWS 1994).

*Recreation and Beach Operations Associated with Reduced Proactive Fencing of Habitat*

The HCP will deviate from the State and Federal guidelines by allowing Plan participants to reduce the proactive symbolic fencing of suitable piping plover habitat, particularly in sections of beach near major access points that tend to have high recreational use. The MADFW will allow beach raking or the temporary placement of material (such as boards) on the beach to minimize the risk of breeding pairs and nests being exposed to high recreational use in unfenced areas that could lead to scrape destruction and/or nest abandonment.

*Recreation and Beach Operations at Piping Plover Nests with Nest Moving*

The MADFW will authorize moving a nest if piping plovers nest in a parking lot, major beach access trail, OSV corridor, or other high use recreational area, where reducing symbolic fencing would not alleviate the impediment to recreational activity (e.g., access to a beach, parking lot, or event).

*Over-sand Vehicle Use in Vicinity of Unfledged Chicks*

The HCP will deviate from the State and Federal guidelines by allowing limited, escorted driving of non-essential OSVs in the presence of unfledged chicks.

The Service recognizes that this HCP takes a unique approach to defining the covered activities. Rather than identifying specific beach recreation activities and beach operations that are allowed (or not allowed) under the plan, the HCP defines the covered activities as allowable deviations from State and Federal plover management guidelines. Therefore, any beach recreation activities and beach operations that are allowed under the guidelines are also allowed in the context of the covered activities. This unique approach in defining covered activities generates some challenges in terms of the Service's approach to the analysis, but will facilitate more straightforward implementation of the covered activities by MADFW and Plan participants.

The covered activities are reasonably likely to cause take of piping plovers (USFWS 2016b) and the permit will be in effect for up to 26 years, from the summer of 2016 through 2042.

### Biological Goals and Objectives

The MADFW's overarching biological goal for the HCP is to contribute to the maintenance of a viable and robust<sup>1</sup> piping plover population in Massachusetts. Note that the Service recognizes that the HCP allows the MADFW to continue to issue take authorizations to Plan participants even when the piping plover population falls below the current population size (down to a population-level of 500 plover pairs). From the Service's perspective this will not present a conflict in whether the HCP is successful in meeting the overall biological goal, because the population will still be greater than 80 percent of the recovery objective for the New England recovery unit (i.e., 625 pairs). The HCP will not allow take to be issued if the population falls

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<sup>1</sup> Viable and robust means able to persist near current population size or higher for the long term.

under 500 pairs (which is 80 percent of the recovery unit abundance criterion and meets or exceeds the Massachusetts share of the New England plover population between 1994 and 2015). Thus, the HCP is compatible with maintaining a viable and robust plover population in Massachusetts. The specific objectives in the HCP required to attain the goal include the implementation of avoidance and minimization measures at beaches managed by Plan participants; increasing the nest and fledging success rate at beaches where mitigation is implemented to achieve or maintain an average productivity increase of 20 percent or greater; increasing awareness of and compliance with the guidelines and other existing conservation actions to protect piping plovers; and conducting experimental vegetation control to improve nesting habitat.

### Minimization and Mitigation Measures

Minimization measures are incorporated for each covered activity as described in section 3.2 of the final HCP. A summary of the avoidance and minimization measures is found in section 4.3.1, table 4-2. The MADFW-approved IAMPs must detail what covered activities will be implemented by Plan participants and for each covered activity, how the required IAMP components are addressed.

Minimization measures are designed to avoid or minimize the likelihood of take by establishing a graduated process, specifying minimum thresholds, or implementing specific actions aimed at preventing disturbance, injury, and/or mortality of nesting plovers or fledglings confronted with reduced protections from State and Federal guidelines when recreational beach activities or beach operations are occurring. For example, with respect to OSV use, minimization measures include requiring vehicle escorts, plover monitors, and smoothing vehicle ruts in between and after escorted vehicles have passed to ensure fledglings cannot be trapped or that the ruts don't impede use of the beach. With respect to vehicle use in parking lots or improved roads, minimization measures include erecting barriers to protect chicks and oversight by plover monitors.

All of the covered activities include active monitoring of affected plovers to identify whether additional management actions are needed to further reduce the likelihood of take. For example, monitors may halt traffic in roads, parking lots, or OSV corridors when chicks approach or enter vehicle travel corridors. Plovers will be more intensively monitored during nest moving or as fencing buffers are reduced to document the plover's response and, if necessary, implement additional minimization measures to decrease the likelihood of abandonment, such as temporarily halting nest moving or more slowly reducing the buffer around a nest.

Section 4.3.2.1 of the final HCP describes the mitigation strategy. To meet ESA-related mitigation requirements, predator management will be used to offset the incidental take authorized under the plan. As explained in the BO, predation is a widespread and continuing threat to breeding Atlantic Coast piping plovers, and increasing predation pressure, particularly from coyote, fox, cats, and avian predators, including crows and gulls, has affected productivity at many Massachusetts beaches. By implementing predator management at beaches, the mitigation will increase nest productivity resulting in the production of more plovers than are being lost by implementation of the covered activities. The HCP requires predator management

to benefit 2.5 breeding pairs for every brood, nest, or territory exposed to take from covered activities. In the event that the covered activity being implemented is *Use of Roads and Parking Lots in the Vicinity of Unfledged Chicks*, the HCP requires predator management to benefit an additional 0.5 breeding pairs (to offset potential impacts to adult plovers). The Service expects the productivity increase from predator management to, at a minimum, offset the impacts of the authorized take of piping plovers.

The MADFW-approved mitigation plans submitted by Plan participants must detail how much take must be offset, whether the mitigation will be accomplished onsite or offsite, how/when/where the selective predator will be implemented, and provide evidence of sufficient budget. Site-specific mitigation plans will focus management on the predator species and/or individuals that evidence indicates are the most prevalent sources of predation. The preferred management approach is to selectively remove individual predators, particularly those predators that have become focused on plover nests, chicks, or adults. Plan participants may elect to implement predator management at piping plover breeding sites under their control (onsite), or to provide funding to the MADFW to administer their statewide predator management program (offsite). In either case, MADFW and/or Plan participant implementing predator management must develop site-specific predator management plans that that will describe how mitigation will be implemented. The Service will review, comment, and approve all site-specific predator management plans. Ultimately, the MADFW is responsible for ensuring that all take they extend to Plan participants is fully offset either onsite by the Plan participants or offsite through their statewide predator management program.

The HCP describes a range of expected benefits from predator management and is inconsistent in some places. In Chapter 4, including table 4-4, the HCP analyzes a 25-percent increase in productivity from predator management, while in many other areas, the HCP anticipates a 20-percent increase in productivity. The Service expects predator management to increase productivity, averaged across mitigation sites, by at least 20 percent over the baseline productivity at mitigation sites prior to predator management (HCP table 4-3). Neither the MADFW nor the Service expects the productivity increase to bolster the fledging rate in Massachusetts to the 1.5 fledglings per pair discussed in the species' recovery plan; however, both parties expect the productivity increase from selective predator removal to, at a minimum, offset the impacts of taking of piping plovers and contribute to the maintenance of a viable and robust population of the piping plover in Massachusetts.

To address MESA's "net benefit" standard, the HCP's conservation program includes other measures that complement the mitigation strategy and would benefit piping plovers. These conservation measures include education and outreach, increased law enforcement, and nesting habitat improvement. The outcomes of these activities are difficult to quantify in terms of benefits to plovers and thus are not considered by the Service in analyzing whether the mitigation is commensurate with the impacts of the authorized incidental take in terms of whether the HCP meets permit issuance criteria. However, the Service recognizes that these additional mitigation actions will provide benefits to plover conservation and recovery. Nesting habitat improvement or restoration will be considered to be pilot projects for the first 5 years of

the HCP, will be limited in scope to no more than 0.5 acre per project and 2.5 acres total, and would be implemented at 2 sites during the first 5 years of the HCP and at no more than 5 sites during the 26-year span of the ITP.

### Monitoring and Reporting

Plan participants are required to monitor plover abundance and productivity under the State and Federal guidelines. In addition, the HCP includes compliance and effectiveness monitoring requirements (HCP section 4.4.1.1 and table 4-7).

Compliance monitoring verifies that Plan participants are carrying out the terms of the HCP in accordance with their COI and that the MADFW is ensuring compliance with the plan as a whole. Plan participants will monitor and ensure their own compliance and provide the monitoring results annually to the MADFW. The MADFW will complete onsite inspections annually of all Plan participants to ensure compliance. The MADFW will also conduct its own compliance monitoring and will provide results of both Plan participant and the MADFW compliance tracking and monitoring to the Service in annual reports. Compliance monitoring and reporting requirements are summarized in table 4-7 of the HCP and include reporting on the annual statewide take exposure, site-specific and statewide numbers of broods, nests and territories affected, site-specific compliance with State and Federal guidelines, implementation and impact of minimization protocols, and the implementation and evaluation of mitigation. The MADFW established several reporting deadlines (table 4-7) to meet specific monitoring objectives. These reporting deadlines include the annual statewide population count, index count and fledging rate necessary to compute the next year's annual limit for statewide take exposure, Plan participants' annual reports to the MADFW site-specific plover numbers, implementation of the covered activities, compliance with the IAMPs and onsite mitigation implementation, and the MADFW's annual report on the implementation of the HCP.

