Massachusetts Habitat Conservation Plan for Piping Plover

Request for Certificate of Inclusion

for Plymouth Long Beach

Prepared for submission to:

Massachusetts Division of Fisheries & Wildlife
Natural Heritage & Endangered Species Program
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Introduction

The Town of Plymouth is requesting a Certificate of Inclusion (COI) in the statewide Habitat Conservation Plan for Piping Plover (HCP) for Plymouth Long Beach. This request includes four covered activities: Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks, Use of Roads and Parking Lots in the Vicinity of Unfledged Least Tern chicks, Oversand Vehicle (OSV) Use in the Vicinity of Unfledged Piping Plover Chicks, and Oversand Vehicle (OSV) Use in the Vicinity of Unfledged Least Tern Chicks.

The Town is requesting up to 5 take exposures for piping plovers, which exceeds 15% of breeding pairs at the site in the previous season (4.5 pairs based on 30 breeding pairs during the 2019 season). The Town requests that the Massachusetts Division of Fisheries and Wildlife (DFW) use their discretion described in Section 5.2.2.3 of the HCP to increase the allowable take exposure to 75% at a limited number of sites to increase the allowable take exposures at Plymouth Long Beach to 5 broods (17% of breeding pairs). The impact avoidance and minimization procedures described in this plan meet or exceed the minimum requirements of the HCP, and for the covered activity that has been implemented in past seasons, Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks, actual time spent monitoring exceeds the minimum described in this plan. While the time spent monitoring a brood on a given day can depend on several factors including brood location and mobility, weather, tides and expected traffic volume, the average amount of time spent monitoring affected broods each day over the last 4 seasons of implementation was 9.6 hours per brood per day. In addition, the proposed mitigation plan exceeds the minimum requirements of the HCP. The Town funds on-site mitigation, which benefits all of the pairs at Long Beach, and at the expiration of the previous COI, 59 pairs of plovers over the required level had benefitted from mitigation.

The Town has implemented the covered activity Use of Roads and Parking Lots in the Vicinity of Unfledged Chicks for both piping plovers and least terns during each of the last four nesting seasons under a COI and Conservation and Management Permit (CMP) No. 017-305.DFW originally issued in 2016 (NHESP File No. 16-35446).

The Town submitted a request for a COI in May 2016. The request included the covered activity Use of Roads and Parking Lots in the Vicinity of Unfledged Chicks for both piping plovers and least terns. Two potential take exposures for piping plover were requested. A COI and CMP were issued on July 8, 2016 and both activities were implemented successfully during the 2016 season.

In December 2016, the Town submitted a request for an amended COI. This request included adding limited night fishing access when only unfledged least tern chicks were present near the road as well as adding two additional activities: Oversand Vehicle (OSV) Use in Vicinity of Unfledged Chicks for piping plovers and for least terns.

In the 2016 amendment request, the Town requested only 2 take exposures, but could have requested up to 3 take exposures based on the number of breeding pairs the previous season (15% of 22 pairs). During the 2018 season, 3 pairs of piping plovers laid nests adjacent to Ryder Way. The Town submitted an emergency request to increase the allowed take exposures to three, which was granted via email on June 22, 2018.

Although 2 of the 3 plover nests adjacent to Ryder Way were predated and the pairs did not renest, all 3 take exposures were used during the 2018 season. Two broods unexpectedly either crossed the road or moved into an area near the road. If the 2 unsuccessful nests had hatched, there could have been 5 broods in the vicinity of the road. In December 2018, the Town submitted a request to amend the COI to include up to 5 take exposures (19% of 2018 breeding pairs) and an amended COI was issued on February 26, 2019. Four broods of plover chicks were exposed to take during the 2019 season.

To date, the covered activity Oversand Vehicle (OSV) Use in the Vicinity of Unfledged Chicks has not been implemented for either piping plovers or least terns at Plymouth Long Beach.

Part 1 - Site Description

1.1 Physical Description of the Property

Plymouth Long Beach is a barrier spit located in Plymouth, Massachusetts. It joins the mainland at Warrens Cove, and trends in a north-westerly direction for approximately 2.8 miles. Long Beach provides storm damage protection and flood control for Plymouth Harbor. Prominent features and landmarks are shown on the maps in Figures 1-1 and 1-2.

The Plymouth Long Beach Management Plan is implemented to protect breeding coastal waterbirds and their habitat as well as wetland resources while providing opportunities for recreational activities. Management zones described in the Plymouth Long Beach Management Plan are shown in Figures 1-1 and 1-2.

There is a long history of shoreline management at Long Beach dating back to the early 1800's, with the most significant effort being the stone dike constructed by the Army Corps of Engineers in the early 1900's. The stone dike runs from Manter's Point at the northern end of the main public parking lot, where it ties in with a concrete seawall added later, to the point of the barrier spit. The scouring effect typically seen with hard coastal structures is evident on the southern portion of the beach, and there is no beach seaward of the dike at high tide for approximately 7,000ft beginning near Manter's Point.

The southernmost portion of the stone dike, 5,000ft in length, was rebuilt by the Army Corps of Engineers in 1971 and included the addition of scour aprons. A portion approximately 2,500ft in length located just north of the reconstructed portion has completely deteriorated. This section begins at a parking area known as the Day Parking Area and runs northward to the over-sand vehicle (OSV) beach access point known as the Crossover. From the Crossover northward, the stone dike is covered by dunes over most of its length.

The northern part of the beach receives some protection from storms from the northeast and east by an offshore bank known as Brown's Bank as well as by Duxbury Beach, Gurnet and Saquish. The dune system is well-developed in this area; however, the point of the beach has seen significant erosion during severe storms during the last several years. The southern portion of the beach does not have the benefit of offshore protection and bears the full brunt of storms from the northeast and east. Much of the dunes and vegetation in these areas have been reduced by erosion.

While about 90% of Plymouth Long Beach is owned by the Town of Plymouth, there are also 19 private properties and 1 property leased from the Town. A map of private and Town properties is shown in Figure 1-3. There are cottages on 16 of these properties. While the activities covered in this COI request will focus on Town-owned properties, the location of breeding activity can vary from year to year. If implementation of any of the covered activities may affect a private property, the Town will obtain written permission from the owner of each impacted property and provide to DFW prior to implementing the covered activity.

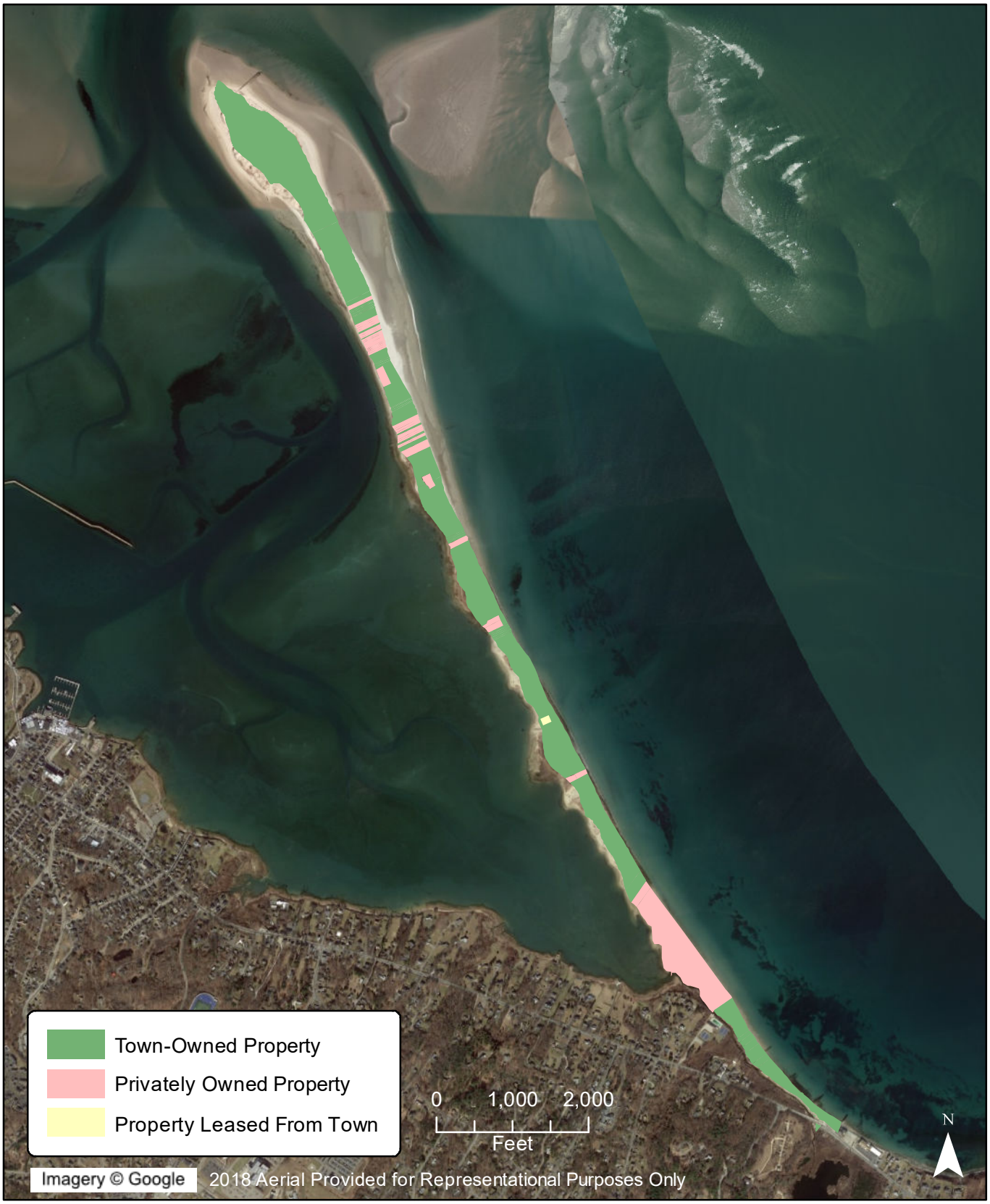
There is an approximately two-mile-long gravel road known as Ryder Way that provides year-round access to these properties as well as public access for recreational areas. In addition to Ryder Way, recreational vehicles can access the beach using an OSV corridor that is installed seasonally, typically from Memorial Day weekend to Labor Day, in Zone 2 (see Figures 1-1 and 1-2). The OSV corridor

Figure 1-1. Plymouth Long Beach Landmarks and Management Zones

Figure 1-2. Detail of the Northern (Left) and Southern (Right) Areas of Plymouth Long Beach with Landmarks and Management Zones

2018 WSP Aerials Provided for Representational Purposes Only

Figure 1-3. Plymouth Long Beach Property Ownership



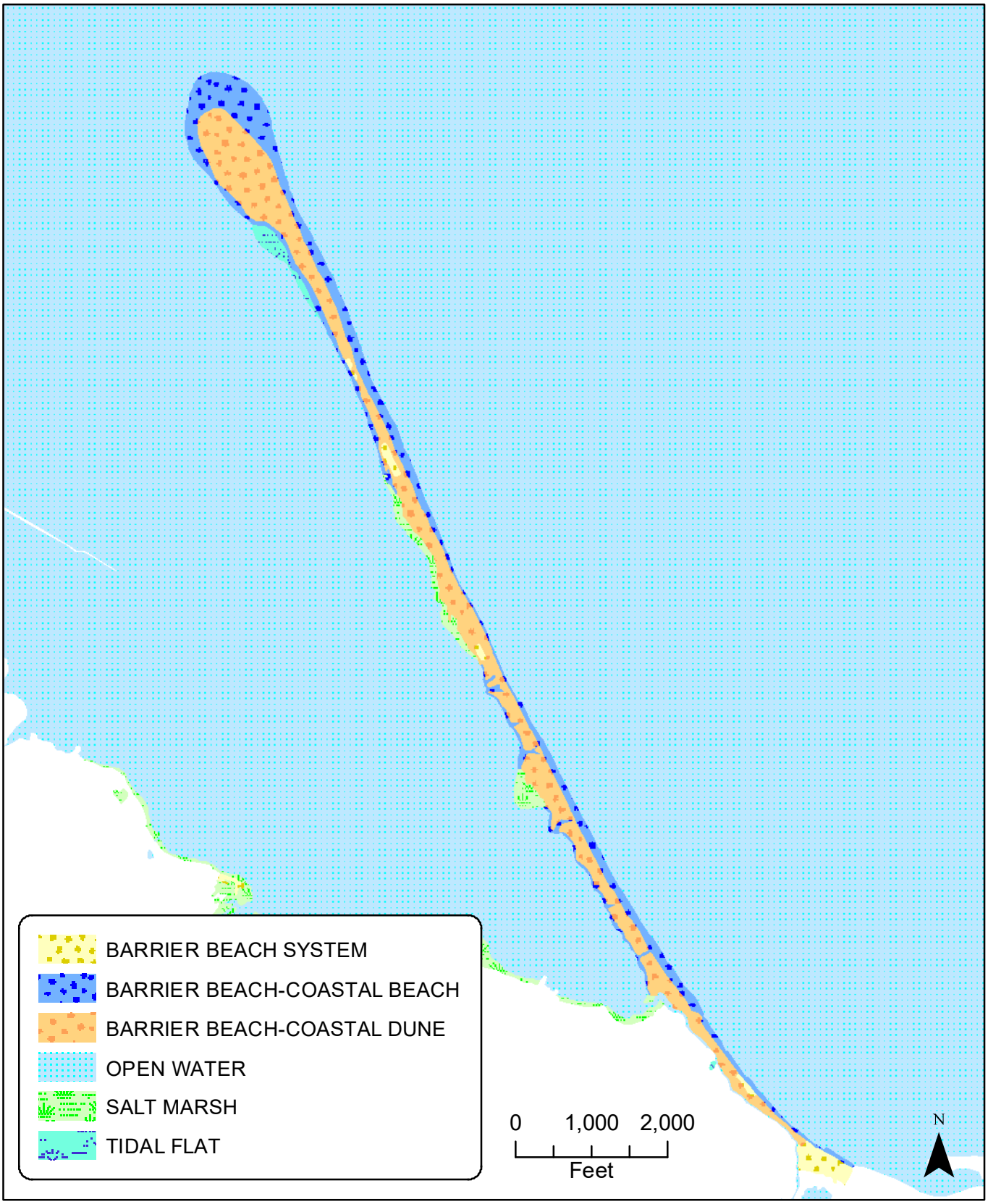
begins at the Crossover and extends approximately one mile north-westward to the “790 line”. Access to the OSV corridor may be partially or fully restricted due to tidal closures and restrictions for coastal waterbird nesting.

Wetland resource areas located on Long Beach, as shown in Figure 1-4, include Barrier Beach, Coastal Beach, Coastal Dune, Salt Marsh, and Tidal Flats. Other resource areas not shown on the map include Land Containing Shellfish, Rare Species Habitat, Land Subject To Flooding, and Land Under Water Bodies and Waterways.

Plymouth Long Beach is located entirely within Estimated Habitat of Rare Wildlife and Priority Habitat of Rare Species. Long Beach is a significant breeding area for several protected species, including piping plovers, least terns and common terns. Arctic terns and roseate terns also nest there in some seasons. Nesting species that do not have a state or federal endangered species designation include black skimmers and a large colony of laughing gulls. Long Beach also serves as an important staging area for migratory shorebirds, including the red knot, which was recently listed as threatened under the federal Endangered Species Act. Checklists reported to ebird.org over the last several years generally include sightings of 1 to 6 Red Knots observed, but there are occasional reports of as many as 11 (9/15/19), 14 (9/29/19) or 20 (7/26/19) Red Knots observed.

Over the last five seasons, the number of breeding pairs of least terns has ranged from 73 to 178. Because least terns often nest in areas similar to piping plovers, the covered activities in this plan may impact least terns in some cases. Least terns are discussed in further detail in Section 1.3. The number of breeding pairs of common terns has ranged from 0 to 663 over the last five years, although in some years, the colony has hosted over 4,000 pairs. When present, the common terns nest in a large colony at the point in Zone 3 and are unlikely to be impacted by the covered activities in this plan. Arctic terns and roseate terns typically nest in association with common terns and are also unlikely to be impacted by the activities covered in this plan.