Effectiveness monitoring assesses the success of the Plan's conservation program and includes both status and trends monitoring and monitoring the effects of management and mitigation. To determine whether the biological goal of the HCP is being met, effectiveness monitoring must assess the effects of the HCP on the statewide population in addition to site-specific effects. The MADFW will assess the reproductive success of breeding pairs of piping plovers exposed to covered activities and compare this result to the reproductive success of pairs not exposed. Effectiveness monitoring will provide information on the benefits of the mitigation implemented by Plan participants and the MADFW. Predator management outcomes will be compared relative to the benchmark established by biological objective 2 (table 4-1). Effectiveness monitoring will also attempt to evaluate the education, outreach, and increased law enforcement components of the mitigation plan and identify site-specific benefits to piping plovers. The pilot nesting habitat improvement projects (i.e., vegetation management) will be evaluated to determine whether habitat restoration or enhancement activities influenced patterns of habitat use and reproduction by piping plovers. Table 4-8 in the HCP summarizes the effectiveness monitoring and reporting requirements for Plan participants and the MADFW.

Effectiveness monitoring also will inform the Plan's adaptive management strategy enabling the MADFW and Plan participants to improve the impact minimization measures and conservation actions in response to observations and lessons learned through the monitoring program (see Section 4.4.2).

Reporting deadlines are established for documenting that the avoidance, minimization, and mitigation measures were successfully implemented to develop the following year's mitigation plans and implement timely adaptive management, if necessary. Plan participants must report to the MADFW information on plover population monitoring results, data on predator activity, and final results of onsite predator management. The MADFW will provide a consolidated annual report to the Service providing a summary of predator management activities conducted under the Plan and results.

#### Changed and Unforeseen Circumstances

Chapter 5 of the HCP describes changed circumstances and other aspects of the adaptive management plan. Three specific changed circumstances are identified in the HCP. If any of these are triggered, changes may result to the HCP as summarized below:

- **New Species Listings:** The trigger will be any future Federal listing as threatened, endangered, or candidate, species that fall within the Plan area and may be affected by covered activities. The purpose of this changed circumstance is to identify a process for determining whether newly listed species will be affected by covered activities and whether to amend the existing HCP or prepare a separate HCP. Prior to a final listing decision for any non-covered species that may be associated with piping plover habitat, the MADFW will conduct an impact assessment and, depending on the outcome, apply for a permit amendment or apply for a separate ITP.
- **Climate Change:** Coastal erosion, sea level rise, and flooding are the primary factors of climate change that may impact piping plovers and their habitat. The HCP anticipates the loss of existing or creation of new piping plover habitat resulting from coastal erosion by describing a fluid boundary for the Plan area. The Plan area is intended to capture all currently suitable Massachusetts piping plover breeding habitat, as well as the area within which additional piping plover breeding habitat could develop during the permit term due to the dynamic nature of the coastline. Therefore, no remedial actions are necessary in response to beach accretion.

The HCP predicts that some beaches within the Plan area could experience sea level rise of up to 12.2 inches and up to 72 flooding events per year based on historic data and projected changes in sea level rise and coastal flooding in Massachusetts. In response, the HCP will automatically adjust the plan area if shorelines change due to erosion and sea level rise. The MADFW will provide the Service with an updated map of the plan area at least once every 5 years, and more frequently in response to major coastal storms. The MADFW will modify or enhance monitoring if piping plover populations increase or

decrease in response to shifting habitats associated with coastal erosion, sea level rise, and flooding, the monitoring program would adapt to tracking new population levels and locations.

In the event of a population decline due to beach erosion or other factors, population data would be used to automatically reduce the annual limits of take exposure for the following season, or even eliminate all take exposure allowances as described in Chapter 4 of the HCP.

- **Permit Extension for Mitigation Assurances:** In the event that any mitigation deficit exceeds what can be offset in the final year of the permit term (e.g., not enough sites for predator management are available to offset the required mitigation deficit), the permit term can be automatically renewed for one additional year for the sole purpose of resolving any remaining mitigation deficit. No take will be authorized or can be extended during this additional year, unless the permit is renewed to allow the program to continue.

Pursuant to the “No Surprises” rule (69 FR 71723) as codified in 50 C.F.R. sections 17.22(b) and 17.32(b), the Service will not require additional land, water, or natural resources without the consent of the MADFW in the event that unforeseen circumstances occur, provided the HCP is being properly implemented. If the Service determines that an unforeseen circumstance has occurred and that additional financial compensation beyond that required in the HCP is needed to conserve the covered species, then the MADFW will not be obligated to provide the additional measures without its consent. Pursuant to 50 C.F.R. 17.22(b)(8) and 17.32(b)(8), the Service retains the authority to revoke an ITP, in response to an unforeseen circumstance or otherwise, if we find that continuation of the take authorized under the ITP, would appreciably reduce the likelihood of the survival and recovery of a listed species.

#### Changes Between the Draft and Final HCPs

The final HCP incorporated a number of changes in response to Service and public comments. Key changes include:

- Clarifying that sites with fewer than seven breeding pairs are allowed only one take exposure;
- Describing necessary pre-approval requirements for plover monitors for some covered activities and qualifications and training for nest movers;
- Describing the conditions and monitoring required for Plan participants to use cover boards;
- Clarifying that moving a nest counts as a single take exposure, and if the pair renests, a second take exposure would be required to move the second nest;
- Adding a requirement that Plan participants provide detailed information on site-specific thresholds for temporarily halting traffic when plover chicks approach or enter a travel corridor;

- Clarifying that take exposure allocation would cease if the plover population drops to 500 breeding pairs. The draft HCP implied that take allocations would cease when the 3-year running average number of breeding pairs reaches 500;
- Limiting the number of take authorizations allotted to *Reduced Proactive Fencing* in a given year to no more than 50 percent of the total allowable take exposure for any year in which more than 10 take exposures could be authorized
- Clarifying the process by which mitigation “credits” can be carried forward and used in subsequent years;
- Clarifying challenges associated with implementing vegetation management including State permitting;
- Clarifying that each COI Plan participant electing to provide funding to the MADFW to implement offsite mitigation will establish an escrow agreement with the MADFW as part of its mitigation plan;
- Adding an adaptive management threshold that addresses the documented benefits of predator management and the potential for unforeseen factors outside the MADFW’s control to mask the positive results of the HCP’s mitigation program. The MADFW will make up for deficits in required mitigation within the limits of the following summary: the MADFW expects that predator management will provide an average increase in productivity of at least 15 percent, even if other factors contribute to a lower productivity than expected and mask the benefits of predator management. Accordingly, if the results of the effectiveness monitoring indicate that average productivity at mitigation sites increased less than 20 percent, the MADFW will be responsible for implementing additional predator management to make up a deficit of up to only 5-percent productivity.
- The MADFW will implement predator management to balance a mitigation deficit that remains at the end of year 25 of the permit term. No take would be permitted in the 26<sup>th</sup> year.

## II. Incidental Take Permit Issuance Criteria – Analysis and Findings

### A. Permit Issuance Criteria

Section 10(a)(2) of the ESA specifies the requirements for permit issuance. This provision is broken into two component parts, one directed to applicants and the other to the Service. Section 10(a)(2)(A) sets forth the required components of an application from which the Service can judge whether an applicant’s submission is complete. Section 10(a)(2)(B) provides the criteria by which the Service must evaluate and approve an application package once it has determined the submission is complete. As described below, the requirements, although necessarily similar, are not identical, and are not interchangeable standards.

Section 10(a)(2)(A) of the ESA specifically mandates that “no permit may be issued by the Secretary authorizing any taking referred to in paragraph (1)(B) unless the applicant submits to the Secretary a conservation plan that specifies:

- (i) the impact which will likely result from such taking;

- (ii) what steps the applicant will take to minimize and mitigate such impacts, and the funding that will be available to implement such steps;
- (iii) what alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized; and
- (iv) such other measures as the Secretary may require as being necessary or appropriate for the purposes of the plan.”

Section 10(a)(2)(B) of the ESA mandates that the Secretary shall issue a permit, “If the Secretary finds, after opportunity for public comment, with respect to a permit application and the related conservation plan that:

- (i) the taking will be incidental;
- (ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
- (iii) the applicant will assure that adequate funding for the plan will be provided;
- (iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
- (v) the measures, if any, required under subparagraph (A)(iv) will be met; and he has received such other assurances as he may require that the plan will be implemented...”

The Service’s implementing regulations (50 CFR 17.22(b)(1) and 50 C.F.R. 17.32(b)(1)) are very similar to the ESA’s statutory requirements for issuance of incidental take permits, but also require conservation plans to include monitoring measures and procedures to address unforeseen circumstances.

## **B. Anticipated Take**

The issuance criteria of ESA section 10(a)(2)(B) focuses largely on the take that is anticipated to occur as a result of implementation of the covered activities and the obligations of the MADFW and Plan participants, as the permittee and subpermittees, respectively, to reduce or compensate for the impact of the taking. Section 9 of the ESA defines take as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. As detailed in the Service’s BO (Service 2016b), the type of take that is anticipated through the covered activities in the HCP includes harassment, harm, and/or killing. The covered activities may result in sublethal to lethal effects to piping plover adults and chicks.

Plan participants will be allowing recreational beach activities and conducting beach operations on their beaches in association with one or more of the covered activities, as described in their MADFW-authorized IAMPs. With the exception of the covered activities, Plan participants must avoid incidental take of piping plovers by managing recreational beaches in accordance

with the applicable State and Federal guidelines. Therefore, the only anticipated incidental take from recreational beach activities and beach operations will occur in association with implementation of the covered activities.

The COI authorizations will allow Plan participants to conduct covered activities subject to an authorized annual limit of take exposures for plover nests, broods, or territories. Each authorized take exposure is anticipated to result in incidental take of plovers. The HCP calculates take estimates from the number of broods, nests, and territories potentially exposed to take from covered activities, and presents those estimates as (1) adult mortality from exposure to vehicles in roads and parking lots, and (2) reduction in productivity as measured by the percentage of fledglings lost as a result of the covered activities. The take mechanisms include vehicle collision, nest abandonment, and disturbance of foraging chicks. The MADFW expects a 50-percent decrease in productivity in each nest, brood, and/or territory exposed to covered activities and expects 1 adult to be killed for every 20 exposures (5-percent risk) to vehicles in roads and parking lots. The MADFW does not expect adults and postfledging juveniles to be injured or killed by covered activities other than *Use of roads and parking lots in the vicinity of unfledged piping plover chicks*.

The Service notes that a single covered activity may adversely affect piping plovers or multiple covered activities could occur simultaneously and cause adverse effects. However, once a single covered activity causes take of a nest, brood, or territory, we do not consider simultaneous activities as causing further take of that nest/brood/territory. In other words, a Plan participant needs only one take exposure allocation for each nest, brood, or territory exposed to covered activities.

The overall amount of incidental take exposure authorized by the ITP to the MADFW to convey to Plan participants via COI authorizations is up to 7 percent of the annual statewide plover population (measured as plover pairs) each year. The annual authorization is based on a sliding scale of take exposure (final HCP, table 3-1) based on the rolling average of the previous 3-year statewide plover population. For any year that the plover population falls below 500 pairs (regardless of the 3-year rolling average), no take will be authorized for the following year and Plan participants will not be able to implement the HCP covered activities. Therefore, the amount of annually authorized incidental take is based on the statewide plover population and the number of Plan participants requesting to implement covered activities, which may vary from year to year. For 2016, based on the statewide population average for the past 3 years, the maximum number of broods, nests or territories that may be exposed to covered activities in 2016 will be 44. While the MADFW could authorize that amount of take exposure to COI applicants, it is unknown how many Plan participants will be engaged with the plan in any given year. The Service assumed the maximum annual authorized take would be allocated for analysis purposes in the EA and BO. Because the annual rate of plover population growth will change over the permit period, it would be speculative to estimate the total number of number of broods, nests or territories that may be exposed to covered activities over the course of the 26-year ITP period.

For permit implementation, the MADFW will calculate the annual allowable take exposure after analyzing the previous year's statewide plover population data and updating the 3-year rolling

average. That authorized level of incidental take will be provided to the Service. The Service will revise the incidental take statement in its biological opinion annually (no later than April 1 or within 20 business days of receiving the MADFW's annual allowable take exposure). The Service will also issue a letter annually confirming the number of breeding pairs authorized for take exposure pursuant to the ITP. Thereafter, the MADFW can convey this take authorization among authorized Plan participants.

The sliding scale for take exposure (final HCP, table 3-1) is a unique and important component of MADFW's HCP. It establishes the maximum amount of annual take based on a percentage of breeding pairs and adapts to the annual abundance of breeding pairs in Massachusetts (which will change over the course of the permit term). At the higher end of the scale, the MADFW will allow take exposure of up to 7 percent of breeding pairs when the statewide population is 655 pairs or greater, and at the lower end of the scale, no take exposure could occur if the stateside population is below 500 breeding pairs. Between 655 and 500 pairs, the rate of allocated take is reduced concurrently with the population size. This approach is conservative and ensures that the authorized take will not reduce or affect Massachusetts' contribution to sustaining the New England portion of Atlantic Coast piping plover population. It also is an optimal adaptive management approach in that as Massachusetts' plover population fluctuates due to changes in available habitat, changes from climate change or major storm events, or any number of other factors over time, the amount of authorized take will self-adjust. As the statewide population increases, so does the allowable amount of take. If the statewide population decreases, so does the allowable amount of take. Thus, the sliding scale serves as an incentive for all entities participating in the HCP to implement measures that benefit the plover population. Finally, the sliding scale serves as a backstop to the entire HCP in terms of tailoring the authorized take to address any uncertainties that may affect the Massachusetts plover population over the permit term. Therefore, the Service recognizes this sliding scale for take exposure as an integral and unique part of the HCP.

Note that the HCP describes the effects of the covered activities on piping plovers in section 3.3.2 and summarizes the effects in tables 4.4 and 4.5. In places, the HCP is unclear about the level of effects that would occur to the piping plover as a result of covered activities, and these analyses may not reflect the Service's expectations for impacts to the piping plover. The Service's analyses of impacts to the species from implementing the HCP are in the EA and BO.

## **C. Findings**

### **1. The taking will be incidental**

Incidental take is defined in 50 CFR 17.3 as "any taking otherwise prohibited, if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity."

The first part of the definition addresses whether take of piping plovers is the purpose of the covered activities in the HCP. As described above, and in the HCP, the purpose of the covered activities is to allow recreational beach activities and beach operations in areas that would otherwise be restricted by State and Federal guidelines. In the course of implementing the covered activities, the MADFW anticipates the potential for incidental take of piping plovers.

For this reason, the MADFW developed the HCP, which describes the measures the MADFW will implement to avoid, minimize, and mitigate impacts from the project. Thus, incidental take of piping plovers is not the purpose of the covered activities and will only occur incidental to recreational beach activities and beach operations.

The second part of the incidental take definition addresses whether the MADFW is conducting otherwise lawful activities. Pedestrian beach recreation, beach management, road and parking lot use, and OSV use are lawful activities in Massachusetts subject to various local, state, and Federal regulations. Plover habitat in Massachusetts is managed in compliance with (1) the Federal Guidelines (USFWS 1994); (2) the State Guidelines (MADFW 1994); and (3) the Massachusetts barrier beach management guidelines (Massachusetts Barrier Beach Task Force 1994). The MADFW, in cooperation with local beach managers, is implementing the State and Federal Guidelines for aspects of their beach management responsibilities not associated with covered activities.

The HCP contains provisions to ensure that the covered activities are in compliance with other State and Federal laws including, but not limited to, the MESA (sections 1.1.1, 1.2.3, 1.3.5, 3.2.2.2, 4.1, 4.3.2, 5.2.2.3, and appendices A and B), Massachusetts Environmental Policy Act (section 1.3.6), and the Massachusetts Wetlands Protection Act (section 1.3.7). In addition, the Service, pursuant to the National Historic Preservation Act, and in consultation with the Massachusetts Historical Commission, made a determination that no historic properties would be affected as a result of the ITP, because the covered activities will not require ground alteration or the erection of permanent structures; and beach operations and recreation, including beach raking and vehicle and pedestrian access, are already allowed when piping plovers are not present.

The ITP authorizes incidental take of piping plovers, a bird species also protected under the Migratory Bird Treaty Act (MBTA; final HCP section 1.3.2). As explained in the Service's 1996 HCP Handbook, a section 10(a)(1)(B) permit can also serve as a MBTA special purpose permit (50 CFR § 21.27) as long as the following conditions are met: (1) any species to be so treated with respect to the MBTA and BGEPA must also be listed under the ESA; and (2) the incidental take of any such species must be authorized, subject to applicable terms and conditions, under section 10(a)(1)(B) of the ESA. For piping plovers, these conditions have been met and therefore the ITP will cover incidental take of the species for purposes of the ESA and MBTA. The HCP also contemplates the MADFW issuing CMPs to cover take of other state sensitive bird species, some of which may also be MBTA-listed bird species. As explained in the HCP (final HCP, section 1.3.2), the MADFW will require minimization and mitigation measures in the CMPs for these species that address MESA requirements (e.g., net benefit standard). The Service finds such requirements meet the intent of the MBTA and therefore will consider prosecutorial discretion for these species in the context of MBTA compliance. Finally, the mitigation under the HCP contemplates selective predator removal that may result in taking avian nest predators. As explained in the HCP, MADFW and entities implementing the Plan's mitigation program will comply with the conditions of the USFWS depredation order (50 CFR 21.43), which applies to blackbirds, cowbirds, grackles, crows, and magpies. When other MBTA-protected species are targeted by the mitigation, a MBTA permit will be obtained by the entity doing the mitigation. Therefore, FWS finds that take authorized by the ITP will also be compliant with the MBTA.

In conclusion, the Service finds that the anticipated take associated with the HCP will be incidental to otherwise lawful activities.

**2. The MADFW will, to the maximum extent practicable, minimize and mitigate the impacts of such taking.**

To issue an incidental take permit, the Service must find that “the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking” (16 U.S.C. 1539(a)(1)(B)(ii); 50 C.F.R. 17.22(b)(2)(i)(B) & 17.32(b)(2)(i)(B)).

The Service’s HCP handbook (USFWS 2000) states:

[t]he applicant decides during the HCP development phase what measures to include in the HCP (though, obviously, the applicant does so in light of discussions with and recommendations from FWS [Service] or NMFS [National Marine Fisheries Service]). However, the Services ultimately decide, at the conclusion of the permit application processing phase, whether the mitigation program proposed by the applicant has satisfied this statutory issuance criterion.

In examining the applicant’s proposed minimization and mitigation measures, the Service is focused solely on proposed measures to reduce the likelihood and extent of the take resulting from the project and on proposed compensatory measures. It is the Service’s position that the impacts of the proposed project must be minimized to the maximum extent practicable, and then the remaining impacts must be mitigated commensurate with the level of take. These standards are based in a biological determination of the impacts of the project as proposed, what would further minimize those impacts, and then what would biologically mitigate, or compensate for, the remaining impacts.