Figure 1-4. Plymouth Long Beach Wetland Resource Areas (MassGIS DEP Wetlands Jan 2009)

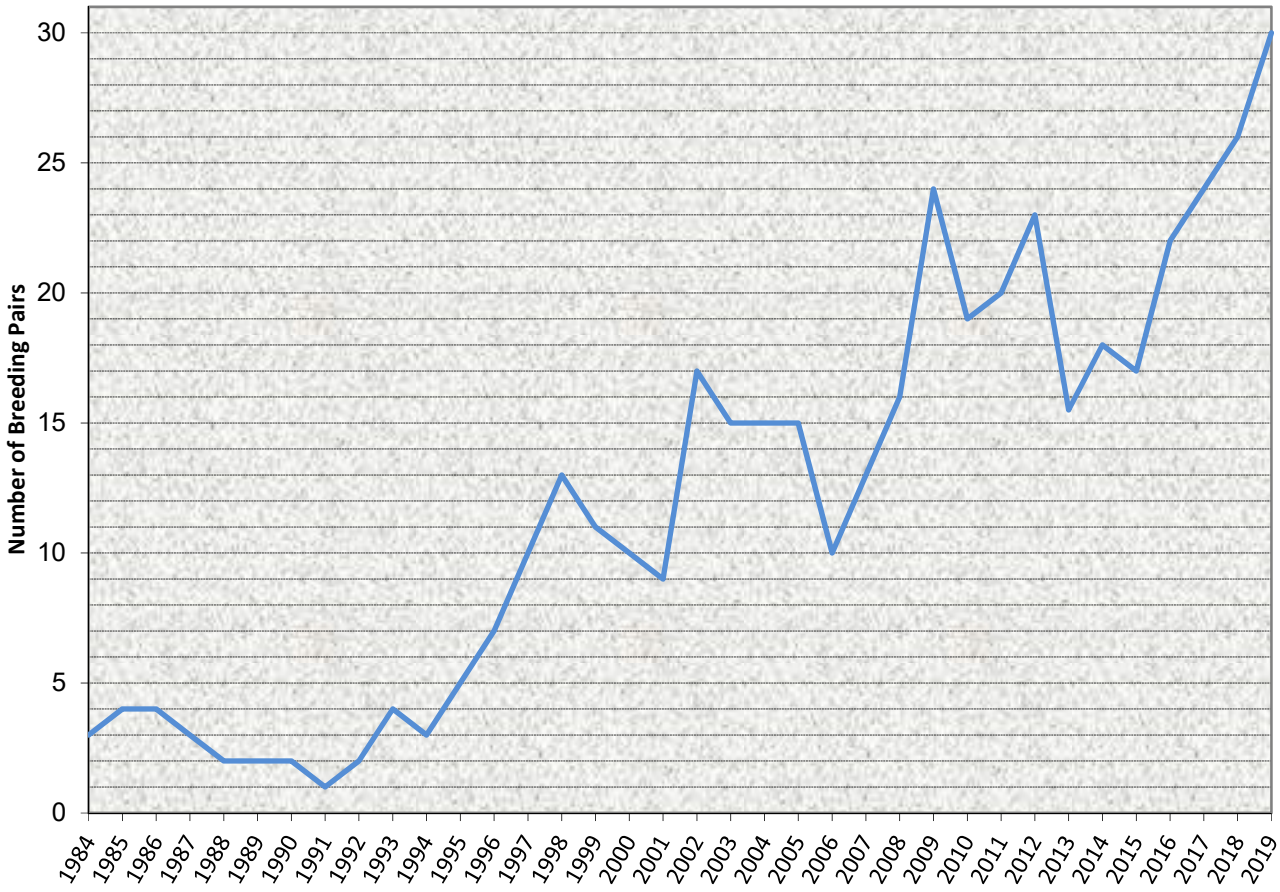


1.2 Piping Plover Habitat and History of Nesting Population and Management

Plymouth Long Beach is located entirely within estimated and priority habitat of piping plovers. While the whole beach is potential habitat, historically, piping plover nesting has been limited to the northern areas of the beach. The majority of piping plover nests are located on the beach and within the dune system in the areas north of the Crossover, however, breeding activity south of the Crossover has increased in recent years. The locations of nests from 2015 to 2019 are shown in Figure 1-6.

Between 1984 and 2019, the population of breeding piping plovers at Plymouth Long Beach ranged from a low of 1 pair (1991) to a high of 30 pairs (2019). The number of breeding pairs per season from 1984 through 2019 is shown in Figure 1-5. The average number of breeding pairs over the last 5 years between 2015 and 2019 was 23.8 pairs (range 17 to 30). In 2019, 30 pairs of piping plovers nested at Plymouth Long Beach, which is the highest number of pairs recorded since monitoring began in 1984.

Figure 1-5. Breeding Pairs of Piping Plovers at Plymouth Long Beach, 1984-2019

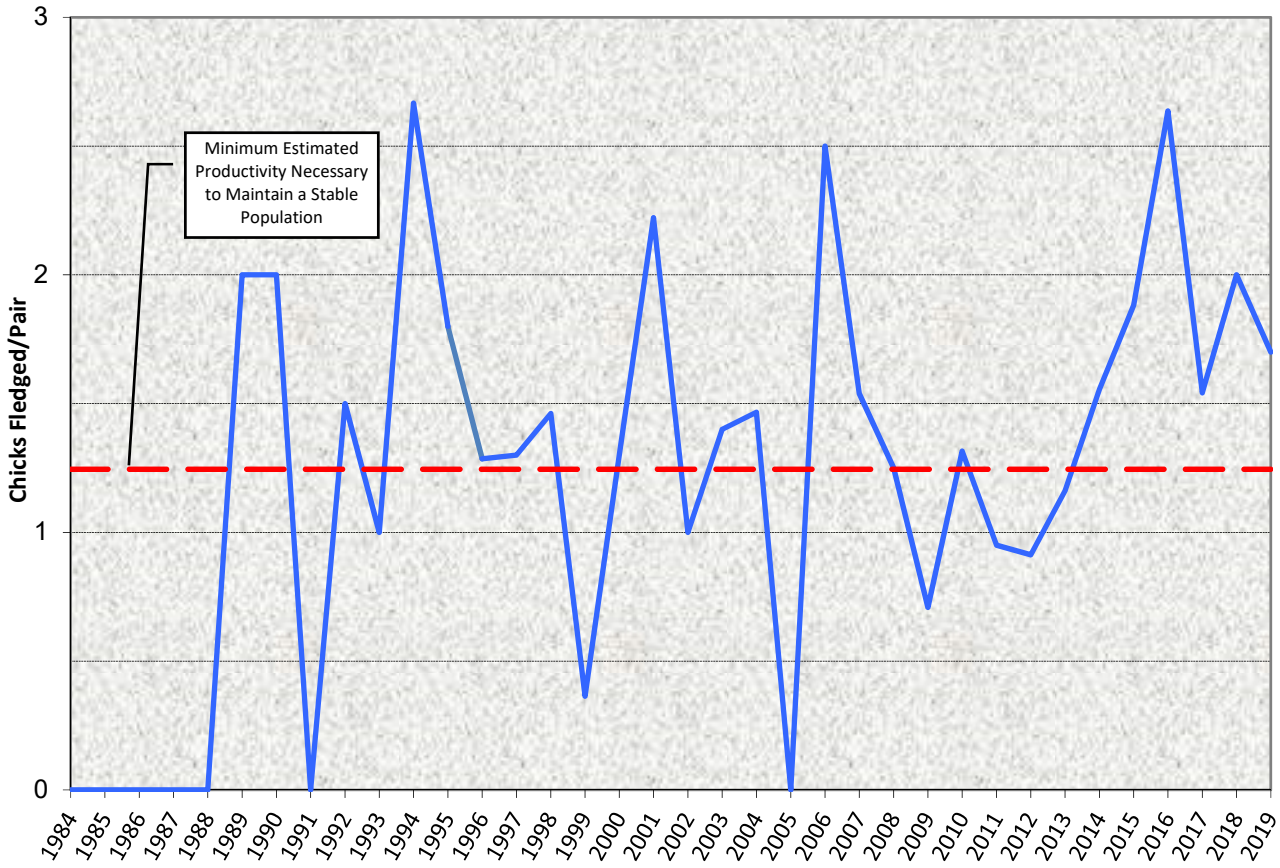


Reproductive success has fluctuated from season to season because of several different factors. The Plymouth Long Beach Management Plan has been effective at limiting impacts by recreational activities, however, the effects of tides, weather and predation vary from season to season. Over the

Figure 1-6. Plymouth Long Beach Piping Plover Nests, 2015-2019

last five years, productivity has ranged from 1.54 to 2.64 chicks fledged per pair. Annual productivity since 1984 is shown in Figure 1-7. Nest loss as a result of flooding from storm-driven high tides and chick loss as a result of weather conditions such as heavy rain and extreme heat or cold can significantly decrease productivity. These impacts vary unpredictably from season to season.

Figure 1-7. Productivity (Chicks Fledged Per Pair) at Plymouth Long Beach, 1984-2019



Predation can severely impact reproductive success. In fact, in 2005, nest predation by red fox was so severe that no eggs hatched, resulting in no plover or tern chicks being produced that year. Predator management has been shown to be an effective tool to increase productivity. Table 1-1 compares productivity between seasons with and without predator management. In years with predator management, there is an average of 0.55 more chicks fledged per pair than in years without predator management. Although there is variation in productivity between seasons, implementation of predator management has on average increased the level of productivity at Plymouth Long Beach above the level of 1.25 chicks fledged per pair estimated to be necessary to sustain Massachusetts' population of piping plovers (Melvin and Gibbs 1996).

The Plymouth Long Beach Management Plan requires a vehicle-free buffer zone to be implemented following hatching of a piping plover nest. See Section 3.1 for more details about the management plan. Because there is only one Crossover at Plymouth Long Beach, the vehicle free buffer-zone results in vehicles being allowed to use the OSV corridor only up to the buffer-zone for the southernmost

Table 1-1. Comparison of piping plover productivity (chicks fledged per pair) at Plymouth Long Beach, Massachusetts, in years with and without mammalian predator removal, 1999-2018

Year	Predator removal	Mean (range) chicks fledged per pair	Mean (range) pairs
1999-2005, 2012-2013	No	1.08 (0.0 - 1.5)	15 (10 - 23)
2006-2011, 2014-2019	Yes	1.63 (0.7 - 2.64) [a]	21 (10 - 30)

[a] Relatively low productivity in 2009 (0.71) and 2011 (0.95), both of which were years when predators were removed, was due in part to nest losses caused by flooding from storm-driven high tides.

hatched nest. There are also other factors that may restrict use of the OSV corridor or parking areas that are described in Section 3.1. Depending on the location of plover nests, significant portions of the OSV corridor, or often the entire OSV corridor may be closed to vehicles while unfledged chicks are present.

Beginning in 2009, and in most years since then, plovers have nested in an area adjacent to Ryder Way between the Crossover and the Day Parking Area (see Figures 1-2 and 1-6). In 2017 and 2018, a pair of plovers nested in the area south of the Fishermen's Turnaround. Without the HCP in place, when the nests along Ryder Way hatch, a vehicle-free buffer zone would be implemented for that portion of Ryder Way. Recreational vehicle access would be restricted to the areas southward of the unfledged chicks and closed areas could include, depending on the location of the brood, the Day Parking Area, Fishermen's Turnaround and significant portions of Ryder Way. Essential vehicles, including the owners, guests and renters for up to 20 properties, would be escorted by the Natural Resources staff through the vehicle-free buffer zone. Impacts to least terns that also nest along Ryder Way are discussed in Section 1.3.

For example, in 2019, the HCP was implemented for four piping plover broods. There were two plover nests between the road and the stone dike between the Day Parking Area and the Crossover and a third plover nest on the west side of the road near the Day Parking Area (see Figure 4-1). The brood from the nest near the Day Parking Area crossed the road, moved northward and spent most of the time in proximity to the other two nests, however, the chicks ranged southward to forage on the east side of the road north of the Day Parking Area and occasionally crossed the road to the harborside. Without the HCP in place, the Day Parking Area and all areas beyond would have been closed for recreational vehicle access. Essential vehicles would have been escorted through an approximately 0.5 mile vehicle-free buffer zone. In addition, essential vehicles would have been escorted through a second vehicle-free buffer zone located near the "Sparkplug" channel marker (see Figure 1-2). The number of plover nests and broods located near Ryder Way has increased over the last few years from 1 in 2016 and 2017, 5 in 2018 and 4 in 2019. Increased plover activity in these areas will likely continue in future seasons, which could lead to significant restrictions for recreational vehicles along Ryder Way, even when recreational areas northward may otherwise be available.

1.3 Least Terns and Other State-Listed Species

Other species protected under the Massachusetts Endangered Species Act at Plymouth Long Beach include the least tern, common tern, Arctic tern, and roseate tern, which is also federally listed. Because vehicle activity is limited to Zones 1 and 2 during the nesting season, the colony of common terns located at the point in Zone 3 (see Figures 1-1 and 1-2) is not likely to be affected by the activities covered in this plan. Arctic terns and roseate terns typically nest in association with common terns, and they also will not likely be affected. Least terns, however, nest in similar habitats as piping plovers, so the covered activities are more likely to affect them.

Least terns prefer a sandy or gravelly substrate and typically nest on the coastal beach and sometimes in dune blowouts and overwash areas. At Plymouth Long Beach, least tern nests can be found from the area just north of the Day Parking Area and along the beach from the Crossover to the "790 line" and sometimes beyond. Figure 1-8 shows the areas used by least terns during the last five years.

Records dating back to 1977 show that the population of least terns at Plymouth Long Beach has varied widely with a low of 3 pairs in 1981 to a high of 512 pairs in 2008 (see Figure 1-9). Over the last five years, the number of breeding pairs of least terns has ranged from 73 to 178. Productivity has also varied widely as a result of factors including predation and weather.

Least terns' preference for habitat similar to that of piping plovers may cause them to be impacted by activities covered by this plan, particularly in the area between the Day Parking Area and the Crossover. Least terns have been nesting in the area just south of the Crossover between Ryder Way and the stone dike, the "Lot O sub-colony", for many years. Until a blizzard impacted this area in 2013, a vegetative border between the nesting area and Ryder Way provided a geographical barrier that prevented tern chicks from entering the road. Least terns began nesting in an overwash area on the west side of the road north of the Day Parking Area, "the Day Parking sub-colony", in 2019.

If a covered activity is not implemented when a piping plover or least tern nest in this area hatches, the vehicle-free buffer zone is implemented. Essential vehicles, including the owners, guests and renters for up to 17 properties are escorted through the buffer zone by the Natural Resources staff. During essential vehicle escorts, the staff walks in front of the vehicles. Vehicles driving by the nesting area have not been observed to affect least terns, however, pedestrian activity, including vehicle escorts, disturbs the adult least terns, causing them to flush from the colony, which can negatively affect hatching success and chick survival.

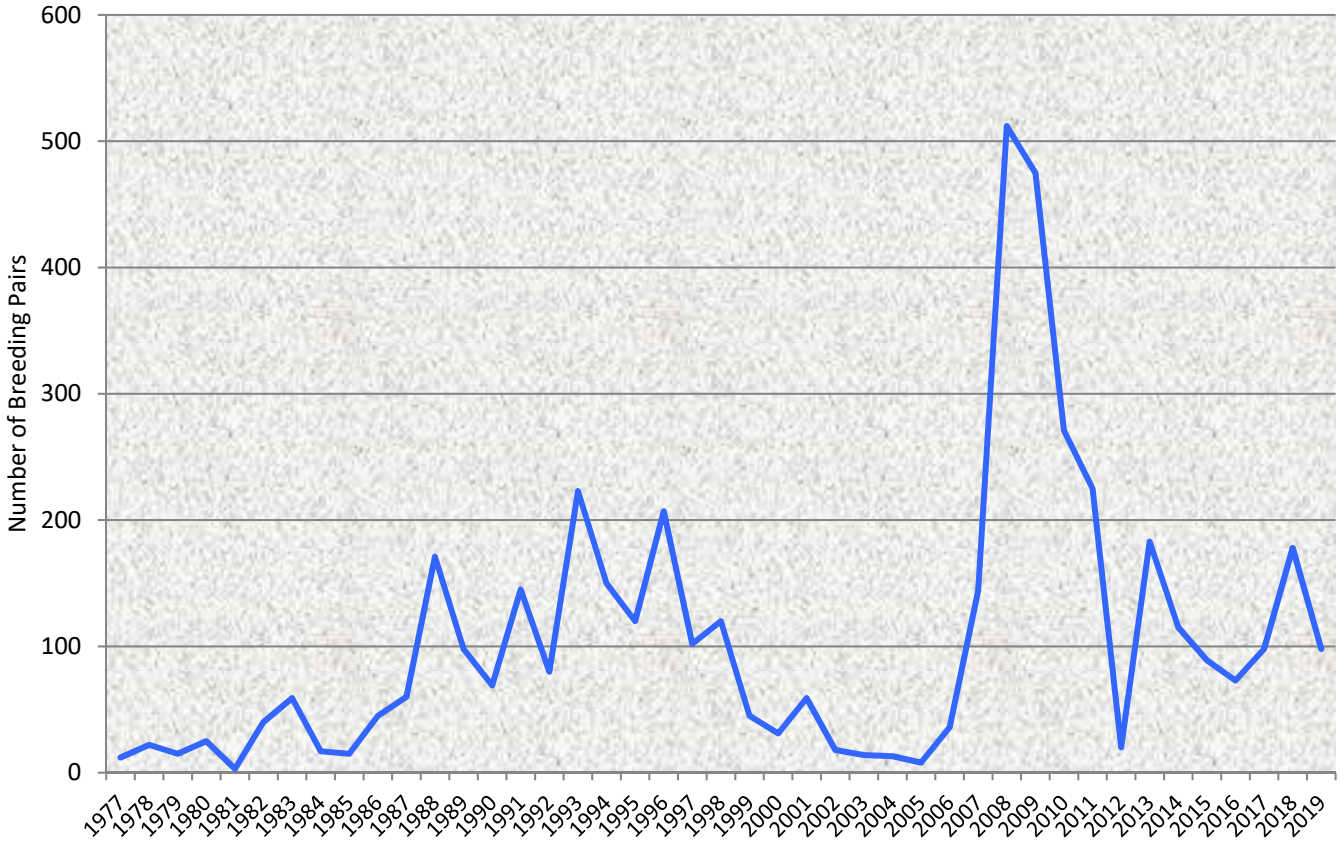
A large portion of the vegetative border was washed out during the February 2013 blizzard and subsequent nor'easter. More of the vegetative border was washed out during the blizzards and severe storms in January-March 2015. Since 2013, with the approval of DFW, a silt fence barrier has been installed to prevent least tern chicks from entering the road. The tern chicks have access to wet sand, open beach, the stone dike, and the boulders delineating the edge of the road. In addition, the Natural Resources staff places at least one shade structure per nest to provide cover and shade for the unfledged tern chicks. Shade structures may include sections of PVC pipe, tepee style wooden shelters, roseate tern nest boxes, wooden pallets, cinderblocks, and plywood propped up on rocks or cinderblocks. The silt fence is checked several times per day, and Natural Resources staff records the number of chicks, their approximate age and their location periodically throughout the day. If any

Figure 1-8. Compilation of Nesting Areas Used By Least Terns at Plymouth Long Beach, 2015-2019

negative impacts from the fence were to be observed, the fence would be removed immediately and essential vehicle escorts would begin.

The silt fence barrier has allowed the negative impacts of essential vehicle escorts for the terns to be avoided. Prior to the HCP, installation was delayed until the piping plover chicks either fledged or left the area. Implementation of the covered activity "Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks" (Section 4.1) would allow installation of the barrier while unfledged piping plover chicks are present, which would further reduce pedestrian impacts to the least tern colony.

Figure 1-9. Breeding Pairs of Least Terns at Plymouth Long Beach, 1977-2019



A second covered activity proposed in this plan, "Oversand Vehicle (OSV) Use in Vicinity of Unfledged Least Tern Chicks", described in Section 4.4, may also impact least terns. This activity would allow escorted recreational vehicles to travel through areas where unfledged least tern chicks are present to access areas of the beach where no unfledged chicks are present. This activity may be implemented for least terns only or in conjunction with implementation for piping plovers. If implemented concurrently with piping plovers, the zone through which vehicles would need to be escorted would incorporate required buffers for both least terns and plover chicks.

Part 2 - Responsible Staff

The Plymouth Department of Marine and Environmental Affairs is responsible for preparation, implementation, and updates of the IAMP. Key staff includes David Gould and Kerin McCall.

David Gould is the Director of Marine and Environmental Affairs. He has been overseeing implementation of the Plymouth Long Beach Management Plan since 2002. He served as the full-time Natural Resources Officer responsible for management of Long Beach from 2002 to 2004. Since 2005, he has supervised the Environmental Technician responsible for day to day management of Long Beach. More information on his background is included in Appendix A.

Kerin McCall has been the Environmental Technician responsible for implementing the Plymouth Long Beach Management Plan since 2005. Prior to that, she was a seasonal Natural Resources Officer at Plymouth Long Beach during the 2003 and 2004 seasons and worked in the Resource Management Department at Gulf Islands National Seashore from 1999 to 2002. She has been monitoring and managing nesting activity of plovers and terns since 1999. She began working with least terns in 1999 and with piping plovers in 2003. More information on her background is included in Appendix A.

Ms. McCall has primary responsibility for preparing, implementing and updating the plan in consultation with Mr. Gould.

Part 3 - Beach Management Plan

Plymouth Long Beach is managed in compliance with the 2008 Plymouth Long Beach Management Plan as conditioned by the Corrected Amended Final Order of Conditions issued by the Massachusetts Department of Environmental Protection in 2014 and the Conditional No Take determination issued by DFW in 2010. The management plan was implemented to protect wetland resources and rare species and their habitats as well as to manage recreational activities. The management plan divides Long Beach into four management zones based on the resources located within each zone (Figures 1-1 and 1-2).

3.1 Recreational Activities

Permitted recreational activities vary between management zones and some are limited to certain times of year to protect the natural resources located in each zone.

Non-motorized Recreational Uses

Non-motorized recreational uses include activities such as walking, jogging, sunbathing, swimming, picnicking, bird watching, recreational finfishing, recreational shellfishing, dog walking and kite flying.

To prevent impacts by beachgoers engaged in these activities, symbolic fencing and signage are installed to protect nesting habitat of plovers and terns. Symbolic fencing is adjusted as needed so that a pedestrian-free buffer zone at least 50 meters in radius is implemented around each nest above the high tide line. The buffer zone may be increased to more than 50 meters if incubating plovers are disturbed. In limited cases, the symbolic fencing may be moved up to 12ft above the mean high tide line resulting in the buffer zone being reduced to less than 50 meters if the Environmental Technician determines that the incubating plovers and/or terns are not exhibiting signs of disturbance. The management plan requires that symbolic fencing be left in place from April 1 through September 30.

The conditional “no take” determination issued by the DFW in 2010 instituted a seasonal partial ban on dogs. Leashed dogs are allowed in all zones between October 1 and March 30. Between April 1 and September 30, dogs are banned from Zones 2, 3, 4, and the areas of Zone 1 north of the Day Parking Area. Leashed dogs are allowed in other areas of Zone 1 during this time period.

Kite flying is prohibited in Zones 3 and 4 from April 1 to September 15 and prohibited within 200 yards of nesting plovers and terns (adults and chicks) in Zones 1 and 2.

Motor Vehicle Management

Protection of Nests

All suitable habitat is identified by a qualified biologist and delineated with symbolic fencing and signage before April 1 (or May 15 for terns) of each year. Pedestrian and vehicular access is prohibited. Before the beachfront opens for vehicles, typically on Memorial Day weekend, an Over-Sand Vehicle (OSV) corridor is installed. The location of the OSV corridor must be reviewed and adjusted a minimum of two additional times, once in July and once in August. OSV use is limited to Zone 2. The corridor is installed beginning at the Crossover and may extend to the “790 line”. Wooden posts and signage delineate the OSV corridor. The seaward edge of the corridor is installed at the mean high tide line. The corridor may be up to 42ft in width, including 12ft for travel in each direction and 18ft for parking,

where sufficient width exists. The corridor may be narrowed for several reasons, including plover or tern nesting activity, protection of vegetation, and passage over private property. In limited cases, when the OSV corridor would infringe on the 50 meter-radius nest buffer zone, a 12ft wide OSV corridor may be installed provided that the Environmental Technician determines that the incubating plovers and/or terns are not exhibiting signs of disturbance. If the plovers and/or terns exhibit signs of disturbance, the OSV corridor is eliminated and the symbolic fencing is moved out to the mean high tide line. Symbolic fencing is installed at the landward edge of the OSV corridor.

After the OSV corridor is established, the Crossover gate is only open between 9:00am and 7:00pm and only when the minimum staffing level of three or four staff, depending on how much of the corridor is open, has been met as required in the management plan. One of the required staff members must be either the Environmental Technician or a Natural Resources Officer.

Protection of Chicks

To allow sufficient wrack to accumulate to provide an adequate food source for plover chicks, a pre-hatch restriction is implemented not less than five days prior to the anticipated hatching date. The OSV corridor is closed 100 yards north and south of the nest. If the nest is found with a complete clutch, precluding estimation of the hatching date and availability of wrack has been substantially reduced or ruts have been created that could impede chick movements, then vehicle restrictions begin immediately. If wrack has not been substantially reduced and ruts will not impede chick movement, restrictions will begin when the nest hatches. In addition, the three scenarios described in the state and federal guidelines for nests with unknown hatching dates are included in the management plan.

Nests located north of the Crossover, including those with unknown hatch dates, are monitored at least once per day, and the OSV corridor closes at 7:00pm and is not re-opened the next day until nests with unknown hatch dates have been checked and the southernmost brood of chicks has been located. Nests with unknown hatch dates and nests approaching a known anticipated hatch date located south of the Crossover are monitored at least twice per day in the morning and evening.

If hatching occurs earlier than expected, or chicks are discovered from an unreported nest, vehicle restrictions are implemented immediately.

When a nest hatches, a vehicle-free buffer zone is implemented. For piping plovers, the buffer zone is a minimum of 200 yards on either side of the nest during the first week. The buffer zone may be reduced to 100 yards after the first week until fledging. The location of the brood is monitored and the buffer zone is increased as needed based on the mobility of the chicks so the buffer zone between vehicles and unfledged chicks is at least 100 yards. For least terns, a 100 yard buffer zone is implemented. The location of each brood is monitored daily, and a Natural Resources staff person is stationed at the vehicle restriction while the OSV corridor is open to monitor proximity of the southernmost brood to the vehicle area and to prevent vehicles from driving into the buffer zone. Vehicle restrictions are lifted when plover chicks are 35 days of age or when observed in sustained flight for at least 15 meters, whichever occurs first.

Vehicle restrictions for least terns begin as soon as hatching begins (as early as June 12th). Restrictions may be later if, in the opinion of the Environmental Technician, tern chicks are not endangered by vehicles because of distance or intervening steep terrain, dense vegetation or other naturally occurring barriers. Restrictions on use of non-essential vehicles in areas where unfledged least tern chicks are

present should continue until chicks have fledged. Least tern chicks are considered fledged when they are capable of flight.

Essential Vehicles

As stated in the Plymouth Long Beach Management Plan, essential vehicles are limited to vehicles necessary for police, fire and EMS service, Natural Resources vehicles, and vehicles necessary to maintain and access private property. All other vehicles are considered non-essential and are prohibited from chick habitat areas. Essential vehicles should travel through chick habitat areas only during daylight hours, except emergencies, and should be guided by a qualified monitor who has first determined the location of all unfledged plover and tern chicks. The speed of vehicles will not exceed five miles per hour. Foot travel is preferred for monitoring and law enforcement because of the improved visibility it affords. A log of the date, time, vehicle number and operator and purpose of each trip through areas where unfledged chicks are present will be maintained by the Natural Resources Officer. Personnel monitoring plovers will maintain and regularly update the log of the numbers and locations of unfledged plover chicks on the beach. Essential vehicles will avoid driving on the wrack line and travel will be infrequent enough to avoid creating deep ruts that could impede chick movements. If essential vehicles are creating ruts that could impede chick movements, use of essential vehicles will be further reduced, and if necessary, restricted to emergency vehicles only.

3.2 Parking and Roads

Ryder Way is an improved and maintained gravel road. Grading is used only for the Main Beach Parking Lot and Ryder Way. Compatible grain-size sediments may be brought in from off-site to repair the road and parking area as necessary.

Parking is allowed in designated areas only. A maximum of 225 vehicles is allowed north of Manter's Point at any one time. Parking on the beachfront is described above in Section 3.1. Parking north of Manter's Point along Ryder Way and in the Day Parking Area is limited to the areas identified in the Parking Plan included in the management plan.

3.3 Beach Cleaning and Refuse Management

Land- and marine-source trash and debris is removed from all zones by hand on a routine basis during the summer season. The Environmental Technician coordinates removal in dune areas and rare-species habitat to minimize impacts.

Trash barrels in the Main Beach Parking Lot are emptied on a daily basis. There are no trash barrels north of Manter's Point. Beach visitors bring trash with them when they leave the beach.

Wrack is not removed from the beach because of its habitat value, however, limited removal from the Main Beach Area is approved for esthetic reasons. In addition, if excessive amounts of seaweed are deposited in an area where a health or safety hazard is a concern as determined by public health officials then it may be necessary to remove the wrack.

3.4 Rules and Regulations

In addition to the management plan, Plymouth Bylaws Chapter 30 – Beaches and Parks also regulates activities at Plymouth Long Beach. The sections of Chapter 30 that are applicable to Plymouth Long

Beach address issues such as required permits, prohibited vehicles such as motorcycles and ATVs, domestic animals, closure of dunes and vegetated areas to vehicles and pedestrians, dumping and littering, restricted areas for vehicles, parking on private property, speed limit, four wheel drive vehicles only, camping, glass containers, use of grills, open fires, liability, stuck vehicles, riding on the outside of vehicles, authority to limit number of vehicles, keeping the right-of-way open, firearms, closing hours of the road and parking lot, and blocking traffic.

3.5 Law Enforcement

The initial approach of the Natural Resources staff to enforcing rules and regulations is educational, but it is sometimes necessary to issue warnings and citations for severe violations, failure to comply, and repeated offenses. The Plymouth Long Beach Enforcement Regulations were adopted by the Board of Selectmen on June 8, 2004. A fine schedule for violations of the Plymouth Long Beach Management Plan was adopted at Town Meeting on October 26, 2004.

The Environmental Technician, the two Natural Resources Officers, and several of the Natural Resources Technicians and Assistants have the authority to issue citations for violations of the management plan and Chapter 30 bylaws. In addition, the Natural Resources Wardens are available to assist with enforcing rules and regulations. Animal Control Officers and Natural Resources Wardens are available to assist with dog violations. The Harbormaster is available to provide enforcement assistance with boaters.

The Plymouth Police Department provides a dedicated patrol officer from 4:00pm to 12:00am on Friday, Saturday and Sunday nights as required by the management plan. In addition, officers patrol the parks and beaches periodically during the week.

3.6 Other Operations

Other operations such as fireworks are not specifically addressed in the management plan, but standard practices for July 4th have been in place since 1999 that protect plovers and terns from the impacts of fireworks and associated activities. The Town's fireworks display is launched from a barge in Plymouth Harbor approximately 3/4 mile from the beach. In order to prevent beachgoers from entering nesting areas or lighting illegal personal fireworks on the beach and other potentially disturbing activities, the OSV corridor and Ryder Way close to recreational vehicles by 7:00pm. In addition, all boaters must leave the beach by 7:00pm. An exception was made to the road closure in 2012 when a portion of Ryder Way was made available for vehicle parking to view fireworks, but this was not continued because of low use. The Main Beach Parking Lot is available for fireworks spectators and is located approximately 1/3 mile from plover and least tern nesting areas. The 7:00pm closure does not apply to private property owners and their guests, as long as all vehicles are parked on private property. Staffing levels are increased for the holiday and staff members are assigned to patrol areas along the length of the beach to be vigilant for illegal fireworks and other potentially disturbing behavior.

In the past, the Town has been rarely approached about holding public events at Plymouth Long Beach. In general, the level of recreational activity and restrictions for coastal waterbird nesting activity preclude public events from occurring at Long Beach. On a few occasions in the past, foot races have been held on either Ryder Way or the beachfront. Planning of these events is coordinated with the

Department of Marine and Environmental Affairs (DMEA). Although public events are not specifically addressed in the management plan, DMEA has worked with the organizers to avoid impacts to nesting plovers and terns by putting restrictions on the event including location and time of year.

3.7 Plover and Tern Monitoring and Management

All suitable plover nesting habitat is delineated with symbolic fencing and signage by April 1 of each year. The location of the symbolic fencing is reviewed weekly and adjusted as the beach gains its wider summer profile. Symbolic fencing and signage are installed for tern habitat by May 15 of each year.

When deemed necessary due to the level of predation occurring, predator-deterrent exclosures are installed at piping plover nests. Each nest is evaluated for several factors including topography, substrate and density of vegetation around the nest, to ensure that installation of an exclosure is appropriate for that nest site.

Predator management has been conducted in some years when funding has been available to reduce predation by mammalian predators, primarily red fox and Eastern coyote, as well as avian predators including crows.