If an applicant commits to implement minimization and mitigation measures that are fully commensurate with the level of impacts, and are consistent with what current science demonstrates to be effective, it has minimized and mitigated to the maximum extent practicable, and no more is required of the applicant. See, for example, *National Wildlife Federation v. Norton*, 306 F. Supp. 2d 920 (E.D. Cal. 2004) (finding that the level of mitigation provided must be “rationally related to the level of take under the plan” and that where mitigation “more than compensates” for the impacts of take, it did not need to demonstrate that more mitigation would be infeasible”). *National Wildlife Fed’n v. Babbitt*, 306 F. Supp. 2d 920, (E.D. Cal. 2005). Thus, it is only where certain constraints may preclude attaining these proven measures or thresholds that the “practicability” issue needs to be addressed more thoroughly.

If the applicant cannot or has not proposed to fully compensate for the impacts of the taking, the Service must evaluate whether the applicant has minimized and mitigated “to the maximum extent practicable.” The court in *National Wildlife Fed’n v. Babbitt* (2005) noted that the term “practicable” as used in the ESA does not simply mean “possible” but means “reasonably capable of being accomplished.” It also corroborated that “there are two components to the mitigation finding: (1) the adequacy of the mitigation program in proportion to the level of take

that will result, and (2) whether the mitigation is the maximum that can be practically implemented by the applicant.” Id. Factors to be considered in the practicability analysis may include constraints based on the site itself, availability of mitigation habitat, timing and nature of the project, financial means of the applicant, cost and time associated with redesign, and local and state permitting and zoning processes. In these instances, the Service must evaluate whether the applicant has provided reasonable explanations concerning its constraints or infeasibility. The Service must also independently review the record evidence supporting the applicant’s assertions. The practicability evaluation is necessarily project specific, and may properly yield different determinations in different situations. The analysis is a limited, although substantial, examination.

### Avoidance and Minimization Measures

The HCP allows Plan participants to request take exposure authorization for covered activities only to a limited extent. That is, the HCP does not intend to resolve all conflicts related to recreational activities and beach management operations resulting from the presence of piping plovers. Instead, the MADFW has limited the extent to which it is requesting take coverage for the described covered activities so as to achieve the HCP’s biological goal of maintaining a robust piping plover population in Massachusetts. Accordingly, the MADFW has imposed the following limits on the covered activities for which it is requesting take authorization: (1) limits on take exposure (i.e., take exposure at any one site being limited to 15 percent of breeding pairs at a site annually (with 30-percent exception at five sites)); (2) limits on areal extent exposed to reduced proactive fencing (limited to 10 percent or 2 acres, whichever is less, with a 20-percent/4-acre exception at five sites); and (3) the requirement that take exposure caused by reduced proactive fencing not exceed 50 percent of the take exposure allocations available statewide (the MADFW included this limit in the HCP in response to public comments). To further reduce the impact of the HCP on the Massachusetts plover population, the MADFW has imposed to further limit the covered activities by accounting for take of plovers by Federal agencies authorized by the Service under section 7 of the ESA; each year, the MADFW will subtract the amount of take by Federal agencies from the number that otherwise would have been available statewide for HCP covered activities under its take allocation strategy.

The HCP identifies conditions for each covered activity that must be implemented on a site-specific basis to avoid or minimize impacts to piping plovers (HCP sections 3.2 and 4.3). Plan participants must describe the suite of impact minimization measures they will implement as a condition of COI coverage in their MADFW-approved IAMPs. The IAMPs are intended to be tailored to site-specific conditions and needs; however if any of the HCP required conditions for the particular covered activity are inappropriate or infeasible, that has to be justified in the plan and ultimately approved by the MADFW. These conditions are intended to further minimize the likelihood and extent of take resulting from the covered activities. For example, the HCP requires limiting reduced proactive fencing at each site to the minimum necessary to resolve the impairment issue. Thereafter there are measures that may further deter nesting and minimize the risk of breeding pairs and nests being exposed to disturbance from recreational activities. Further, to minimize the likelihood and extent of take to the maximum extent practicable for all covered activities, the Service has conditioned the ITP to require the MADFW to limit take exposure to the minimum necessary to resolve the impairment issue for all covered activities, not

only for reduced proactive fencing. A summary of the conditions for each covered activity are below:

*Use of roads and parking lots in the vicinity of unfledged piping plover chicks*

For this covered activity, the following minimization measures will be implemented depending on site-specific needs:

1. Barriers: Plan participants may deploy barriers such as silt fencing to prevent adults and chicks from crossing a road or accessing a parking lot. These barriers may be placed at both “hot spots” where adults and their broods consistently cross a road or access a parking lot, and at sites where adults and broods may travel less consistently across roads.
2. Signage: Plan participants may deploy signage alerting motorists to watch for crossing birds and to obey speed limits. At some sites, signs may be used to alert motorists and beach goers to contact staff if they observe piping plovers in or near a road or parking lot.
3. Staff training: Plan participants must provide shorebird monitors and parking attendants adequate training prior to a Plan participant implementing this covered activity.
4. Traffic management: Beach managers must design protocols to manage vehicular traffic on roads and parking lots when chicks and tending adults are present. These protocols might include temporarily rerouting traffic away from a section of a parking lot with chicks, having a monitor or parking attendant “herd” chicks out of a parking lot or across a road, reducing speed limits, or instituting temporary road closures to allow chicks to pass. Traffic management also involves communication: (1) relaying information about plover locations; (2) relaying information about specific traffic management protocols; and (3) responding to motorists or pedestrians alerting managers to the presence of plovers.

*Recreation and Beach Operations Associated With Reduced Symbolic Fencing Around Nests*

1. Fencing will be reduced only to the extent necessary to achieve specific recreational or beach operations objectives and will not be reduced to less than 10 yards of a nest except under limited circumstances.
2. 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.
3. Fencing distance from the nest will be gradually reduced, in increments of approximately 10 yards, no more than once daily.

*Recreation and Beach Operations Associated With Reduced Proactive Fencing of Habitat*

1. Plan participants will limit reduced fencing to the minimum necessary to resolve the impairment issue, up to 10 percent or 2 acres of available nesting habitat at a given breeding site, whichever is less.
2. Plan participants will further minimize take by limiting the number of breeding pairs that may be exposed to the reduced proactive fencing at a given site to 15 percent of breeding pairs present during the previous breeding season.
3. At up to five sites statewide, the MADFW may allow reduced proactive fencing of up to 20 percent of habitat or 4 acres, whichever is less (HCP section 5.2.2.3) and/or may authorize exposure to take for up to 30 percent of the number of breeding pairs at five sites.

4. The MADFW will limit the number of authorizations for this covered activity in a given year to no more than 50 percent of the statewide allowable take exposure authorizations for any year in which more than 10 take exposures would be authorized (HCP section 3.3.2.1). The 50-percent limit would not apply in any year when 10 or fewer take exposures are available statewide.
5. The MADFW may authorize beach raking or the temporary placement of material such as cover boards on the beach to deter nesting and minimize the risk of breeding pairs and nests being exposed to disturbance from recreational activities. If piping plovers nest despite the lack of symbolic fencing, Plan participants will immediately install symbolic fencing around the nest to limit disturbance and prevent the destruction of eggs.

#### *Recreation and Beach Operations at Piping Plover Nests with Nest Moving*

1. The MADFW will work with Plan participants to determine whether nest moving is necessary or whether the participant could achieve the same or similar result with other approaches.
2. Nests will not be moved until at least 48 hours after the clutch is completed.
3. Nests will not be moved during inclement weather, extreme heat, or evening hours.
4. An appropriate relocation site will be chosen in suitable habitat that minimizes the movement distance to the extent practicable.
5. Nests will be moved using the “cylinder/plate/platform method” (HCP section 3.2.2.3).
6. The MADFW will train monitors in nest moving techniques and directly oversee and participate in nest moving the first time nest moving is attempted at a given site and anytime new personnel are approved to implement nest moving.
7. Nests will be moved gradually to reduce the risk of abandonment. The first move will generally be less than 15 feet; however, distances may vary by site.
8. 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.
9. 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.
10. The nest may then be moved repeatedly, up to two times per day, in 10- to 20-foot increments following this monitoring procedure. The MADFW may allow up to three movements per day.
11. If inconsistent incubation or significant distress behavior is observed, nest movement will be halted and resumed the next day.
12. If the first attempt to move the nest is unsuccessful, nest moving may be attempted again the following day.
13. In cases where parent birds fail to accept the moved nest, the MADFW will be consulted to determine the best course of action.

#### *Over-sand Vehicle Use in Vicinity of Unfledged Chicks*

1. Travel in the vicinity of unfledged chicks will be restricted to a single, clearly demarcated vehicle travel corridor less than 5 yards wide.
2. Parking will not be allowed within 218 yards of unfledged chicks during the first week after hatching, and never closer than 109 yards of unfledged chicks.

3. The MADFW will encourage participants to use a restricted parking zone considerably farther than 109 yards from unfledged chicks to reduce the need for constant monitoring of chicks and readjustment of vehicle parking during the course of the day.
4. OSV travel in the vicinity of unfledged chicks will be restricted to no more than 6 hours per day and may occur only in two to three travel periods during daylight hours.
5. Vehicles must be escorted by one these options:
  - a. A passenger walking in front of each vehicle, scanning for chicks;
  - b. A single escort walking in front of a caravan of 50 vehicles, scanning for chicks;  
or
  - c. In lieu of a single pedestrian caravan escort, the MADFW may approve a qualified shorebird monitor to lead a caravan in an open-top OSV at 5 miles per hour or less.
6. Vehicle escorting will begin at least 200 feet from the closest chick and terminate no less than 200 feet past the last chick in a given brood.
7. Measures to address (1) enforcement of restricted driving hours and escorting procedures including specific procedures for temporarily halting traffic if monitors observe chicks approaching the travel corridor; (2) communication among monitors, beach access attendants, law enforcement, and other staff; and (3) protocols for escorting vehicles off of the beach in the event of an emergency, must be approved by the MADFW and in place prior to implementing the OSV escort program.
8. Tire ruts must be smoothed at least once daily in the travel corridor, at the end of the travel period.
9. Detailed information on site-specific thresholds for temporarily halting traffic must be provided in IAMPs.