Monitoring is carried out by the Environmental Technician, Natural Resources Officers, Natural Resources Technicians, and Natural Resources Assistants that have been cross-trained to assist with monitoring activities.

Typically, plover nesting activity is monitored approximately 3 times per week in early to mid-April and increases to 5-7 times per week in late April or early May. When the OSV corridor opens for the season on Memorial Day weekend, nesting activity is monitored daily through the end of the nesting season. Each monitor has a field book in which all activity is recorded. Each nest has a log sheet that is filled out daily where information such as clutch size or number of chicks, adult behavior, exclosure use, expected hatch date, hatching, and brood location are recorded. Nest sheets are reviewed daily before monitoring begins.

Piping plover nesting data is compiled and submitted to the DFW's Natural Heritage and Endangered Species Program through PIPLODES (Piping Plover Online Data Entry System).

Least tern nesting activity is monitored by counting nests several times during the tern census windows. Least tern chicks are monitored from outside the colony, and location and approximate age are recorded. The highest count for each census window and estimated productivity is submitted to the Natural Heritage and Endangered Species Program through TERNODES (Tern Online Data Entry System).

The Environmental Technician, two seasonal Natural Resources Officers and three Natural Resources Technicians conduct monitoring. Minimum qualifications as stated in the management plan for Natural Resources Officers include actively pursuing a Bachelor's Degree in natural resource management, environmental sciences or related field; one to three years of experience in natural resource management and progressive supervisory experience; or an equivalent combination of education and experience. Minimum qualifications for Natural Resources Technician include a high school diploma and one to two years of experience in natural science application or participation. All Natural Resources Officers and Technicians receive training from the Environmental Technician regarding plover and tern biology and behavior, monitoring procedures, and data collection. Natural

Resources Assistants that show interest in coastal waterbird monitoring are cross-trained to assist experienced monitors.

Part 4 - Covered Activities

The Town of Plymouth is requesting to implement two covered activities that impact piping plovers: "Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks", and "Oversand Vehicle (OSV) Use in Vicinity of Unfledged Chicks". These activities may also impact least terns. These activities, including impact minimization measures and monitoring, are described below for both piping plovers and least terns.

Based on the 2019 piping plover census, a maximum of 4.5 take exposures (15% of 30 onsite breeding pairs) could be requested. However, the level of plover activity along Ryder Way exceeded this maximum number of take exposures during the 2018 season. In 2018, the covered activity "Use of Roads and Parking Lots in Vicinity of Unfledged Chicks" was implemented for 3 broods, and an additional 2 pairs laid nests adjacent to the road, but the nests were predated and the pairs did not renest. There could potentially have been a total of 5 broods in the vicinity of the road in 2018. During the 2019 season, this covered activity was implemented for 4 broods located in the vicinity of the road. The Town requests that the DFW use their discretion described in Section 5.2.2.3 of the Habitat Conservation Plan for Piping Plover to increase the allowable take exposures to 75% at up to 8 sites per year. The Town is requesting 5 take exposures (17% of pairs) in this COI request. The covered activity "OSV Use in Vicinity of Unfledged Chicks" may impact up to one (1) brood of piping plover chicks. The covered activity "Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks" may impact up to five (5) broods of piping plover chicks in the event that "OSV Use in Vicinity of Unfledged Chicks" is not implemented in the same season. The total number of take exposures in a season will not exceed 5 broods.

The area of disturbance resulting from implementation of the covered activities will vary between seasons based on nest location and brood behavior and the location of the least tern sub-colonies, but implementation of these activities will not cause disturbance to greater than two acres of designated priority habitat.

4.1 Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks

Ryder Way is an improved gravel road that provides year-round access to recreational areas as well as access for 20 private properties, including 16 residences. The road is maintained through grading and repaired by adding compatible material when necessary. Nearly every year since 2009, a piping plover pair has nested in an area adjacent to Ryder Way between the Crossover and the Day Parking Area also referred to as the Lot O least tern sub-colony (Figures 4-1 and 4-2). In fact, 2 pairs of plovers nested in this area in 2019. Since 2017, the number of pairs active along the road has increased and nests have been located farther south. Because there is no impact to wrack or ruts made on the beach, vehicle restrictions have been implemented for Ryder Way when each nest hatches. When this covered activity is not implemented, recreational vehicles are limited to at least 200 yards southward during the first week after hatching and at least 100 yards southward thereafter until the chicks fledge. Essential vehicles, including those of the owners, guests and renters of up to 20 private properties are escorted through these areas by the Natural Resources staff. In most seasons, vehicles must be escorted past the least tern nesting area adjacent to Ryder Way, which flushes adults from nests and causes nests and chicks to become more vulnerable during each escort, many times per day. Although

property owners are told to limit travel to daylight hours, they sometimes insist on travelling through the area at night when chicks are more difficult to observe, which increases the risk of a take occurring. There are sometimes recreational areas that would otherwise be accessible because there is no nesting activity in the area or chicks have fledged that are closed only because of the presence of chicks near Ryder Way. The Day Parking Area, which is the preferred parking area when the beachfront areas are closed for vehicle access, is sometimes also inaccessible. Under this covered activity, the Town would provide unrestricted access for essential vehicles and access for recreational vehicles when recreational areas beyond are available subject to the impact minimization measures described below.

In no event would the Town expose more than 5 broods of piping plover chicks to this covered activity. If 5 broods are exposed to this covered activity in a season, then the other covered activity, "Oversand Vehicle (OSV) Use in Vicinity of Unfledged Chicks" will not be implemented in the same season.

4.1.1 Impact minimization measures

Impact minimization measures will limit the amount of take by reducing exposure of chicks and adults to vehicles travelling on Ryder Way. Impact minimization measures employed will include installation of a barrier fence, signage, staff training, and traffic management if necessary.

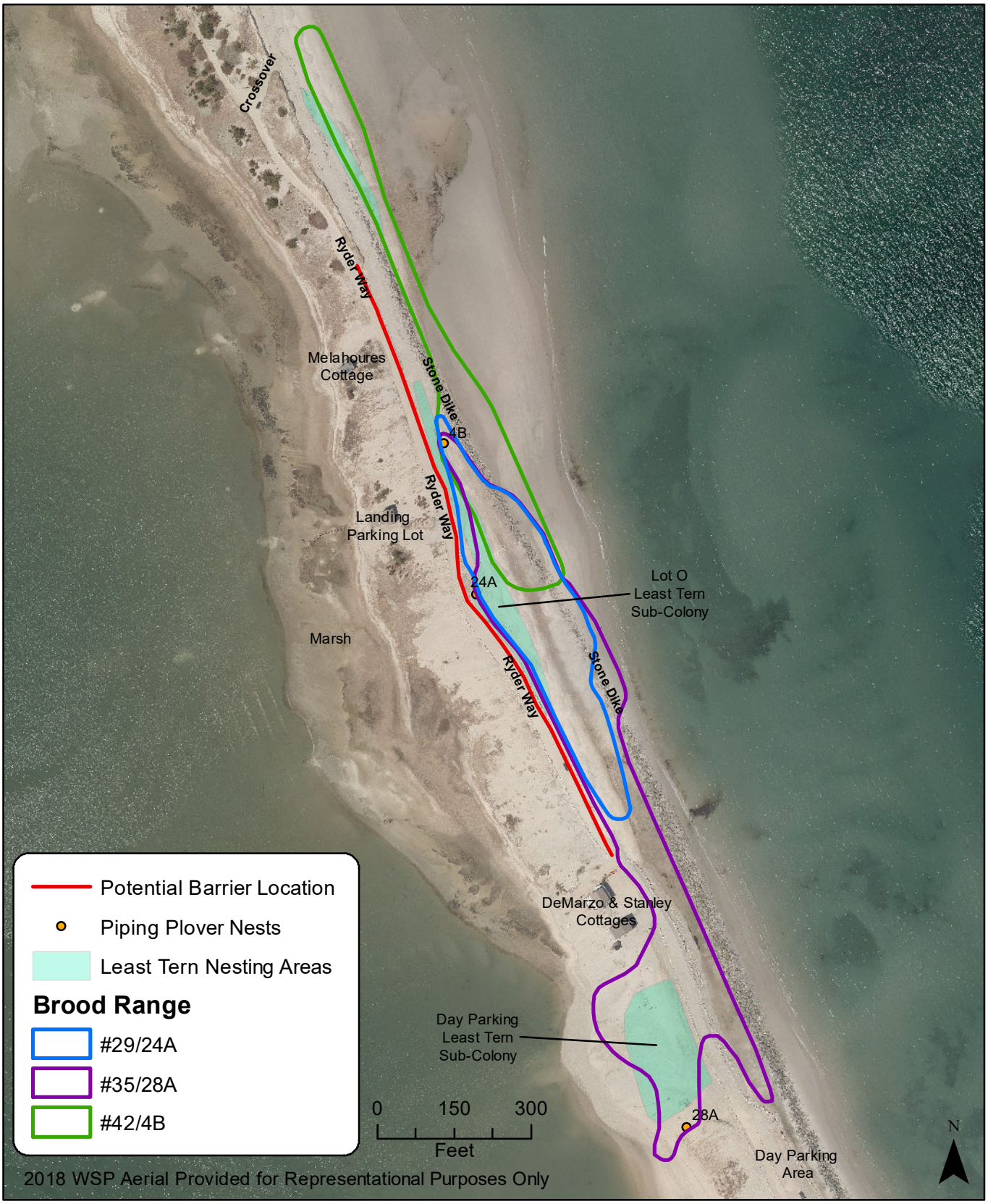
Barriers

If unfledged plover chicks are present in the area between Ryder Way and the stone dike between the Crossover and the Day Parking Area, a barrier may be installed to reduce risk by preventing chicks from accessing Ryder Way. The potential location for the barrier, which could be up to approximately 1,200ft in length, depending on plover and tern activity, is shown in Figure 4-1. The barrier will consist of a silt fence installed along the edge of the road so that habitat areas including open beach, wet sand, the stone dike and the boulders and posts that delineate the roadway will be available for chicks. The length of barrier fence installed will vary depending on location and mobility of the chicks. The nesting habitat is very narrow in this area, particularly during high tide, and there is a chance that plover chicks may inadvertently wander into the road, even if there is no suitable habitat to access.

The southern end of the barrier fence will be left open to allow chicks to move southward to access foraging areas to the south. In some years, plover chicks have moved southward to access foraging habitat on the east and/or west side of the road. For example, Figure 4-1 shows the ranges of the 3 broods in this area in 2019. One of the broods (#35/28A) occasionally ranged between the Lot O sub-colony and the Day Parking Area to forage on primarily the east, but sometimes also the west, side of the road. In 2015, a brood that hatched from a nest in the Lot O colony also moved southward and crossed to the harborside near the Day Parking Area to the foraging areas west and southwest of the Day Parking Area.

The northern end of the barrier fence may tie into the existing dunes and vegetation to prevent access to the road, but access to the beach will be unimpeded. A brood crossed the road in this area in 2014. The brood was on the beach east of the stone dike when the tide was coming in. There was no beach at high tide in this area, and the plovers from an adjacent territory did not allow the brood to pass by, so the adults led the chicks up a sand path created by a private property owner over the stone dike, across the road, and into the private driveway directly across from the path. Approximately 30 minutes later, the brood crossed the road again to return to the area between the road and stone dike, presumably because there was no suitable habitat on the west side of the road.

Figure 4-1. Location of Potential Barrier to Minimize Impacts of Use of Roads and Parking Lots in the Vicinity of Unfledged Piping Plover Chicks in Relation to Piping Plover Activity in 2019



The barrier will be inspected for gaps and damage at least twice per day and repaired as necessary. The barrier will also be inspected for negative impacts to chicks. Should any negative impacts be observed for either plover or tern chicks, such as increased predation or hindering movement to foraging areas, the barrier will be removed. The potential barrier shown in Figure 4-1 is based on observations of nest locations and brood behavior from previous seasons. If these are substantially different in future seasons, the barrier may be installed in another location with written approval of DFW.

In the event that high tide may reach or approach within a few feet of the barrier, for example, during a storm, sections of the barrier will be opened or the barrier will be removed to prevent chicks from becoming trapped against the barrier.

Signage

Signage alerting drivers to watch for crossing birds will be installed along Ryder Way or the Day Parking Area at least every 100 yards beginning at least 200 yards south of and 200 yards north of the location of unfledged piping plover chicks. In addition, signs requesting that drivers alert staff if they observe piping plovers in or near the road or parking area will be installed. Additional signs stating the speed limit of 10 miles per hour will be installed in proximity to the impacted brood.

Staff Training

The Natural Resources staff will be trained to implement the impact minimization plan. The Environmental Technician will oversee implementation with assistance from two seasonal Natural Resources Officers (NROs). The Environmental Technician, NROs and three seasonal Natural Resources Technicians (NR Technicians) are responsible for monitoring nesting activity of piping plovers, least terns, common terns, laughing gulls, and in some years, Arctic terns and roseate terns. The NROs and NR Technicians receive training from the Environmental Technician to fulfill these duties. Generally, two or more of the twelve seasonal Natural Resources Assistants (NR Assistants) are cross-trained to assist with coastal waterbird monitoring. All staff members are trained to recognize piping plover adults and chicks, understand basic piping plover biology and recognize behaviors.

In addition to this general training, each staff member will be trained to understand their respective roles and responsibilities in regard to the impact minimization plan. Periodic monitoring of the impacted brood will be conducted by an NRO, NR Technician, or cross-trained NR Assistant. NR Assistants on patrol within the covered activity area will be alert to the presence of piping plovers. Staff members that observe piping plovers near the road or parking area, or a change in the location of the impacted brood will immediately report the information to the Environmental Technician or NRO on duty. Cell phones with push-to-talk walkie-talkie capabilities are provided to all staff members to enable instant communication of beach management information. In the event of a change of location of the impacted brood, traffic management as described below or modification of the silt fence barrier within the potential area identified in Figure 4-1 will be implemented as necessary as determined by the Environmental Technician.

Traffic Management

Should chicks be observed in the road or within 50ft of a section of the road without a barrier, the road should temporarily close until the adults and chicks have crossed the road and moved at least 50ft from the road.

Should chicks be observed in the road where a barrier is in place, the Natural Resources staff may approach the chicks to herd them toward an area without a barrier so they may access suitable habitat.

Should chicks be observed within 50 yards of the Day Parking Area, the Natural Resources staff may approach the chicks to herd them away from the parking area.

Distances that trigger traffic management may be subject to change based on the physical features of the site and behavior and mobility of the brood.

Natural Resources staff members that observe or receive reports of piping plovers near the road or parking area, or a change in the location of the impacted brood will immediately report the information to the Environmental Technician or NRO on duty. Cell phones with walkie-talkie capabilities are provided to all staff members to enable instant communication of beach management information.

4.1.2 Monitoring

To reduce the risks that chicks may cross into traffic without adequate protective measures in place, the location of the brood must be monitored. Monitoring intensity should increase with proximity to Ryder Way or the Day Parking Area. Because of the narrow width of the beach along Ryder Way, chicks will likely always be within 100 yards from the road or parking lot and must be monitored more frequently than other broods located north of the Crossover.

Because chicks are mobile, monitoring frequency may change as the location of the brood changes. Each monitoring period will last a minimum of twenty minutes. If the chicks consistently remain within 50-100 yards of the road or parking lot, they will be monitored at least twice per day, and at least five times per day during high traffic periods. If the chicks are observed less than 50 yards from the road or parking area, they will be monitored at least four times per day, and continuously during high traffic periods. High traffic periods will include at minimum the hours between 8:30am and 10:00am, 12:30pm and 2:00pm, and 6:00pm and 7:00pm on weekends, unless traffic is expected to be reduced (e.g., adverse weather conditions). Frequency of monitoring may be increased by the Environmental Technician or Natural Resources Officer if deemed necessary. Monitoring frequency will increase to a level determined in consultation with DFW once chicks have been observed crossing a road or parking area.

In the event of inclement weather where monitoring may adversely affect the chicks, monitoring frequency may be reduced and non-essential vehicle access will be restricted.

Monitoring the brood is difficult after sunset. To minimize the risk of take after dark, non-essential vehicle access will be restricted, however, essential vehicles may continue to travel through the area. Monitoring will be carried out by a qualified shorebird monitor. There will be no less than one monitor per brood. Under staffing levels required by the Plymouth Long Beach Management Plan, at least two qualified shorebird monitors, and sometimes as many as six depending on the day of the week and

time of day, are on duty, which will allow monitoring for both the covered activity and routine management and monitoring. When the HCP is not implemented, , three staff members, including a qualified shorebird monitor, are dedicated to escorting essential vehicles through the area where unfledged chicks are present in the vicinity of the road. Routine management and monitoring are conducted by the second shorebird monitor. Implementing this covered activity will allow these staff members to perform other duties, including those associated with this covered activity, so additional staff will not be necessary for one take exposure. If this covered activity is implemented for both piping plovers and least terns concurrently, or for multiple plover broods, additional shorebird monitors will be scheduled if needed to provide monitoring coverage.

Shorebird monitors shall have the following minimum qualifications:

- A high school diploma or equivalent.
- Ability to gain a working knowledge of State and Federal Guidelines for the protection of piping plovers, least terns and common terns on multi-use recreational beaches.
- Good observational skills.
- Ability to perform physical labor associated with the placing of posts, signage, symbolic fencing, and protective exclosures in habitat areas.
- Ability to walk up to 5 miles per day within habitat area for survey and protection activities.
- Knowledge and experience, or willingness to obtain, with four wheel drive vehicles.
- Ability to work independently with little direct supervisory oversight.
- Strong people skills, team oriented, and ability to work in a collaborative, problem-solving approach.
- A valid Massachusetts driver's license.

Shorebird monitors should start working at least 2 weeks before the anticipated use of roads and parking lots in the vicinity of unfledged piping plover chicks to allow time for on-site training.

Monitors will keep a log documenting frequency of monitoring, location of the brood, number of chicks, approximate distance from the road or parking lot, whether a barrier was in place, and if the brood crosses the road or enters the parking lot. Samples of the datasheets used to monitor this covered activity during the 2019 season are included in Appendix B.

4.2 Use of Roads and Parking Lots in the Vicinity of Unfledged Least Tern Chicks

Use of the road and parking lot may impact least terns because they often nest in similar habitats to piping plovers. Least terns have a history of nesting in the narrow area east of Ryder Way between the Crossover and the Day Parking Area (Lot O sub-colony), which is located adjacent to the potential barrier fence location identified in Figure 4-1 and also shown in Figure 4-2 with a compilation of the areas used by nesting least terns over the last five years that may be impacted by this activity. During this time period, the level of use of this area has varied from season to season, with the number of nesting pairs ranging from 24 to 60 pairs of least terns. The Day Parking sub-colony (see Figure 4-2) was a new area for least terns in 2019 and had 13 pairs.

Elimination of escorting of essential vehicles adjacent to the least tern nesting area benefits least terns by decreasing disturbance to the colony. During essential vehicle escorts, a Natural Resources staff member walks in front of the vehicles. Vehicles driving by the nesting area have not been observed to affect least terns, however, pedestrian activity, including vehicle escorts, disturbs the adult least terns, causing them to flush from the colony, which can negatively affect hatching success and chick survival.

Prior to 2013, a vegetative border separated the colony from the road, and property owners and guests of 17 properties and fishermen travelled in this area without restrictions, both during the day and at night, as long as unfledged piping plover chicks were not present. Access to Ryder Way is limited to property owners, their guests, and fishermen between 9:00pm and 4:00am. In 2013, much of the vegetative border was washed out during a blizzard. The silt fence barrier has been installed each year since 2013, and until the 2016 season, vehicle access for private properties and fishermen was unrestricted at night as long as unfledged plover chicks were not present. Least terns that nest in this area are subject to the light and movement associated with vehicles travelling adjacent to the colony during all phases of the nesting season, including nest site selection, courting, laying, hatching and fledging. DMEA has not observed negative effects of night time vehicle travel past the colony. Abandonment has not been observed. In seasons when there has been low productivity in this sub-colony, there was evidence of or direct observation of predation on eggs and/or chicks.

4.2.1 Impact minimization measures

Impact minimization measures will limit the amount of take by reducing exposure of unfledged least tern chicks to vehicles travelling on Ryder Way. Impact minimization measures employed will include installation of a barrier fence, installation of shade structures, signage, staff training, and traffic management if necessary.

Barriers

As described above for piping plover chicks, if unfledged least chicks are present in the area between Ryder Way and the stone dike south of the Crossover and north of the Day Parking Area, a barrier will be installed to reduce risk by preventing chicks from accessing Ryder Way. Since 2013, with the approval of DFW, a silt fence barrier has been installed to prevent least tern chicks from entering the road. The potential location for the barrier is shown in Figures 4-1 and 4-2. The barrier will consist of a silt fence installed along the edge of the road so chicks are able to access open beach, wet sand, the stone dike and the boulders and posts that delineate the roadway. The actual length of barrier fence installed will vary depending on the location and mobility of the chicks.

A minimum of one shade structure per nest will be added to the area adjacent to the barrier fence to ensure that least tern chicks have access to adequate shade and cover. Shade structures may consist of lengths of PVC pipe, tepee style wooden shelters, roseate tern nest boxes, wooden pallets, cinderblocks, plywood or boards propped up on cinderblocks or rocks, or other similar structures.

The barrier will be inspected for gaps and damage at least twice per day and repaired as necessary. The barrier will also be inspected for negative impacts to chicks. Should any negative impacts be observed for either plover or tern chicks, such as increased predation or hindering movement to habitat areas, the barrier will be removed.

Figure 4-2. Location of Potential Barrier in Relation to Nesting Areas Used by Least Terns at Plymouth Long Beach, 2015-2019

This plan is based on observations of nesting areas from previous seasons. If least terns begin nesting along Ryder Way in areas other than adjacent to the potential barrier shown in Figures 4-1 and 4-2, the barrier may be installed in another location with written approval of DFW.

In some locations, a barrier may not be installed depending on the needs of piping plover chicks to access important foraging areas, which may increase the risk of take for unfledged least tern chicks. To reduce this risk of take, monitoring will be increased as described below and traffic management will be implemented as necessary.

In the event that high tide may reach or approach within a few feet of the barrier, for example, during a storm, sections of the barrier will be opened or the barrier will be removed to prevent chicks from becoming trapped against the barrier during high tide.

Signage

Signage alerting drivers to watch for chicks in the road will be installed along Ryder Way or the Day Parking Area at least every 100 yards beginning at least 100 yards south of and 100 yards north of the location of unfledged least tern chicks. In addition, signs requesting that drivers alert staff if they observe chicks in or near the road or parking area will be installed. Additional signs stating the speed limit of 10 miles per hour will be installed in proximity to the unfledged least tern chicks.

Staff Training

Staff training will be similar to that described in Section 4.1. Each staff member will be trained to understand their respective roles and responsibilities in regard to the impact minimization plan. Periodic monitoring of the impacted chicks will be conducted by an NRO, NR Technician, or cross-trained NR Assistant. NR Assistants on patrol within the covered activity area will be alert to the presence of unfledged least tern chicks. Staff members that observe unfledged chicks near the road or parking area, or a change in the location of the impacted chicks will immediately report the information to the Environmental Technician or NRO on duty. Cell phones with push-to-talk walkie-talkie capabilities are provided to all staff members to enable instant communication of beach management information. If necessary, traffic management as described below or modification of the silt fence barrier within the potential area identified in Figures 4-1 and 4-2 will be implemented as necessary as determined by the Environmental Technician.

Traffic Management

Should unfledged least tern chicks be observed in the road or <50 feet of a section of the road without a barrier, the road should temporarily close; however, the Environmental Technician or NRO will have discretion to restart traffic under certain circumstances even if the chicks remain within 50 feet of the road (e.g., young chicks hiding in vegetation and not moving).

Should chicks be observed in the road where a barrier is in place, the Natural Resources staff may approach the chicks to herd them toward an area without a barrier so they may access suitable habitat.

Should chicks be observed within 50 yards of the Day Parking Area, the Natural Resources staff may approach the chicks to herd them away from the parking area.

Natural Resources staff members that observe or receive reports of unfledged least tern chicks near the road or parking area, or a change in the location of the impacted chicks will immediately report the information to the Environmental Technician or NRO on duty. Cell phones with walkie-talkie capabilities are provided to all staff members to enable instant communication of beach management information.

4.2.2 Monitoring

While least tern chicks are considered precocial, they generally don't travel as great a distance from their nest area as plovers. Least tern chicks spend much of their time in vegetation or other cover and are fed by their parents, which can make them more difficult to count than piping plover chicks. Most of the counting and mapping of nest and chick locations will be conducted from a distance with binoculars and/or a spotting scope to minimize disturbance. In some cases, it may be necessary to enter nesting areas to confirm the presence of nests. Nest and chick locations will be sketched on a map similar to the one in Appendix B that was used during the 2019 season. The maps will include key landmarks to aid in recounting. Data collected will include date, time monitoring began and ended, personnel, whether each nest/chick was confirmed or inferred to be present and the basis of inference. The approximate age of all chicks directly observed will be estimated using the Least Tern Aging Key included in Appendix C.

In areas where a barrier is installed, a shorebird monitor will record the number of chicks, their approximate age and location a minimum of 2 times per day.

If a barrier is not installed to allow piping plover chicks to access foraging areas, monitoring will increase to reduce risks of chicks entering the roadway or parking area without adequate protective measures in place. Chick monitoring will increase to at least four times per day, and continuously during high traffic periods. Frequency of monitoring may be increased by the Environmental Technician or Natural Resources Officer if deemed necessary. Monitoring frequency will increase to a level determined in consultation with DFW once chicks have been observed in the roadway or parking area.

In the event that inclement weather may adversely affect the chicks, monitoring frequency may be reduced and non-essential vehicle access will be restricted.

During the period when use of the road and/or parking lot is occurring, the number of active nests will be recounted 2 times per week while the covered activity is implemented, and the number of unfledged chicks will be counted daily to estimate the number of tern chicks exposed to this covered activity.

Monitoring chicks is difficult after sunset. To minimize the risk of take after dark, non-essential vehicle access will be restricted, however, essential vehicles and a limited number of fishermen, subject to restrictions, may continue to travel through the area. If a barrier is in place, up to five (5) vehicles per night may travel through the area adjacent to unfledged least tern chicks to access fishing areas. Vehicle passengers must be actively fishing. The number of chicks within 100ft of and the approximate distance of the nearest chick to the terminus of the barrier will be recorded. In the event that inclement weather prevented monitoring of chicks earlier in the day, vehicle access for fishing will be restricted. Fishermen may not travel through areas where unfledged piping plover chicks are present. Vehicle access for fishing will be discontinued until the plover chicks have fledged.

Monitoring will be carried out by a qualified shorebird monitor as described above in Section 4.1.

4.3 Oversand Vehicle (OSV) Use in Vicinity of Unfledged Piping Plover Chicks

The OSV corridor at Plymouth Long Beach begins at the Crossover and may, depending on restrictions for shorebird nesting and tides, extend up to approximately one mile to the "790 line" (see Figures 1-1 and 1-2). The OSV corridor is adjacent to piping plover nesting habitat, and plovers may potentially nest along the whole length of the corridor. When pre-hatch restrictions and vehicle-free buffer zones are implemented, use of the OSV corridor past the nest is temporarily eliminated until the chicks have fledged. Nests located near the Crossover severely restrict or eliminate use of the OSV corridor. In some years, the timing and location of nests can result in unfledged chicks in the southern portion of the OSV corridor while chicks from nests in northern portions of the OSV corridor have already fledged. In this case, use of the OSV corridor may be restricted or eliminated because of one brood of unfledged chicks. Implementing the covered activity "Oversand Vehicle (OSV) Use in Vicinity of Unfledged Chicks" would allow non-essential OSVs to self-escort through an area where unfledged chicks are present to access areas that would otherwise be unavailable. Implementation of this covered activity is subject to the impact minimization measures described below. This activity would be limited to a single brood of unfledged chicks.

This covered activity was allowed under the previous COI, but was not implemented due to timing and locations of plover nests and chicks along the OSV corridor.

4.3.1 Impact minimization measures

Impact minimization measures employed will include narrowing of the OSV corridor and eliminating parking, restricted travel hours, vehicle escorting, staff training, enforcement and communication, mandatory OSV operator education, and smoothing of tire ruts.

Narrow Vehicle Corridor and No Parking

Travel in the vicinity of unfledged chicks will be restricted to a single, clearly demarcated vehicle escort corridor. The seaward edge of the corridor will be located at the mean high tide line as required in the Plymouth Long Beach Management Plan. The narrowness and location of the corridor will reduce impacts to wrack. The location and length of the escort corridor will vary based on the location and movement of the affected plover brood. The width of the corridor will not exceed 15 feet, except for occasional turnouts to accommodate two-way traffic. Additionally, vehicle traffic will be halted should plover chicks approach within 50 feet on either side of the escort corridor.

The escort corridor will be clearly marked at the beginning and end points. The width of the corridor will be delineated periodically with wooden posts and signage. The boundaries of the escort corridor will be determined daily and adjusted as needed prior to commencement of vehicle access.

Parking will not be allowed within 200 yards of unfledged plover chicks during the first week following hatching and will in no event be permitted within 100 yards of unfledged plover chicks. Based on chick mobility as determined by the Environmental Technician, the area restricted for parking may be substantially farther than 100 yards to reduce the need for readjustment of vehicle parking during the course of a day. Areas where parking is allowed will be set up according to the requirements of the Plymouth Long Beach Management Plan with the travel corridor and parking areas identified by signage.

Restricted Travel Hours

To limit disturbance of chicks and impacts on foraging, OSV travel in the vicinity of unfledged chicks will be restricted to no more than 3 hours per day in 3 travel periods during daylight hours. The three travel periods will include the following:

9:00am to 10:00am
1:00pm to 2:00pm
5:00pm to 6:00pm

Timing of travel periods may be flexible within one hour based on weather and chick locations.

Upon written notice to DFW, the timing of travel periods may be adjusted to accommodate tide-related closures, but in no event will travel periods exceed more than three hours per day.

In the event of inclement weather, or if inclement weather is forecast, that will make locating chicks difficult or where monitoring may adversely affect the chicks, vehicle escorts may be delayed or cancelled. Exceptions to designated travel periods may be necessary for emergencies.

A maximum number of 75 vehicles may travel through the escort corridor per day, for a total maximum of 150 vehicle passes.

Vehicle Self-Escorting

The Town will notify DFW at least 24 hours in advance of initiating the program. Vehicle escorts will not begin until a qualified monitor (see below) has located the chicks. Chicks will be monitored continuously during the travel periods.

Vehicle escorting will begin at least 200 feet from the closest unfledged plover or least tern chick and will end at least 200 feet past either the last plover chick in a given brood or unfledged least tern chick, whichever is further.

Basic Procedures for Self-Escorting

1. Pre-determined area(s) of Ryder Way or an area of the OSV corridor where there are no plover or tern chicks present will be identified for staging of OSVs for both entering and exiting the escort corridor.
2. At least one half hour prior to the beginning of each travel period, the shorebird monitor will proceed along the escort corridor and surrounding area to determine the locations of the chicks in the affected brood. Once the shorebird monitor has determined the locations of the chicks, the monitor will notify the Environmental Technician or NRO on duty. The escort corridor will be modified if necessary. In the event that all the chicks have not been located, the opening of the escort corridor will be delayed until such time that all chicks are accounted for or it has been determined by the shorebird monitor that there are no chicks in the escort corridor.
3. At the beginning of each travel period, the shorebird monitor will confirm to the Environmental Technician or NRO on duty that the brood is >50 feet from the escort corridor and it may open for travel. The Environmental Technician or NRO on duty will notify the compliance monitor, Crossover attendant and all other staff stationed in vicinity of the escort corridor when self-escorted travel commences for each travel period.