The Service notes that the HCP provides limited explanations for how the MADFW established the limits on take exposure (e.g., take exposure at any one site being limited to 15 percent of breeding pairs at a site annually) and the identified exceptions to those limits (e.g., 30-percent exception at five sites) (HCP pages 1-5, 3-2). As explained above, such limits constrain the extent to which Plan participants can implement the covered activities, but do not change how the other avoidance and minimization components of the plan are implemented. The Service has reviewed the limits and exceptions and determined that there is no other biological basis that should be considered in establishing such limits and that the MADFW's explanations from a practical perspective make sense. In terms of the exceptions, the Service documents (i.e., EA and BO) assume they will be fully used annually to consider the broadest potential impacts of the Plan.

The MADFW and the Service considered additional restrictions or measures to further minimize the likelihood of take of piping plovers; however, additional measures would equate to impact avoidance (e.g., State and Federal guidelines) and would prevent the very activities requested to be allowed by the ITP or would have no additional benefit to piping plovers. Therefore, not only are additional minimization measures not necessary, but in many cases they are not considered practicable relative to achieving the objectives of the plan. For example, some beach access points, roads, and OSV travel corridors are so narrow that fencing larger areas around nests or increasing buffer distances around vehicles in the vicinity of unfledged chicks would preclude the covered activities.

In summary, the HCP contains both activity-specific measures and broadly applicable measures and commitments to avoid and minimize the likelihood and extent of take by covered activities. The HCP also requires the MADFW to consider specific criteria (final ITP section 5.2.2.1) when they approve Plan participant-generated IAMPs to ensure they include all appropriate minimization measures in the IAMPs. Because the HCP and ITP will limit take exposure to the minimum extent necessary to resolve the impairment issue and the covered activities include required avoidance and minimization measures that will be sufficiently protective of nesting and fledging plovers, the Service finds that the MADFW has adequately reduced the likelihood and extent of take of piping plovers and therefore has minimized the impacts of the taking to the maximum extent practicable.

#### Mitigation Measures and Adaptive Management

The HCP (section 2.3.2.7), EA, and BO all discuss predation as a threat to piping plovers. The BO characterizes predation as posing "...a continuing (and perhaps intensifying threat) to Atlantic Coast piping plovers" and includes documentation of predation as a major ongoing and/or increasing threat to plovers since the species was listed (i.e., Status of the Species, Threat from predation sections). Accordingly, to mitigate for the incidental take of piping plovers, the MADFW and Plan participants will implement predator management (HCP sections 4.3.2, 4.3.2.1). To compensate for reduction in productivity and occasional loss of an adult plover by covered activities, the MADFW and Plan participants will apply predator management to benefit at least 2.5 piping plover breeding pairs for every pair (clutch, chicks, or territory) exposed to covered activities. They also will implement predator management to benefit an additional 0.5 breeding pair for each instance of the *Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks* covered activity. The MADFW's mitigation plan was modeled after the "Enhanced Management Program" developed to benefit piping plovers affected by the oil spill from Bouchard Barge 120 in Buzzards Bay (FWS et al. 2012).

As an example, for 2016, based on the statewide population average for the past three years, the maximum number of broods, nests or territories that the MADFW will be authorized to expose to covered activities in 2016 will be 44. If the MADFW was to convey all of this take allowance to Plan participants, the MADFW and/or Plan participants would have to implement predator management to benefit at least 110 breeding pairs of piping plovers. This number would increase by 0.5 pair for every instance of *Use of roads and parking lots in the vicinity of unfledged piping plover chicks* implemented by Plan participants to address potential impacts to adult plovers.

The MADFW also commits to increasing average productivity of the pairs benefiting from mitigation by at least 20 percent. This approach is preferred over asking the MADFW to achieve a specific productivity level, because productivity levels can fluctuate substantially from year to year, likely due to factors outside the MADFW's control, and therefore obtaining a specific productivity level may not be attainable. As discussed in the BO, survival and productivity of local piping plover populations heavily influences population growth and stability. Accordingly, improving productivity will contribute to the maintenance of a viable and robust population of the piping plover in Massachusetts (i.e., the biological goal of the HCP). Based on an analysis of

predator management in Massachusetts presented in HCP section 4.3.2.1 indicating that predator management provides substantial productivity increases for piping plovers (e.g., the four sites studied for more than 5 years produced a 57-percent productivity increase), the MADFW and the Service expect these actions to result in at least a 20-percent average increase in piping plover productivity for the pairs benefiting from mitigation. A 20-percent increase in the productivity of 2.5 to 3 pairs would, at a minimum, offset a 50-percent loss in productivity of each nest/brood/territory exposed to take by covered activities and could more than compensate for the impacts of take. Therefore, in the absence of a mitigation deficit requiring “truing up,” the MADFW does not need to provide additional mitigation or demonstrate that more mitigation would be infeasible.

Plan participants can choose to implement onsite predator management or pay the MADFW to implement offsite predator management. A Plan participant choosing to implement onsite predator management is required to develop a “mitigation plan” that details the site-specific predator management that will be implemented (HCP section 5.2.2.3). The plans are subject to Service approval and need to be submitted as part of the mitigation plan for approval by the MADFW as part of the COI application process. Whether mitigation takes place onsite or offsite, the MADFW is responsible for ensuring that sufficient mitigation occurs to offset the take incurred by the Plan participants via the HCP. To ensure that onsite mitigation occurs, the MADFW is also responsible for confirming that Plan participants conduct predator management prior to implementing covered activities. For offsite mitigation, the MADFW will collect sufficient predator mitigation funds from each Plan participant prior to that participant implementing covered activities. In the event that insufficient funds or sites are available to fulfill mitigation requirements, the MADFW will reduce the number of Plan participants and/or take authorizations. A summary of the MADFW’s process for selecting sites for predator management and developing and implementing site-specific budgets and work plans is provided in table 4-3 of the HCP.

Predator management will occur at sites with adequate numbers of breeding pairs to achieve the required mitigation ratio. However, the number of breeding pairs at a given site varies from year to year, and the exact number of breeding pairs benefiting from predator management will not be known until after the breeding season. Therefore, the MADFW will use the number of breeding pairs present during the previous year to inform the current year’s predator management plan. As part of the Plan’s monitoring program, the pairs at the mitigation site will be recounted during the breeding season, concurrent with predator management to determine how the number of piping plover pairs benefited compares with the number of pairs expected to occur at the site. If predator management benefits more plover pairs than expected, the MADFW can carry over the “surplus” pairs as mitigation credits for up to three years (HCP section 5.2.2.1) and use the credits as needed to address future mitigation obligations including deficits. However, if predator management benefits fewer plover pairs than expected, the required mitigation ratio (and biological objective 2) would not be met. In this case, the MADFW would have to implement adaptive management and conduct additional predator management prior to or during the following breeding season to make up for the deficit (see Chapter 5). This process applies to onsite mitigation as well.

The MADFW will ensure that the 20-percent increase in productivity associated with biological objective 2 is being met, regardless of whether the predator management occurs onsite or offsite. Because evaluating changes in productivity and the efficacy of predator management across multiple sites is difficult to evaluate over short time frames, the MADFW will use the results of the compliance and effectiveness monitoring program (HCP sections 4.4.1.1 and 4.4.1.2)—a critical factor in ensuring that the HCP is mitigating to the maximum extent practicable—to prepare a more detailed analysis and report on the efficacy of predator management every 5 years for the term of the ITP. The Service expects that the monitoring required in the HCP will effectively determine site-specific productivity to inform the 5-year reports. This report will calculate and compare average productivity at sites that received predator management to the productivity at control sites and to the productivity baseline at the mitigation sites prior to predator management. The Service expects productivity, averaged across mitigation sites, to be at least 20 percent higher than the baseline productivity at mitigation sites prior to predator management (HCP table 4-3). The 5-year report could indicate that more chicks were “produced” than predicted, in which case objective 2 would be met. Alternatively, the report may show that fewer chicks were “produced” than predicted if predator management increased productivity by less than the expected 20 percent.

In the event that productivity does not meet the standard set in objective 2, the MADFW would have to implement adaptive management and conduct additional predator management to “true up” the productivity deficit. However, the HCP recognizes that the measurable average increase in productivity from predator management will fluctuate, in part because of factors outside the control of the MADFW and Plan participants (e.g., extreme weather events), and that these uncontrollable factors could reduce productivity, offsetting some or all of the benefits of the mitigation program. Accordingly, if the results of effectiveness monitoring and the 5-year report indicate that average productivity at mitigation sites increased less than 20 percent, the MADFW will implement additional predator management within two breeding seasons to make up a deficit of up to 5-percent productivity. If after accounting for a deficit of up to 5 percent, the mitigation site productivity is still below 20 percent, no further increase in productivity will be required of the MADFW for that 5-year review period. Based on the best available science regarding the benefits of predator management for piping plovers and similar species (Neuman et al. 2004; Hartlaub et al. 2007; NPS 2007a,b; Hartlaub et al. 2008; Vashon 2008; Cohen et al. 2009; Service 2009; Wiitala et al. 2009; A.D. Vashon, Wildlife Services, pers. comm. 2016; MADFW unpublished data; USFWS *in litt.* 2016 ), the Service expects the HCP’s predator management program to increase average productivity by at least 20 percent, and a substantial negative deviation from this expectation would be the result of unforeseen factors outside the control of the MADFW obscuring the positive results of the predator management.