4. Vehicles will self-escort for the duration of the 1 hour travel period. The end of the travel period may be adjusted accordingly in response to a delayed opening of the travel period but in no event will a travel period last more than 1 hour. The OSV operator will be required to display a self-escort permit prior to accessing the escort corridor. At either the Crossover or a staging area, depending on the location of the escort corridor, the Natural Resources staff will verify the OSV operator's identity (i.e., driver's license), and that the OSV operator has a self-escort permit and has attended the mandatory OSV operator education.
5. Prior to opening the escort corridor, the compliance monitor will contact the shorebird monitor to confirm that all chicks are still being monitored, all chicks are accounted for and the escort corridor can open. During each travel period, the shorebird monitor shall maintain a constant visual on all plover chicks using binoculars and/or a spotting scope in a manner that will minimize disturbance to chicks.
6. Once vehicles have passed through the escort corridor, which shall extend at least 200 feet past the closest chick, vehicles may use the sections of beach previously determined to be free of unfledged plover and tern chicks, in accordance with the Plymouth Long Beach Management Plan.
7. Each vehicle must have at least one passenger 16 years of age or older to walk approximately 10 feet in front of the vehicle in the escort corridor. The escort will look for chicks in the corridor and stop the vehicle if either a chick is observed or one of the monitors requires the vehicle to stop. All self-escorted vehicles must maintain a safe distance of at least 15 feet from the vehicle in front.
8. To avoid adverse effects to the habitat and allow unimpeded chick passage across the escort corridor when vehicles are not present, the tire ruts will be hand-raked at the end of the last travel period of the day. Mechanized raking will be utilized only with a trained observer walking in front of the vehicle to search for chicks.
9. If at any time during the escorting process, the shorebird monitor loses visual contact with one or more chicks, the vehicles will be allowed to continue on their way and the period between travel periods will be used to determine the presence of the chick(s) in the area or absence of chicks in the corridor. Shorebird monitors will document in the daily report the approximate time that visual contact with the chick(s) was lost and efforts made to relocate it.
10. The Environmental Technician, NROs and shorebird monitors will each have the independent authority to temporarily close the escort corridor at any time for any reason. For example, if at any time a shorebird monitor determines that chicks have approached within 50 feet of the escort corridor, the shorebird monitor will immediately notify the compliance monitor, Environmental Technician or NRO on duty, and the Crossover attendant to temporarily halt traffic to allow the chicks to cross the corridor and/or move >50 from the corridor. The escort corridor will not reopen until the Environmental Technician or NRO on duty determines that it is safe to do so. Monitors will document the approximate time the escort corridor was closed and the duration of the closure in the daily report.

Caravans

The Town reserves the right to substitute escorted caravans for self-escorting as described in the HCP. If escorted caravans are implemented, groups of up to 25 OSVs would stage along Ryder Way or an area of the OSV corridor where unfledged plover and tern chicks are not present. Once the caravan

reaches the area where unfledged chicks are present and escorting is required, a qualified monitor will lead the caravan through the escort area either on foot or in an open top OSV. All other requirements, including but not limited to brood monitors and compliance monitors, would remain in place as described in the self-escorting protocols.

Contingency Plans

Personnel availability
The shorebird monitor and compliance monitor are essential personnel prior to and during the self-escort travel periods. In the event that one of these employees is unavailable, the Environmental Technician, the NRO on duty or their designee shall assume this duty. In addition to these staff, all other staff required by the Plymouth Long Beach Management Plan must be present to allow access to the OSV corridor.

Inclement weather
The Environmental Technician, NRO on duty or their designee, will monitor weather forecasts on a daily basis. In the event that a storm warning is predicted by the National Weather Service, or any other weather warning that could jeopardize public safety within a 24-hour period, the escort corridor shall be closed for the duration of the hazard or the start time of a travel period may be moved one hour later or earlier. The escort corridor may not reopen until the Environmental Technician, NRO on duty, or their designee has determined that it is safe to do so. It shall be presented in writing at the mandatory self-escort OSV operator training (see below) that all users shall use the beach at their own risk. Exit travel outside a travel period will not take place due to unpredicted weather. Self-escort permit holders shall be informed in writing that a "shelter in place" policy will go into effect until the inclement weather has passed, or a scheduled travel period has begun.

Medical or family emergencies
Self-escort permit holders shall be advised verbally and in writing at the mandatory self-escort OSV operator training (see below), via affidavit, that egress from the beach outside of the self-escort windows shall be strictly prohibited. In the event of a life-threatening medical emergency, the Natural Resources staff should be notified (see Plymouth Long Beach Rules and Regulations for information to report an emergency). Essential vehicles will assist in escorting the vehicle off the beach. Due to the time sensitive nature of medical emergencies, the vehicle(s) may be escorted by a monitor scanning for chicks in the escort corridor, even if the chicks have not been located prior.

Violations and Enforcement

Any violations of the aforementioned protocol will not be tolerated. A zero-tolerance policy will be fully enforced. Monitors and the Environmental Technician and NROs will be in constant contact to ensure enforcement. The Plymouth Long Beach Enforcement Regulations, Section 3.1 states that the Director of Marine and Environmental Affairs, and/or his designee, "may, in their discretion, immediately suspend or revoke a Beach Sticker for violation(s) of the Beach Management Plan that threaten the health or safety of persons, property or wildlife." The Environmental Technician, NROs, and Natural Resources Wardens will be authorized to revoke Long Beach 4x4 Stickers and eject the violators from the beach immediately. Violators of the escort protocols shall be subject to Long Beach 4x4 Sticker revocation and shall have their rights to operate an OSV on Plymouth Long Beach suspended immediately for a period of one year from the date of the violation.

All Natural Resources staff, including those not acting as a shorebird or compliance monitor, will be vigilant for violations of self-escort procedures and communicate violations immediately to the Environmental Technician or NRO on duty. Natural Resources Wardens may also assist with enforcement. If necessary, Plymouth Police Officers can be called for assistance.

Staff Training and Communication

To carry out this covered activity, a qualified shorebird monitor (see Section 4.1.2) and a compliance monitor will be required during each travel period. These monitors will begin working at least two weeks before implementation of the covered activity begins to allow time for on-site training. To ensure coverage of each travel period, two shorebird monitors and two compliance monitors per day will be scheduled. The morning shift will be from 8:00am to 4:00pm and the afternoon shift will be from 12:00pm to 8:00pm. The timing of these shifts may be adjusted if the Environmental Technician determines that implementation would be more effective, however, the morning shift will begin no less than 1 hour prior to the first travel period and the shifts will overlap for at least one hour per day to facilitate communication between morning and afternoon monitors.

In addition to the shorebird monitors and compliance monitors, the staffing level required by the Plymouth Long Beach Management Plan must be met before vehicles may access the OSV corridor. This includes NR Assistants to staff the Manter's Point and Crossover checkpoints and the vehicle restriction, and to patrol the beach and Ryder Way. A Natural Resources Technician is required to monitor shorebird activity not associated with the covered activity, and either the Environmental Technician or an NRO is required.

All of the Natural Resources staff will be trained in all of the self-escort procedures and impact minimization measures so that they will be able to provide education and enforcement to all beach visitors and OSV operators. NR Assistants on patrol within the covered activity area will be alert for violations and the presence of piping plovers. Cell phones with push-to-talk walkie-talkie capabilities are provided to all staff members to enable instant communication of beach management information.

Mandatory Self-Escort OSV Operator Education

To participate in the escort program, OSV users must attend a mandatory training prior to participating in the escort program. The training will cover restricted travel hours, escort procedures and emergency procedures. In addition, a written quiz approved by DFW will document familiarity with the rules and procedures. After completing the training and passing the written quiz, a self-escort permit will be issued. The self-escort permit is only valid in conjunction with a valid Long Beach 4x4 Sticker. The self-escort permit and driver's license must be presented each time the OSV operator accesses the escort corridor. In addition, DMEA will maintain a list of self-escort permit holders.

Smoothing of Tire Ruts

Tire ruts in the escort corridor will be smoothed out at least once per day at the end of the travel period to minimize the risk of plover and least tern chicks sheltering in or becoming trapped in the tire ruts. Hand raking will be used to smooth tire ruts. Mechanized raking will be utilized only with a trained observer walking in front of the vehicle to search for chicks. Smoothing of tire ruts will continue until all plover chicks present near the escort corridor are more than 14 days old.

4.3.2 Monitoring

A qualified monitor (see Section 4.1.2) will conduct continuous monitoring of chicks during travel periods when vehicles are present. Each monitor will be responsible for monitoring no more than one brood of plover chicks.

A compliance monitor will be stationed adjacent to the escort corridor to monitor OSV operator compliance and to ensure that vehicle travel can be stopped if chicks approach or enter the escort corridor.

Monitors will keep a log documenting frequency of monitoring, location of the brood, number of chicks, approximate distance from the escort corridor, if brood crosses the escort corridor, and the location and length of the escort corridor. A datasheet similar to the ones found in Appendix B will be developed to record chick monitoring sessions, and a map will be developed to aid in estimating distances from the escort corridor. Any closures of the escort corridor will be recorded, including approximate time the escort corridor closed and the duration of closure. If at any time during the escorting process, the shorebird monitor loses visual contact with one or more chicks, the approximate time and efforts made to relocate it will be documented.

Chick numbers, chick locations, and escort corridor locations and dimensions shall be provided to the Environmental Technician or the NRO on duty by the shorebird monitor daily, prior to commencing OSV escorts.

A log will be kept for tracking the number of OSVs accessing the escort corridor during each travel period and any violations of the self-escort procedures.

4.4 Oversand Vehicle (OSV) Use in Vicinity of Unfledged Least Tern Chicks

Least terns often nest in similar habitat to piping plovers, so use of the OSV travel corridor may also impact least terns. This covered activity was allowed under the previous COI, but because of the timing and location of unfledged least tern chicks along the OSV corridor, it was not implemented. Based on least tern activity over the last several seasons, this covered activity would most likely be implemented in an area approximately 800 feet in length beginning approximately 1200 feet north of the Crossover. The area available for OSV parking between the Crossover and this least tern sub-colony is further limited because only about 750 feet is Town-owned and available for parking for about 70 vehicles. While there typically is least tern nesting activity in areas further north, the chicks in this sub-colony are sometimes the last to fledge, which limits vehicle access to more than half of the beach where all of the chicks have fledged and that would otherwise be available for OSV use. Regardless of location, this activity will not expose more than 20 unfledged least tern chicks to OSV traffic. If more than 20 unfledged least tern chicks are expected to be present in the affected area, implementation of the covered activity will end when more than 20 unfledged chicks are present, or, implementation may be delayed until some of the chicks have fledged and there are 20 or fewer unfledged chicks remaining in the area. Implementation of this covered activity is subject to the impact minimization measures described below.

4.4.1 Impact minimization measures

Impact minimization measures employed will include narrowing of the OSV corridor and eliminating parking, restricted travel hours, vehicle escorting, staff training, enforcement and communication, mandatory OSV operator education, and smoothing of tire ruts.

Narrow Vehicle Corridor and No Parking

As described above for piping plovers, travel in the vicinity of unfledged least tern chicks will be restricted to a single, clearly demarcated vehicle escort corridor. The seaward edge of the corridor will be located at the mean high tide line as required in the Plymouth Long Beach Management Plan. The location and length of the escort corridor will vary based on the location of the affected least tern chicks. The width of the corridor will not exceed 15 feet, except for occasional turnouts to accommodate two-way traffic. Additionally, vehicle traffic will be halted should unfledged least tern chicks approach within 50 feet on either side of the escort corridor.

The escort corridor will be clearly marked at the beginning and end points. The width of the corridor will be delineated periodically with wooden posts and signage. The boundaries of the escort corridor will be determined daily and adjusted as needed prior to commencement of vehicle access.

Parking will not be allowed within 100 yards of unfledged least tern chicks. Based on chick mobility as determined by the Environmental Technician, the area restricted for parking may be substantially farther than 100 yards to reduce the need for readjustment of vehicle parking during the course of a day. Areas where parking is allowed will be set up according to the requirements of the Plymouth Long Beach Management Plan with the travel corridor and parking areas identified by signage.

Restricted Travel Hours

To limit disturbance, OSV travel in the vicinity of unfledged chicks will be restricted to no more than 3 hours per day in 3 travel periods during daylight hours. The three travel periods will include the following:

9:00am to 10:00am
1:00pm to 2:00pm
5:00pm to 6:00pm

Timing of travel periods may be flexible within one hour based on weather and chick locations.

Upon written notice to DFW, the timing of travel periods may be adjusted to accommodate tide-related closures, but in no event will travel periods exceed more than three hours per day.

In the event of inclement weather, or if inclement weather is forecast, that will make locating chicks difficult or where monitoring may adversely affect the chicks, vehicle escorts may be delayed or cancelled. Exceptions to designated travel periods may be necessary for emergencies.

A maximum number of 75 vehicles may travel through the escort corridor per day, for a total maximum of 150 vehicle passes.

Vehicle Self-Escorting

The Town will notify DFW at least 24 hours in advance of initiating the program. Monitor(s) must attempt to verify the locations and count all chicks prior to each travel period and continue to monitor

chick movements and locations periodically during the travel period. More information on monitoring for this covered activity is included in Section 4.4.2.

Vehicle escorting will begin at least 200 feet from the closest unfledged least tern chick and will end at least 200 feet past the unfledged least tern chick.

Basic Procedures for Self-Escorting

1. Pre-determined area(s) of Ryder Way or an area of the OSV corridor where there are no unfledged tern chicks present will be identified for staging of OSVs for both entering and exiting the escort corridor.
2. At least one half hour prior to the beginning of each travel period, the shorebird and/or compliance monitor will attempt to verify the locations and count all chicks by searching the beach adjacent to and within 200 yards of the escort corridor. The monitors conducting pre-travel monitoring will be responsible for searching no more than 500 yards of vehicle corridor and the habitat adjacent to the corridor. Areas with unfledged chicks <100 feet from the escort corridor and any unfledged chicks seaward of the escort corridor will be noted for extra attention during the travel period. Once the monitor(s) have determined the locations of the chicks, they will notify the Environmental Technician or NRO on duty. The escort corridor will be modified if necessary.
3. Vehicles will self-escort for the duration of the 1 hour travel period. The end of the travel period may be adjusted accordingly in response to a delayed opening of the travel period but in no event will a travel period last more than 1 hour. The OSV operator will be required to display a self-escort permit prior to accessing the escort corridor. At either the Crossover or a staging area, depending on the location of the escort corridor, the Natural Resources staff will verify that the OSV operator has a self-escort permit and has attended the mandatory OSV operator education.
4. During the travel period, the monitor will patrol the escort corridor checking for compliance with escort procedures, while also scanning for unfledged least tern chicks. Vehicle traffic will be temporarily halted if unfledged chicks approach within 50 feet of the corridor, however, the Environmental Technician or NRO on duty will have discretion to restart traffic under certain circumstances, even if chicks remain within 50 feet (e.g., young chicks hiding in vegetation and not moving).
5. Once they have passed through the escort corridor, which shall extend at least 200 feet past the closest unfledged chick, vehicles may use the sections of beach previously determined to be free of unfledged chicks, in accordance with the Plymouth Long Beach Management Plan.
6. Each passenger must have at least one passenger 16 years of age or older to walk approximately 10 feet in front of the vehicle in the escort corridor. The escort will look for chicks in the corridor and stop the vehicle if either a chick is observed or one of the monitors requires the vehicle to stop. All self-escorted vehicles must maintain a safe distance of at least 15 feet from the vehicle in front.
7. To avoid adverse effects to the habitat and allow unimpeded chick passage across the escort corridor when vehicles are not present, the tire ruts will be hand-raked at the end of the last travel period of the day. Mechanized raking will be utilized only with a trained observer walking in front of the vehicle to search for chicks.

8. The Environmental Technician, NROs and shorebird monitors will each have the independent authority to temporarily close the escort corridor at any time for any reason. For example, if at any time a shorebird monitor determines that chicks have approached within 50 feet of the escort corridor, the shorebird monitor will immediately notify the compliance monitor, Environmental Technician or NRO on duty, and the Crossover attendant to temporarily halt traffic to allow the chicks to cross the corridor and/or move >50 from the corridor. The escort corridor will not reopen until the Environmental Technician or NRO on duty determines that it is safe to do so. Monitors will document the approximate time the escort corridor was closed and the duration of the closure in the daily report.

Caravans

The Town reserves the right to substitute escorted caravans for self-escorting as described in the HCP. If escorted caravans are implemented, groups of up to 25 OSVs would stage along Ryder Way or an area of the OSV corridor where unfledged tern chicks are not present. Once the caravan reaches the area where unfledged chicks are present and escorting is required, a qualified monitor will lead the caravan through the escort area either on foot or in an open top OSV. All other requirements, including but not limited to shorebird monitors and compliance monitors, would remain in place as described in the self-escorting protocols.

Contingency Plans

Contingency plans as described above in Section 4.3.1 will be implemented for this covered activity for least terns as well.

Violations and Enforcement

Enforcement and violations will be handled as described above in Section 4.3.1.

Staff Training and Communication

Staff training and communication for this covered activity will be carried out as described above in Section 4.3.1.

Mandatory Self-Escort OSV Operator Education

Mandatory self-escort OSV operator education will be conducted as described above in Section 4.3.1.

Smoothing of Tire Ruts

Tire ruts in the escort corridor will be smoothed out at least once per day when young chicks (<10 days old) are present. Hand raking will be used to smooth tire ruts. Mechanized raking will be utilized only with a trained observer walking in front of the vehicle to search for chicks.

4.4.2 Monitoring

While least tern chicks are considered precocial, they generally don't travel as great a distance from their nest area as plovers. Least tern chicks spend much of their time in vegetation or other cover and are fed by their parents, which can make them more difficult to count than piping plover chicks. Most of the counting and mapping of nest and chick locations will be conducted from a distance with binoculars and/or a spotting scope to minimize disturbance. In some cases, it may be necessary to enter nesting areas to confirm the presence of nests. Nest and chick locations will be sketched on a

map similar to the one in Appendix B that was used during the 2019 season. The maps will include key landmarks to aid in recounting. Data collected will include date, time monitoring began and ended, personnel, whether each nest/chick was confirmed or inferred to be present and the basis of inference. The approximate age of all chicks directly observed will be estimated using the Least Tern Aging Key included in Appendix C.

Prior to the beginning of each travel period, the shorebird and/or compliance monitor will attempt to verify the locations and count all chicks by searching the beach adjacent to and within 200 yards of the escort corridor. The monitors conducting pre-travel monitoring will be responsible for searching no more than 500 yards of vehicle corridor and the habitat adjacent to the corridor. Areas with unfledged chicks <100 feet from the escort corridor and any unfledged chicks seaward of the escort corridor will be noted for extra attention during the travel period. In the event that inclement weather may adversely affect the chicks, monitoring frequency may be reduced and non-essential vehicle access will be restricted.

To estimate the number of chicks exposed to OSVs, at least two nest/chick counts will be conducted in the five days prior to the anticipated start of the escorting program, including one count within 24 hours of the start date. Estimates of active nests will be obtained for all sections of beach located within 200 yards of the anticipated escort corridor. During the period when this covered activity is occurring, the number of active nests will be tracked, with recounts 2 times per week during the escort period.

Monitoring will be carried out by a qualified shorebird monitor as described above in Section 4.1.2.

Chick numbers, chick locations, and escort corridor locations/dimensions shall be provided to the Environmental Technician or the NRO on duty by the shorebird monitor daily, prior to commencing OSV escorts.

4.5 Monitoring Plan

Compliance & Effectiveness Monitoring

Compliance monitoring will document that impact minimization and mitigation measures associated with covered activities are implemented and that all requirements of the Habitat Conservation Plan for Piping Plover (HCP) are being met. The Town will continue to submit annual plover and tern census data through the online data entry systems PIPLODES and to document the total and index counts of piping plovers as well as the fate of each nest attempt, A- and B-counts for least tern censuses and maps of nest locations. The Town will maintain a log of initiation dates for covered activities, number of pairs, broods, nests and chicks exposed, and locations, as well as monitoring frequency of breeding pairs and habitat. Chick numbers, chick locations, and escort corridor locations and dimensions shall be provided to the Environmental Technician or NRO on duty by the shorebird monitor daily, prior to commencing OSV escorts. Daily maps showing the locations of the affected plover and least tern chicks will be kept with the daily log. The Town will notify DFW at least 24 hours in advance of initiation of any covered activity and when the covered activity ceases. The Town will maintain logs documenting timing and frequency of activities such as installation of symbolic fencing, monitoring of plover and tern activity, beach patrols, enforcement of bylaws and rules and regulations and timely implementation of temporary prohibitions on non-essential vehicle use. This will include detailed

documentation of staff hours by day and time, for each employee, for all activities directly associated with covered activity implementation. A summary report will be submitted to DFW on or before October 15 of each year. At minimum, the report will include dates of covered activities, estimated age of plover chicks in each brood or tern chicks in the affected sub-colony when covered activities were initiated, fledging success, number of chicks present on each date of implementation, estimated daily chick survival based on daily counts, number of vehicle passages for self-escorts, observations of behavioral responses and movement patterns of the adults and chicks exposed to covered activities, dates of fledging and supporting documentation, if applicable, and any documented "take" of chicks resulting from the covered activities program. The report will also contain recommendations for improving the efficiency and/or effectiveness of the escorting program in the future.

Every week, a brief summary report will be submitted to DFW. The report will include: (1) daily vehicle trip count for escorting and vehicles accessing Ryder Way at Manter's Point and the OSV corridor at the Crossover; (2) quantification of changes to the barrier system associated with road/parking lot use; (3) description of changes in location of the escort corridor (e.g. because of brood relocation); (4) for each affected brood, daily observations of plover chick numbers and behavior including a daily sketch map of the observed range of the brood on the beach; (5) daily observations of least tern chick numbers, approximate age and location; (6) weekly tally and description of any rules violations and enforcement actions taken; (7) weekly tally and description of all observations of plover broods crossing or approaching <50 feet from Ryder Way (for road/parking lot use) and from the escort corridor; (8) weekly tally and description of all observations of least tern chicks in an area without a barrier crossing or approaching <50 feet from Ryder Way; (9) any other notes, observations, or recommendations.

Any violations, incidents or accidents associated with the vehicle escort program and/or road and parking lot use in vicinity of unfledged chicks, including take of a chick(s) shall be immediately reported to DFW and U.S. Fish and Wildlife Service (USFWS) staff. In the event of an alleged incident related to the use of roads and parking lots, the Director of Marine and Environmental Affairs, Environmental Technician or their designee in coordination with a shorebird monitor shall cooperate with and assist Town, State and Federal officials with the investigation of the incident. Depending on the nature of the incident, the Town of Plymouth, DFW and USFWS reserve the right to suspend the covered activity for such time as they deem appropriate.

Part 5 - Budget

Implementation of the Plymouth Long Beach Management Plan is funded through a revolving fund. Beach operations for the 2020 season will be funded through the fiscal year 2020 and 2021 budgets. The budget for FY20 shown in Table 5-1 was authorized at the 2019 Spring Town Meeting, and the FY21 budget shown in Table 5-2 will be voted on at the 2020 Spring Town Meeting.

Approximate additional costs above normal operating costs for implementing the use of roads and parking lots in the vicinity of unfledged chicks for 5 take exposures include the following:

Shorebird Monitors	$46,409
Silt fence for barrier	$1,000
Signage	$300
Subtotal	$47,709
Contingency (5%)	$2,385
Total	$50,094

This budget includes funds for up to 20 rolls of 100ft fence and 60 sign blanks that the DPW sign shop will use to make the needed signs if implemented for the maximum number of take exposures. Some materials purchased for implementation during previous seasons will be reused. The normal operating budget for Long Beach includes funds for seasonal staff consisting of 2 Natural Resources Officers, 3 Natural Resources Technicians and 12 Natural Resources Assistants. Under staffing levels required by the Plymouth Long Beach Management Plan, at least two qualified shorebird monitors, and sometimes as many as six depending on the day of the week and time of day, are on duty. If the covered activity Use of Roads and Parking Lots in the Vicinity of Unfledged Plover Chicks is not implemented when unfledged chicks are present near Ryder Way, three staff members, including a qualified shorebird monitor, are dedicated to escorting essential vehicles through the area where unfledged chicks are present. Routine management and monitoring are conducted by the second shorebird monitor. Implementing this covered activity allows these staff members to perform other duties, including those associated with this covered activity for one take exposure. The funds shown above are needed to hire 12 seasonal staff members for 7 weeks (2 weeks training and up to 5 weeks implementation) to implement this covered activity for the additional 4 take exposures. Alternately, the funds could be used to hire fewer staff for a longer period of time if the implementation periods for each take exposure are staggered.

The FY20 budget shown in Table 5-1 and the FY21 budget shown in Table 5-2 are sufficient to fully fund this covered activity for up to 5 take exposures.

The estimated additional costs to fully implement OSV use in the vicinity of 1 brood of unfledged plover chicks include the following:

Shorebird & Compliance Monitors	$23,627
Signage	$100
Subtotal	$23,727
Contingency (5%)	$1,186
Total	$16,796

Fully implementing this activity would require 6 additional full-time seasonal staff to fulfill the roles of shorebird and compliance monitors as well as funding for signage to delineate the escort corridor. This covered activity will only be implemented if road/parking lot use is implemented for 4 or fewer take exposures, and there is sufficient funding left to implement OSV use. If funds are limited, the Town may implement this covered activity only on weekends, so costs would be lower. The anticipated costs for partial implementation would be as follows:

Shorebird & Compliance Monitors	$6,256
Signage	$100
Subtotal	$6,356
Contingency (5%)	$318
Total	$6,674

Implementation on weekends only would require 4 additional part-time seasonal staff (or equivalent) as well as signage.

The estimated cost for mitigation for the 2020 season is $12,285. This work will be funded through the HCP Implementation Costs line items shown in Table 5-1 and Table 5-2. See Part 6 for more information on the mitigation plan for these covered activities.

Table 5-1. Fiscal Year 2020 Plymouth Long Beach Revolving Fund Budget (Approved at 2019 Spring Town Meeting)

Full Time Salaries		**$46,036.00**
MEA Director (20%)	$22,199.00	
Environmental Tech I (33%)	$23,837.00	
Benefits		**$10,404.00**
Overtime (Police Patrols, Env Tech)		**$23,500.00**
Seasonal Salaries		**$216,783.00**
Natural Resources Assistants	$111,290.00	
Natural Resources Officers	$30,392.00	
Natural Resources Technicians	$31,605.00	
HCP Implementation Staff	$43,496.00	
Equipment/Materials		**$33,148.00**
Educational Materials	$500.00	
Uniforms	$1,000.00	
Optical (Binoculars)	$300.00	
Fencing/Posts	$3,000.00	
Supplies (twine, tools, signs, etc.)	$5,000.00	
Fill	$8,000.00	
HCP Implementation Costs	$15,348.00	
Storm Damage Contingencies		**$15,000.00**
Total Funding Request		**$344,871.00**

Table 5-2. Fiscal Year 2021 Plymouth Long Beach Revolving Fund Budget (Pending Vote at 2020 Spring Town Meeting)

Full Time Salaries		**$47,485.00**
MEA Director (20%)	$23,557.00	
Environmental Tech I (33%)	$23,928.00	
Benefits		**$10,888.00**
Overtime (Police Patrols, Env Tech)		**$24,000.00**
Seasonal Salaries		**$236,576.00**
Natural Resources Assistants	$123,387.00	
Natural Resources Officers	$31,532.00	
Natural Resources Technicians	$35,248.00	
HCP Implementation Staff	$46,409.00	
Equipment/Materials		**$33,985.00**
Educational Materials	$500.00	
Uniforms	$1,000.00	
Optical (Binoculars)	$300.00	
Fencing/Posts	$3,000.00	
Supplies (twine, tools, signs, etc.)	$5,000.00	
Fill	$8,000.00	
HCP Implementation Costs	$16,185.00	
Storm Damage Contingencies		**$15,000.00**
Total Funding Request		**$367,940.00**

Part 6 – Mitigation Plan

To mitigate for the potential impacts of the covered activity on both piping plovers and least terns, the Town of Plymouth will contract with the U.S. Department of Agriculture—Wildlife Services (USDA-WS), or another qualified predator management expert, to conduct on-site selective predator management. The DMEA staff will carry out one of the tasks under the guidance of USDA-WS as well as providing information on presence and activity of predators.

Predator management has been demonstrated to increase productivity at Plymouth Long Beach (see Section 1.2 and Table 1-1). Use of roads and parking lots in the vicinity of unfledged piping plover chicks requires mitigation to benefit 3 breeding pairs for every brood exposed to take. Oversand Vehicle (OSV) Use in Vicinity of Unfledged Piping Plover Chicks requires mitigation to benefit 2.5 breeding pairs for every brood exposed to take. A minimum of 2 breeding pairs of least terns must benefit from mitigation activities for every nest exposed to take.

The number of breeding pairs of plovers and terns at Plymouth Long Beach varies each season. The level of selective predator management is based on the number of breeding pairs present during the previous season, but the actual number of pairs that benefit cannot be determined until after the breeding season. Any deficits in the required predator management will be offset by additional predator management during the following season. A surplus of required predator management may be carried forward into future seasons until the expiration of the COI.

Additional information about the proposed 2020 mitigation is provided in Appendix D. In summary, the Town of Plymouth will self-fund an $12,285 annual work plan. This is expected to benefit approximately 30 pairs of piping plover based on the number of breeding pairs in 2019. An estimated 98 pairs of least terns will benefit based on breeding pairs in 2019. As set forth in the HCP, the Town will provide a selective predator management work plan to DFW on an annual basis in order to ensure that at least 3 piping plover pairs benefit from selective predator management for each brood exposed to the use of roads and parking lots activity, 2.5 plover pairs benefit for each brood exposed to the OSV use activity, and 2 least tern breeding pairs benefit for every pair exposed to either of the covered activities. After the work plan and budget are approved by DFW, selective predator management will be implemented in advance of carrying out the covered activities during that beach season.

Mitigation Monitoring Plan

To assess effectiveness of the mitigation plan, the Town will monitor and report the following to DFW annually: the actual number of plover broods and least tern nests and chicks exposed to covered activities, actual number of breeding pairs of piping plovers and least terns benefitting from selective predator management, piping plover and least tern productivity for the site, causes of nest and/or chick loss, and any mitigation credits or deficits that will be carried over into the following season.

Literature Cited

Melvin, S.M. and J. P. Gibbs. 1996. Viability analysis for the Atlantic Coast population of Piping Plovers. Pages 175-186 In U.S. Fish and Wildlife Service. Piping Plover Atlantic Coast Population Revised Recovery Plan. U.S. Fish and Wildlife Service, Hadley, MA.

Appendices

A – Resumes of Responsible Staff

B – 2019 Monitoring Datasheets

C – Least Tern Aging Key

D – 2020 Predator Management Plan/Wildlife Services Proposal Letter

Appendix A – Resumes of Responsible Staff

David Gould

58 Myles Standish Drive
Carver, MA 02330
(508) 866-2023

EDUCATION

Master of Environmental Planning (May 1998), Arizona State University.
Concentration in Landscape Ecological Planning. Honors Graduate.

Bachelor of Arts (January 1993), Bridgewater State College (MA).
Dean's List (1991-1993). Phi Alpha Theta International Honor Society.

PROFESSIONAL EXPERIENCE

Director of Marine and Environmental Affairs, Town of Plymouth – October 2012 to present. Executive level management and oversight of Harbormaster Division, Natural Resources Division and Animal Control Division within Department. Responsible for operating budget, capital projects, equipment requests and grant awards. Oversees programs including shellfish, aquaculture, endangered species, river restoration and beach management plans.

Acting DPW Director Town of Plymouth– January 2007 to May 2007 and February 2009 to February 2010
Responsible for day-to-day operations, management, long-term planning for Public Works Department. Responsible for management and supervision of a staff of 120 full time employees. Responsible for planning, budgeting, directing and controlling of seven divisions, 400 miles of roadway and 103 square miles with a budget of $13 million dollars within the largest geographic community in the Commonwealth.

Environmental Manager – Town of Plymouth. Massachusetts 2004 - Present.
Provides technical, administrative and field expertise in managing environmental resources. Responsible for permit compliance, project development and oversight of diverse environmental programs ranging from coastal shorebird program, beach management, river restoration, watershed management and harbor development.

Natural Resources Officer - Town of Plymouth, Massachusetts 2001- 2004.
Provides technical, administrative and field expertise in managing coastal beaches, anadromous fish runs and other town properties. Responsible for the administration of coastal shorebird endangered species program. Supervises seasonal shorebird staff and volunteer herring wardens.

Conservation Agent - Hanson, Massachusetts. 1999-2001.
Provided professional support to the Conservation Commission in administering and enforcing the Massachusetts Wetlands Protection Act and the municipal wetlands protection by-law. Conducted site inspections, reviewed wetlands delineations and prepared site visit reports.

Assistant Conservation Agent - Wrentham, Massachusetts. 2000-2001.
Provided professional support to the Conservation Commission in administering and enforcing the Massachusetts Wetlands Protection Act and the municipal wetlands protection by-law.