If these 5-year reviews indicate that biological objective 2 is not being met, the MADFW will implement adaptive management, which could include a combination of (1) changing predator management protocols or methods, (2) modifying mitigation site selection criteria and ceasing predator management at sites where plover productivity is not responding to predator management, (3) decreasing take exposure allocations without decreasing predator management effort, and/or (4) increasing the number of breeding pairs benefiting from predator management per exposure to covered activity.

The MADFW also addressed mitigation uncertainty through changed circumstances—Permit Extension for Mitigation Assurances (HCP section 5.3.2.4). The final year of the ITP term will be reserved for “truing up” any outstanding mitigation deficit. If the mitigation deficit exceeds what can be offset in the final year of the permit term, the permit term can be automatically renewed for one additional year for resolving the outstanding deficit. No take will be authorized or can be extended during this additional year, unless the permit is renewed to allow the program to continue.

The Service believes that selective predator removal is an effective mitigation strategy when the piping plover population in Massachusetts is below carrying capacity, as it will serve to increase the number of plovers that use the available nesting habitat. However, if the population were to reach carrying capacity and productivity was at a level that just offsets adult mortality, the effect of the take would be to reduce the population below carrying capacity. In this case, the increase in productivity resulting from mitigation would cause the population to increase back to carrying capacity. If the population is at carrying capacity and productivity is higher than necessary to offset adult mortality, the population will be producing excess offspring (offspring that the habitat may not support), and the effect of the take will be to reduce the number of excess offspring produced. In this case, the increase in productivity resulting from mitigation would not cause a population response, but it would offset the loss of excess offspring. Therefore, if the population is at carrying capacity, and regardless of the level of productivity, mitigation will fully offset (will be commensurate with) the impact of the taking.

In addition to predator management, the MADFW and Plan participants will conduct increased education and outreach, increased law enforcement, and experimental nesting habitat improvement projects. Plan participants will implement increased education, outreach, and law enforcement at sites they manage and possibly at supplemental sites. The MADFW will implement a pilot habitat management project on at least two sites within the first 5 years of the permit term, and at up to five sites over the permit term. These pilot projects will be limited in scope to no more than 0.5 acre per project and 2.5 acres total, and will mimic natural disturbance processes such as storm overwash. Given the difficulty in quantifying the benefits of increased education and outreach, increased law enforcement, and habitat improvement, these actions will not contribute toward the MADFW’s mitigation obligation under the ESA. However, they will complement predator management efforts, benefiting the piping plover.

The MADFW and the Service considered alternative mitigation strategies such as land protection and large-scale habitat restoration or improvement; however, the challenges associated with these approaches eliminated them from consideration. The portions of the Atlantic coastline of Massachusetts that contain piping plover habitat are either already largely developed or are currently protected from development by Federal, State, local government, or nongovernmental conservation organizations. Parcels that contain unprotected piping plover habitat or land that would be suitable for habitat restoration could be appropriate for acquisition and protection as a mitigation strategy; however, we expected these parcels to be prohibitively expensive to acquire and/or restore and to become available too infrequently to provide a reliable mitigation strategy for a large-scale HCP covered by a long-term ITP. Further, we expected some State environmental laws (i.e., Massachusetts Wetlands Protection Act) to limit the MADFW’s ability

to implement large-scale habitat restoration or improvement. Therefore, predator management is the only method the MADFW will use to mitigate for take of piping plover under the ESA.

In conclusion, the minimization measures adequately reduce the likelihood and extent of take of piping plovers, and the mitigation is commensurate with the impact of the take anticipated by the project. Therefore, the Service finds that the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking.

**3. The MADFW will ensure adequate funding for the HCP, and procedures to deal with unforeseen circumstances will be provided.**

The Service finds that the MADFW has ensured adequate funding for implementation of the HCP. The HCP (section 5.4) outlines the estimated costs of HCP and COI implementation and describes assurances that adequate funding for HCP and COI implementation will be secured by the MADFW and Plan participants.

To implement the HCP, adequate funding needs to be assured by both the MADFW and Plan participants. Plan participants will provide budgets associated with their implementation commitments in IAMPs and mitigation plans that are required for COI applications. In approving COI applications, the MADFW will also be approving that the budgets are sufficient to fully implement the site-specific avoidance, minimization, monitoring, and mitigation plans. The HCP also requires Plan participants to have a contingency fund in reserve in case additional funding is required during COI implementation. If proposed budgets are inadequate, MADFW cannot approve the COI applications.

Through this HCP, the MADFW is essentially administering a program that conveys its authorized take to Plan participants. As such, the MADFW plays an oversight role and will incur costs that include program administration, implementation and effectiveness monitoring of Plan participants, and reporting and coordinating with the Service to ensure the HCP is being adequately implemented. In addition, the MADFW is ultimately responsible for assuring that any take that it conveys is fully offset either onsite by Plan participants or offsite through a statewide predator management program that it implements. Plan participants electing to mitigate via the MADFW's statewide predator management program will pay an annual mitigation fee that the MADFW will use to implement the program. In addition, the MADFW has established a contingency fund that is assured through its own funding that will be used in the event that additional funds are needed for program administration, implementation of the statewide predator management program, and/or to address adaptive management/changed circumstances commitments.

*How much funding is adequate?*

The estimated costs of HCP implementation for the MADFW and COI implementation for Plan participants are outlined in tables 5-4 and 5-5, respectively, of the HCP. The MADFW's costs include program administration costs and monitoring and adaptive management costs. Plan participant costs include staffing costs, direct costs, contingency costs, mitigation fees, and surcharges. The MADFW has committed to secure adequate funding, and to ensure that Plan participants secure adequate funding, to fulfill all commitments under the HCP and ITP

*regardless of cost.* Furthermore, in the event that a Plan participant defaults on a COI requirement (e.g., properly carrying out onsite mitigation) and the MADFW is unable to bring the Plan participant into compliance through enforcement or other action, the MADFW has committed to funding and ensuring implementation of the required action. The Service has reviewed the MADFW's proposed budget and determined that it provides reasonable estimates of the costs of HCP and COI implementation.

#### *Sources of funding*

The MADFW staff is funded through grants, contributions to the Natural Heritage and Endangered Species Fund, the State general fund, and Federal funds for specific programs. The MADFW spending authority is granted through an annual legislative process as described under HCP section 5.4.2.1. The State Legislature, or the Office of the Budget when the Legislature is not in session, authorizes the expenditure of Federal funds, including grants and appropriations. The MADFW recognizes that Federal funds (e.g., Pittman-Robertson funds) have limitations on the activities on which they can be spent. The MADFW will ensure that Federal funds are used only for eligible HCP activities.

Plan participants will likely fund COI implementation through locally appropriated funding, although Plan participants could conceivably obtain grant or other funding as well. For some Plan participants, funding generated from OSV or other user fees for covered activities may directly or indirectly cover COI implementation costs.

#### *Assurances that adequate funding will be secured*

The HCP (section 5.4.2.3) describes the assurances that the MADFW and Plan participants will secure adequate funding for HCP implementation. The HCP clarifies that, before the MADFW provides annual authorizations to Plan participants (through issuance of either new COIs or annual authorizations under existing multiyear COIs), the MADFW must annually provide confirmation to the Service that adequate funding for its HCP implementation obligations has been secured and dedicated within the MADFW operating budget for the year. The MADFW will provide evidence that the funds have been earmarked or segregated for their intended purpose within the MADFW's accounting system (HCP section 5.2.2.1, Annual Reporting).

On an annual basis, the MADFW will also require each Plan participant to demonstrate that it has secured adequate funding to cover COI implementation costs before authorizing the Plan participant to conduct any covered activities (i.e., incur any take). In addition, under the HCP, the MADFW will require Plan participants to pay offsite mitigation fees by February 15 of each year to ensure funding in time to implement predator management in late winter and early spring, well in advance of conducting covered activities. The MADFW will require each Plan participant opting to provide offsite mitigation funding to pay those funds into an escrow account subject to an escrow agreement in substantially the same form as the sample provided in HCP appendix D.

The MADFW recognizes that incidental take authorization under the ITP is contingent on demonstrating adequate annual funding for HCP implementation and that failure to annually ensure adequate funding to implement the HCP is grounds for suspension or revocation of the ITP.

*Managing offsite mitigation funding*

The MADFW will hold each Plan participant's offsite mitigation fee payments in an escrow account subject to an escrow agreement in substantially the same form as the sample provided in the HCP's appendix D. This sample escrow agreement was approved by the Service for use by the MADFW and the Town of Orleans to ensure funding for the Town's mitigation obligation pursuant to its 2015 HCP and ITP. Therefore, this template is suitable for use in implementing the MADFW's HCP. If the escrow agreement changes substantially, the MADFW will provide a draft of the new escrow agreement to the Service for review and written approval prior to finalization. In the future, the MADFW may elect to establish a mitigation trust fund or similar designated account to hold mitigation funds, in which case the MADFW will provide draft trust or account documents to the Service for review and approval. Furthermore, to provide further assurance of funding for implementation of the HCP, the Service has conditioned the ITP to require the MADFW to (1) annually account for inflation and changes in hard costs, personnel costs, and workload allocations in its funding request to the State legislature; (2) annually account for increased mitigation costs in the fees charged to Plan participants (including those holding multiyear COIs); and (3) manage (track, disburse, report, etc.) mitigation fees paid to escrow accounts for offsite predator management mitigation separately from any other fees paid to the same accounts (other MADFW funds for other programs, other species, or other types of mitigation required under the State's permit).

*Finding*

The HCP and/or ITP provide reasonable estimates of the costs of HCP and COI implementation, identify available sources of funding for implementation, provide assurances that each year covered activities will not be authorized until adequate funding is secured by the MADFW and Plan participants, and describe a process and instruments for ensuring appropriate management of offsite mitigation funds. Therefore, the Service finds that the MADFW has ensured adequate funding for HCP implementation.

Changed Circumstances

Changed circumstances are defined by Federal regulation as those circumstances affecting a species or geographic area covered by the HCP that can be reasonably anticipated by the applicant or Service and to which the parties can plan a response (50 CFR 17.3). The changed circumstances identified in the HCP are:

- New Species Listings
- Climate Change
- Coastal Erosion, Sea Level Rise, and Flooding
- Permit Extension for Mitigation Assurances

It is important to note that, because the take limits defined in chapter 3 of the HCP are predicated on piping plover population size, outside factors, such as those described below for changed circumstances, do not pose the risk to species inherent in other HCPs. Rather, the MADFW's take limit approach is self-correcting and will reduce the take allowance if either anticipated or unanticipated changes occur.

### *New Species Listings*

The Service will notify the MADFW when a non-covered species associated with piping plover habitat might be or has been proposed for listing (“new non-covered species”). The MADFW will then assess the impacts of the covered activities on the new non-covered species. If the MADFW determines that the new species occurs or could occur in piping plover habitat and could be adversely affected by covered activities, the MADFW and Plan participants will develop measures, in coordination with the Service, to avoid take of the proposed species. If necessary, covered activities will be suspended until these measures are in place. If the impact assessment indicates that take authorization is required to fully implement the covered activities, the MADFW will apply for a permit amendment or apply for a new and separate permit. The MADFW will continue to work with the Service to develop and implement interim guidelines to avoid take until the permit amendment or a new permit is issued.

### *Climate Change—Coastal Erosion, Sea Level Rise, and Flooding*

Climate change has the potential to result in sea level rise, coastal flooding, and an increase in the frequency and/or severity of coastal storms leading to shoreline change (see HCP sections 2.2.3 *Climate and Climate Change* and 2.3.2 *Piping Plover*). As these are the primary drivers through which climate change may impact piping plovers and their habitat, the changed and unforeseen circumstances for climate change, as well as the MADFW’s response to these changes, are discussed below under *Coastal Erosion, Sea Level Rise, and Flooding*.

#### *Coastal Erosion*

The projected rates of shoreline change in Massachusetts (HCP table 5-2) are based on an extensive analysis of historical data and forecasted changes (Thieler et al. 2013). Therefore, such changes in beach erosion and accretion are foreseeable over the permit term. Erosion and accretion in excess of these projections are considered unforeseen circumstances.

The HCP already anticipates substantial beach erosion and accretion occurring in the Plan area (HCP section 1.2.2). Piping plover habitat lost to beach erosion within the changed circumstance defined in table 5-2 would be taken into account during the annual assessments of population size and population trends. In the event of a population decline due to beach erosion or other factors, these population data would be used to automatically reduce the annual limits of take exposure for the following season, or even eliminate all take exposure allowances as described in chapter 4 of the HCP. Therefore, no additional remedial actions are necessary in response to beach erosion. The plan area is intended to capture all currently suitable Massachusetts piping plover breeding habitat, as well as the area within which additional piping plover breeding habitat could develop during the permit term due to the dynamic nature of the coastline. New piping plover habitat would be incorporated into the plan area and the HCP’s conservation and monitoring program. Therefore, no remedial actions are necessary in response to beach accretion.

#### *Sea Level Rise and Flooding*

Based on historical measurements of sea level rise in the Northeast and projected changes in sea level rise and coastal flooding in Massachusetts (HCP table 5-3), it is foreseeable that parts of the plan area could experience sea level rise of up to 12.2 inches and up to 72 flooding events per

year. Sea level rise and flooding in excess of these projections are considered unforeseen circumstances.

In response to sea level rise and flooding, the MADFW would adjust the plan area to reflect the shift in piping plover breeding habitat. As defined in chapter 1 of the HCP, the plan area automatically adjusts in response to erosion or accretion to include a 300-yard zone along the Massachusetts coast. The MADFW will also modify or enhance monitoring to track new population levels and locations as they change in response to shifting habitat.

In addition to these remedial actions, piping plover habitat loss from sea level rise would be taken into account during the annual assessments of population size and population trends. These population data would be used to automatically reduce the annual limits of take exposure for the following season, or even eliminate all take exposure allowances within the limits specified in chapter 4 of the HCP.

#### *Permit Extension for Mitigation Assurances*

As explained in HCP section 5.2.2.1, in the event that any remaining mitigation deficit exceeds what can be offset in the final year of the permit term (e.g., not enough sites for predator management are available to offset the required mitigation deficit), the permit term can be automatically renewed for one additional year for the sole purpose of resolving any remaining mitigation deficit. No take would be authorized during this additional year. A minor permit amendment will be required to implement this changed circumstance provision.

#### Unforeseen Circumstances

Unforeseen circumstances are defined as changes in circumstances affecting a species or geographic area covered by an HCP that could not reasonably have been anticipated by plan developers and the Service at the time of the development and negotiation of the plan and that result in substantial and adverse changes in the status of the covered species. They are those events that are completely unpredictable, or that exceed historical variability, and that result in a substantial and adverse change to the status of a covered species. The HCP section 5.3.1 outlines the obligations of the MADFW and the Service in the event of unforeseen circumstances and describes the assurances guaranteed by the Service's "No Surprises" regulations (50 CFR 17.22(b)(5) and 17.31(b)(5)). Under the No Surprises Rule, if unforeseen circumstances occur, the MADFW will not be obliged to commit additional land, water, or financial compensation, or be further restricted in the use of these resources beyond the level agreed upon for the piping plover in the HCP, provided the MADFW is properly implementing the HCP.

Although not described in the HCP as an unforeseen circumstance, the failure to realize an average 20-percent increase in productivity following implementation of predator management (biological objective 2) includes an unforeseen circumstance component. A shortfall in effectiveness of predator management of greater than 5 percent is considered an unforeseen circumstance, and the HCP describes the procedures, summarized as follows, to deal with this circumstance.

In section 4.4.2, the HCP states that in the unlikely event that effectiveness monitoring indicates that biological objective 2 is not being met, the MADFW will change predator management protocols, decrease take exposure allocations without decreasing predator management effort, or increase the number of breeding pairs benefiting from predator management per exposure to covered activity. However, the HCP section 4.3.2 further states that the *measurable* average increase in productivity from predator management will fluctuate, in part because of factors out of the MADFW or Plan participant's control, and that these uncontrollable factors could mask the benefits of the mitigation program. Accordingly, if the results of effectiveness monitoring indicate that average productivity at mitigation sites (both onsite and offsite) increased less than 20 percent, the MADFW will implement additional predator management within two breeding seasons to make up a deficit of up to 5-percent productivity. If after accounting for a deficit of up to 5 percent, the mitigation site productivity is still below 20 percent, no further increase in productivity will be required of the MADFW for that 5-year review period.

In conclusion, the Service finds that the MADFW has provided procedures to deal with unforeseen circumstances. In addition, the HCP section 5.3.2 includes procedures, summarized above, for determining the occurrence of changed circumstances, which trigger changes in the conservation plan.

**4. The taking of piping plover will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.**

The ESA's legislative history indicates Congress intended this issuance criterion be based on a finding, among others, that the proposed action is not likely to jeopardize a listed species pursuant to section 7(a)(2) of the ESA or adversely modify critical habitat. Implementing regulations for section 7 (50 CFR 402) define "jeopardize the continued existence of" as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." As a result, the Service has reviewed the project pursuant to section 7 of the ESA.

The jeopardy analysis completed in the BO (USFWS 2016) assesses whether implementing the HCP would be reasonably expected to directly or indirectly reduce appreciably the likelihood of both survival and recovery of the piping plover by reducing its reproduction, numbers, or distribution in the wild. Jeopardy determinations are ultimately made for the listed entity, in this case, the threatened Atlantic Coast piping plover population which has a rangewide breeding distribution from Newfoundland, Canada to North Carolina. However, the jeopardy analysis is best conducted in the context of an analytical framework that addresses the effects at various scales, beginning with the smaller, local population. Because the action area for this proposal is the entire State of Massachusetts, we start by considering the effects of the ITP on the Massachusetts piping plover population.

We determined the HCP would not jeopardize the continued existence of the piping plover in Massachusetts. First, the HCP would not reduce statewide reproduction of piping plovers in Massachusetts although on a site specific level, productivity of affected breeding pairs is anticipated to be reduced by 50 percent. The HCP requires that the percentage of pairs that could

be affected at a given site is low, 15 percent for most sites (although up to 5 sites may have up to 30 percent exposed to covered activities) and for sites with 7 pairs or less, only one pair may be exposed to the covered activities. This minimizes the impact of the reduced activity by site by ensuring that the majority of plovers are unaffected by the covered activities. Moreover, at no time will more than 7 percent of the statewide population experience reduced productivity as a result of the HCP. Should the population decline for any reason, the MADFW's sliding scale for take would automatically reduce take limits. To compensate for, any reduction in productivity caused by the covered activities, the HCP's predator management program would increase productivity for breeding pairs either onsite or offsite, at a minimum balancing the effects of reduced productivity.

Second, we do not expect the covered activities to impact the statewide distribution of piping plovers, because the allowed take exposures would be dispersed across sites, the amount of take per site may not exceed 15 percent of the site's breeding population (up to 30 percent for five sites) and the amount of habitat that may be affected may not exceed 20 percent at a given site (minimizing the number of pairs affected by the reduced proactive fencing covered activity). The HCP would not cause any permanent loss of piping plover habitat. Impacts from covered activities are limited to the temporary functional loss of suitable courtship and nesting habitat. Once the covered activity is no longer implemented, the habitat will return to its original state and availability to plovers.

Third, due to the noncontiguous distribution of large non-federally owned sites, the statewide and site-specific limits for take exposure, and dispersal of recruits from their natal sites, the HCP would not discernibly affect the distribution of piping plovers across Massachusetts. Because the effects of the HCP on the Massachusetts piping plover population will be minimal, site-specific and likely to be fully offset by the mitigation, the effects of the HCP on the New England recovery unit are expected to be neutral and effects to the other recovery units, or the Atlantic Coast population as a whole, are anticipated to be imperceptible.

In the Service's biological opinion, we concluded that, in the context of the status of the piping plover, the environmental baseline for the action area, the expected effects of implementing the HCP on the piping plover, and cumulative effects, the covered activities would have minor impacts on the reproduction, numbers, or distribution of piping plovers in Massachusetts, the New England recovery unit and within the Atlantic Coast population. When including the HCP's mitigation strategy, the HCP would, at a minimum, balance any adverse effects on the species through increasing productivity as a result of predator management. Further, the HCP will not reduce the Massachusetts population's contribution to the species' recovery, because it would reduce take exposure if the population were to decline and ultimately prohibit take exposure if the statewide population dropped to 500 pairs, a level whereby the Massachusetts population still contributes 80 percent to the New England recovery unit's population objective (625 pairs). Therefore, we concluded that the Service issuing the ITP and the MADFW implementing the HCP is not likely to jeopardize the continued existence of the piping plover. Below we provide a brief summary of the jeopardy analysis, but the complete analysis is provided in the BO (USFWS 2016b).

In formulating the biological opinion, we consider the following points:

1. A small proportion of the Massachusetts piping plover population would be affected. The covered activities will annually expose up to 7 percent of the State's breeding pairs and their territories, nests and broods to take when the statewide population is above 500 breeding pairs (according to a sliding scale based on a 3-year average of the statewide population). No take will be authorized if the population drops below 500 breeding pairs. Only one covered activity is anticipated to result in injury or death of adult plovers—use of roads and parking lots could take 1 adult per 20 breeding pairs exposed.
2. Impacts to habitat are limited to the temporary functional loss of suitable courtship, nesting, and foraging habitat from reduced proactive fencing and the transient presence of tire ruts during the time when the escorted vehicles traverse the beach and prior to rut raking.
3. The HCP includes measures to avoid and minimize take of piping plovers. Intensive monitoring to adaptively manage and reduce the risk, as well as activity-specific measures for each covered activity, will reduce the likelihood of take for all covered activities. These measures also would ensure that the productivity of pairs exposed to covered activities is not reduced by more than 50 percent.
4. The best available information indicates that the HCP's mitigation strategy—predator management—will at least offset the taking due to the covered activities, because 2.5 breeding pairs would benefit from predator management for every pair exposed to covered activities.
5. Impacts to the reproduction, numbers, and distribution of nesting pairs of piping plovers in Massachusetts will be minor.
6. We are not aware of any effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area.
7. The proposed action will take place in the New England recovery unit, where the piping plover population has exceeded (or been within three pairs of) its 625-pair abundance goal since 1998, attaining a postlisting high of 918 pairs in 2015, 47 percent above the recovery unit goal.
8. The proposed HCP contains safeguards (e.g., the self-adjusting sliding scale for take allocations) that assure that activities under the HCP will not diminish the contribution of the Massachusetts population to survival and recovery of the New England recovery unit, nor to the Atlantic Coast population as a whole.

After reviewing the rangewide status of the piping plover, the environmental baseline for the action area, the effects of the Service issuing the ITP and the MADFW implementing the HCP, and the cumulative effects, we find that the proposed action is not reasonably expected to reduce appreciably the likelihood of both survival and recovery of the Atlantic Coast population of piping plovers by reducing their reproduction, numbers, or distribution in the wild. Our analysis indicates that the effects of the covered activities are likely to be minimal, temporary, and likely to be at least fully offset by mitigation activities. We conclude that the proposed action is not likely to jeopardize the continued existence of the piping plover in the New England recovery unit or the Atlantic Coast population as a whole.

**5. Other measures the Director of the Service requires as necessary or appropriate for purposes of the HCP, will be met; and the Director has received such other required assurances that the plan will be implemented.**

*Other Measures:* The avoidance, minimization, and mitigation measures and all other aspects of the HCP and ITP incorporate all measures determined by the Service to be necessary for approval of the HCP and issuance of the ITP. Therefore, the Service finds that other measures, as required by the Director of the Service, have been met.

*Other Assurances:* Compliance with the HCP is a condition of the permit. The authority of the permit is a primary instrument for ensuring that the HCP will be implemented. The permittee understands that failure to comply with the HCP will result in having the permit suspended and/or revoked, making the permittee vulnerable to an ESA section 9 violation. Also, on an annual basis, the MADFW will also require each Plan participant to demonstrate that it has secured adequate funding to cover COI implementation costs before authorizing the Plan participant to conduct any covered activities (i.e., incur any take). In addition, under the HCP, the MADFW will require Plan participants to pay offsite mitigation fees, if necessary, by February 15 of each year to ensure funding in time to implement predator management in late winter and early spring, well in advance of conducting covered activities. The Service finds that the HCP will be implemented and all other assurances have been satisfied.

### **III. Public Comments**

On January 21, 2016, the Service published a notice of availability (NOA) and request for comments in the Federal Register for the MADFW's draft HCP and the Service's draft EA (81 FR 3450; Docket No. FWS-R5-ES-2015-0182). The NOA, draft EA, and the draft HCP were made available via the internet (<http://www.regulations.gov>) and the Service's New England Field Office website. The 30-day public comment period closed on February 22, 2016. The Service received 129 unique comment submissions pertaining to the EA and/or the HCP, of which 13 were substantive. Fifteen of the comment letters clearly supported the HCP, and 105 comment letters did not support the HCP. We modified the draft EA, and the MADFW modified the draft HCP, in response to some of the comments we received. Responses to all substantive public comments are included as Appendix B to the Service's final EA. Following final action on the permit application, the Service will publish a notice of permit decision in the Federal Register.

### **IV. National Environmental Policy Act – Analysis and Findings**

Pursuant to the National Environmental Policy Act (42 U.S.C. 4321 et seq.), the Service prepared an EA that considered the issuance of an ITP with implementation of the HCP (the proposed action); a “no action” alternative; a third alternative in which the Service would issue a 10-year ITP and the MADFW would issue 1-year COIs. The Service considered three additional alternatives (EA section 2.4), but eliminated them from detailed analysis as they did not meet the purpose and need for the proposed action, were not practical or feasible, or would not meet the Service's permit issuance criteria. These alternatives were (1) greater deviations from the State and Federal Guidelines, (2) covering additional species under the HCP, and (3) reducing the size

of the Plan area. The Service concluded its NEPA review with a final EA and Finding of No Significant Impact (FONSI)(40 CFR 1508.27).

**V. General Criteria and Disqualifying Factors – Analysis and Findings**

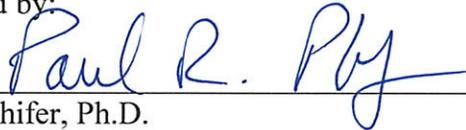
The Service has no evidence that would disqualify or make the MADFW ineligible to receive a permit under our general permitting regulations in 50 CFR 13.21 (b through d) at this time.

**VI. Recommendations on Permit Issuance**

Based on our findings with respect to the ITP application (including the HCP) and supporting Service documents (including EA, FONSI, BO, and ITP conditions), I have determined that the application meets the issuance criteria found in section 10(a)(2)(B) of the ESA.

I therefore recommend issuance of the section 10(a)(1)B incidental take permit (number TE01281C-0) to the MADFW for incidental take of piping plovers that may occur during the implementation of recreational and beach activities on beaches participating in the HCP under COIs issued by the State of Massachusetts.

Approved by:



Paul R. Phifer, Ph.D.  
Assistant Regional Director, Ecological Services  
Northeast Region

7/8/16  
Date

Neuman, K.K., G.W. Page, L.E. Stenzel, J.C. Warriner, and J.S. Warriner. 2004. Effect of mammalian predator management on snowy plover breeding success. *Waterbirds: The International Journal of Waterbird Biology*. 27(3): 257-263.

[Service 2007] U.S. Fish and Wildlife Service. 2007. Recovery Plan for the Pacific Coast Population of the Western Snowy Plover

[Service 2016a] U.S. Fish and Wildlife Service. 2016. Final Environmental Assessment for the Proposed Massachusetts Piping Plover Habitat Conservation Plan and Incidental Take Permit. New England Fish and Wildlife Office. July 2016. 174pp.

[Service 2016b] U.S. Fish and Wildlife Service. 2016. Biological Opinion on the Application for an Incidental Take Permit submitted by the Massachusetts Division of Fisheries & Wildlife for a Habitat Conservation Plan for Piping Plover. July 8, 2016. 64pp.