Awards

- 2009 Boston/New York Chapter of American Institute of Architects: Urban Design Award for the Plymouth Public Space Action Plan
- 2007 NOAA Environmental Hero Award
- 2002 Coastal America Spirit Award for Town Brook Herring Run Restoration Project: Billington Street Dam Removal

Invited Speaker

2010 Urban River Restoration Conference
Water Environment Federation
Boston, MA
March 2010

Water Watch Series Workshop: Environmental Restoration
North South Rivers Watershed Association
Norwell, MA
February 2009

Demystifying Dam Removal Workshop
Massachusetts Dept. of Fish and Game – Division of Ecological Restoration
West Boylston, MA
November 2009

Local Planning Committee Member
2009 Restore America's Estuaries National Conference
Providence, RI
October 2008

Hands on Habitat – 10 Years of Coastal Restoration
National Oceanic and Atmospheric Administration
United States Capitol Building, HC-5
Washington, DC
June 2006

River Herring Restoration Workshop
Coalition for Buzzards Bay
Wareham, Massachusetts
February 2005

Coastal Stream Habitat Restoration Workshop
Waquoit Bay National Estuarrine Research Reserve
East Falmouth, Massachusetts
November 2004

Emerging Issues in Water Resources in the Northeast
Massachusetts Water Resources Research Center
University of Massachusetts – Amherst
October 2004

River Restoration Workshop
Tufts University
Medford, Massachusetts
October 2004

KERIN McCALL
Environmental Technician, Department of Marine & Environmental Affairs
Town of Plymouth, 26 Court Street, Plymouth, MA 02360
(508)747-1620 x10201 kmccall@townhall.plymouth.ma.us

EDUCATION

Bachelor of Science, Marine Science-Biology Concentration, August 1997.
Southampton College of Long Island University, Southampton, NY.
Dean's List 1993-1997, Honors Program, Merit Fellows Scholar, Beta Beta Beta Biological Society, Magna Cum Laude.

PROFESSIONAL EXPERIENCE

Town of Plymouth, Massachusetts
Environmental Technician I, 5/05 to present
Natural Resources Officer, 5/03-9/03 and 5/04-9/04
Implement the Plymouth Long Beach Management Plan, which was developed to minimize the impacts of off-road vehicle use and pedestrian activities on coastal waterbird nesting and wetland resources. Monitor nesting activity of coastal waterbirds, including Piping Plovers, Least Terns, Common Terns, Roseate Terns, Arctic Terns and Laughing Gulls. Compile census and productivity data for each species. Educate the public through personal interaction, columns in the local paper, development of informational pamphlets, and maintenance of the Plymouth Long Beach page on the Town's website. Enforce regulations and bylaws concerning beach management and issue citations to gain compliance when necessary. Hire and supervise seasonal staff. Interact with and report to regulatory agencies to ensure compliance with the Plan and protection of nesting shorebirds and wetland resources.
Implement requirements of the Town's Certificate of Inclusion in the Massachusetts *Habitat Conservation Plan for Piping Plover* and Conservation and Management Permit for Least Terns (2016 to present).
Serve as Site Leader for Common Tern Monitoring Program in cooperation with the Massachusetts Division of Fisheries & Wildlife (2010 to present). Install monitoring plots, monitor nesting activity, band and weigh Common Tern chicks, supervise and train seasonal staff, analyze data.
Enforce shellfish regulations.
Provided support for the solid waste and recycling program including environmental permitting and planning, interaction with recycling vendors, preparation of annual reports, represented the Town at meetings of regional organizations. (2005-2013)

Gulf Islands National Seashore, Gulf Breeze, Florida
Biological Science Technician, 3/00-9/00, 4/01-12/01, and 5/02-9/02
Student Conservation Associate, 5/99-3/00
Performed field work, data compilation and reporting for Natural Resources Management programs including monitoring of coastal waterbird nesting, shorebird monitoring program, monitoring of sea turtle nesting activity, satellite monitoring of sea turtle post-nesting migration routes, sea turtle and marine mammal stranding response, Gopher Tortoise habitat improvement and colony relocation, monitoring activity of Perdido Key Beach Mouse. Preparation, implementation and monitoring of urban-interface prescribed fire. Invasive plant removal. Injured and problematic/venomous animal response. Storm damage assessments and revegetation of dune areas. Trained new staff and volunteers. Interacted with the public, developed and distributed informational brochures on sea turtles, wrote articles for newsletters, interviews with press.

Buck Island Reef National Monument, St. Croix, U.S. Virgin Islands.
Research Assistant, 6/98-10/98
Monitored nesting Hawksbill and Green sea turtles and foraging juvenile sea turtles, assisted with deployment of inter-nesting dataloggers and satellite transmitters for monitoring post-nesting migration, hurricane preparation and post-storm assessment, supervised and trained volunteers.

Culebra Leatherback Project. Isla de Culebra, Puerto Rico.
Field Technician, 4/98-6/98
Monitored nesting activity of Leatherback sea turtles. Supervised and educated groups of up to 15 visitors per night. Trained three new staff members to handle nesting sea turtles, use research equipment, and collect data.

Douglas Robinson Center for Marine Turtle Research. Ostional, Costa Rica.
Volunteer Research Assistant, 1/98-2/98
Monitored the nesting population of the Olive Ridley sea turtle, identified and tagged turtles with fibropapilloma for tumor monitoring, assisted with biopsy sampling of both fibropapilloma and normal tissue.

Coastal Research & Education Society of Long Island/Southampton College. Southampton, New York.
Lead Field Technician, 6/97-11/97
Acted as liaison with fishermen for a cooperative research program studying juvenile Green, Loggerhead, and Kemp's Ridley sea turtles in developmental habitat. Collected data on morphology, tagging, capture locations, and took blood samples. Compiled and analyzed 12 years of data.

Queensland Department of Environment. Townsville, Queensland, Australia.
Volunteer Research Assistant, 11/96-1/97
Collected data on the nesting populations of Green and Hawksbill sea turtles on Milman Island. Identified/collected species of reptiles, arachnids and insects at Milman Island for a Q. DoE project aimed at describing the flora and fauna of a typical islet of the northern Great Barrier Reef.
Student Intern, 9/96-11/96
Monitored Australian Brush-turkeys at Cape Pallarenda Environmental Park. Set up GIS, created datasheets, updated maps for digitization. Prepared honors thesis, submitted report to Q. DoE. Responded to local sea turtle strandings and assisted with field necropsies. Sighted turtles for rodeo capture on Green turtle feeding grounds.

CERTIFICATIONS

- PADI Open Water Diver SCUBA Certification, October, 1994.
- US Coast Guard Auxiliary Boating Skills and Seamanship Certification, 1996.
- S-130 Firefighter Training and S-190 Wildland Fire Behavior, August, 1999.
- Massachusetts Shellfish Constable Training Course, February, 2013.
- American Heart Association Certifications: Adult CPR, Child CPR, Infant CPR, AED, First Aid & Safety, May 2017.

Appendix B – 2019 Monitoring Datasheets

Piping Plover Habitat Conservation Plan - Plover Chick Monitoring

Plymouth Long Beach Nest # _____

Date _____ Weather _____

Start Time _____ Start Location _____

End Time _____ End Location _____

Barrier Fence In Place? _____ Recreational Access Open? _____

Crossing or Approaching <50ft of Road/Parking Lot (without a barrier in place)

Time	Direction	Notes (response to vehicles/pedestrians,etc?)	Vehicle Mgmt?

Monitoring Sessions

Start Time:	End Time:	Observer:
Brood Location at Start:		
Brood Location at End:		
Observations:		

Start Time:	End Time:	Observer:
Brood Location at Start:		
Brood Location at End:		
Observations:		

Date _____ Nest # _____

Start Time:	End Time:	Observer:
Brood Location at Start:		
Brood Location at End:		
Observations:		

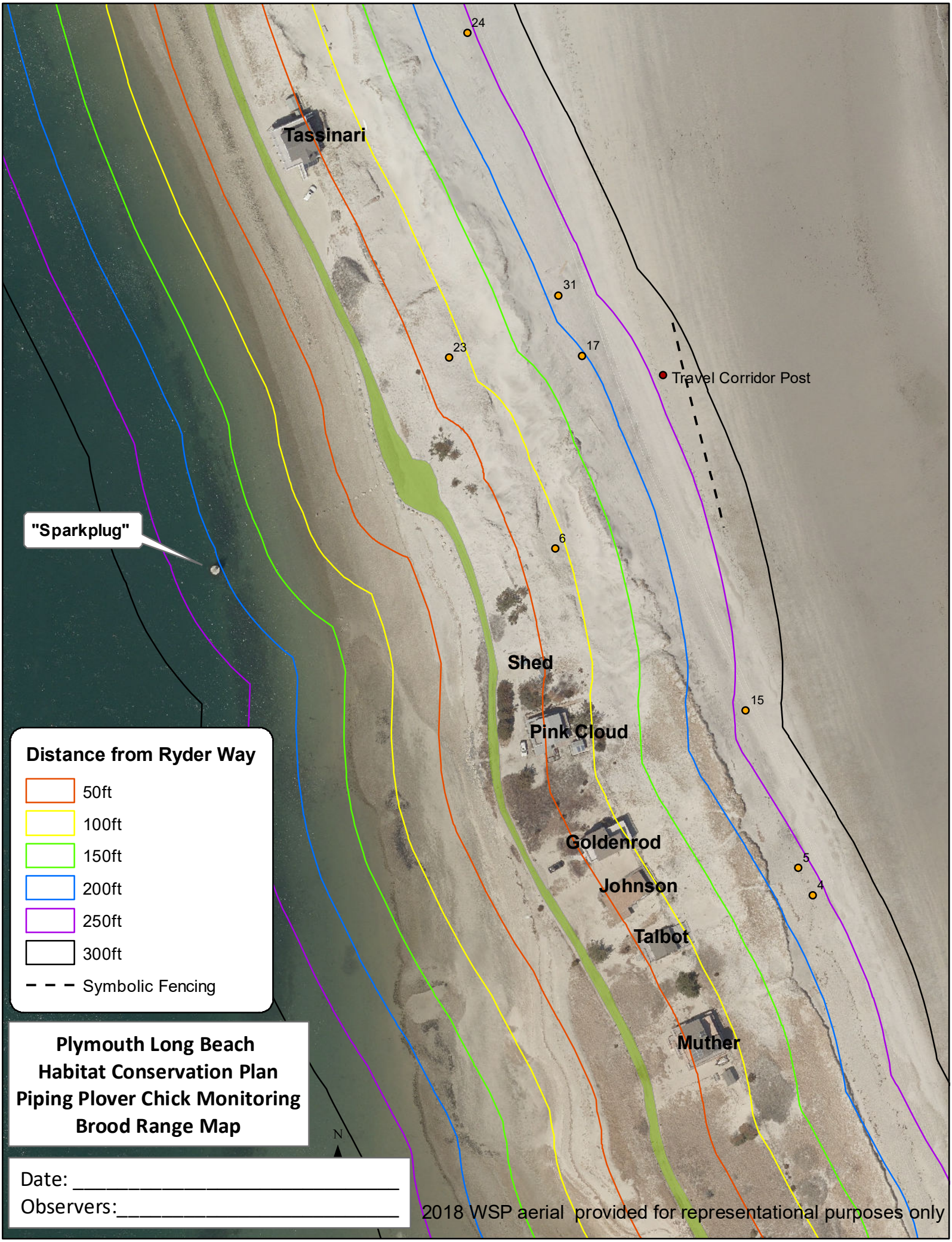
Start Time:	End Time:	Observer:
Brood Location at Start:		
Brood Location at End:		
Observations:		

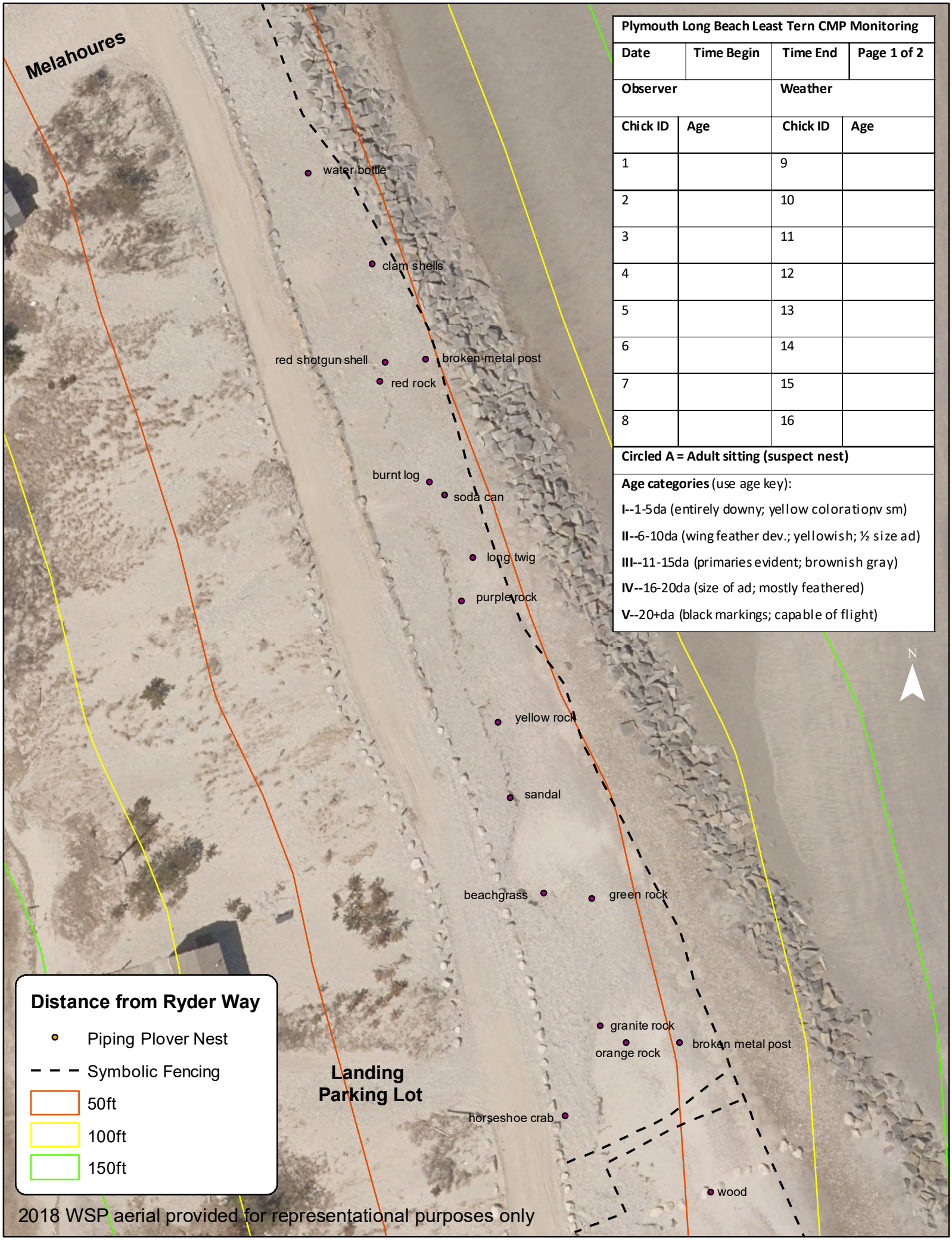
Start Time:	End Time:	Observer:
Brood Location at Start:		
Brood Location at End:		
Observations:		


Plymouth Long Beach
Habitat Conservation Plan
Piping Plover Chick Monitoring
Brood Range Map
Crossover
telephone pole
log
wood post
Melahoures
water bottle
clam shells
broken metal post
red rock
burnt log
soda can
long twig
42
purple rock
yellow rock
sandal
beachgrass
green rock
granite rock
broken metal post
orange rock
horseshoe crab
wood
Landing
Parking Lot
N
Distance from Ryder Way
Symbolic Fencing
50ft
100ft
150ft
Date: _____ Brood #: _____
Observers: _____
2018 WSP aerial provided for representational purposes only


Plymouth Long Beach
Habitat Conservation Plan
Piping Plover Chick Monitoring
Brood Range Map
horseshoe crab
wood
orange rock
red rock
29
yellow tube
green rock
lobster trap
rope
purple rock
twig
yellow rock
triangle rock
small log
small log
square board
green funnel
yellowish plastic
horseshoe crab
DeMarzo
Stanley
N
Distance from Ryder Way
Symbolic Fencing
50ft
100ft
150ft
Date: _____ Brood #: _____
Observers: _____
35
Day Parking Area
2018 WSP aerial provided for representational purposes only


Plymouth Long Beach - Habitat Conservation Plan
Piping Plover Chick Monitoring
Brood Range Map
Date: _____
Observers:_____
DeMarzo
Stanley
metal pipe
black tube
metal grate
green net
long rock
black tarp
fragile area sign
dead branch
square rock
horseshoe crab
large wrack pile
log
dog sign
dog sign
35
yellow sign
concrete
branch
small log
small beachrose
log
shellfish sign
Sparks
Distance from Ryder Way
50ft
100ft
150ft
200ft
Piping Plover Nest
N
Imagery © Google
2018 aerial provided for representational purposes only


24
Tassinari
31
23
17
Travel Corridor Post
"Sparkplug"
6
Shed
15
Pink Cloud
Goldenrod
5
4
Johnson
Talbot
Muther
N
Distance from Ryder Way
50ft
100ft
150ft
200ft
250ft
300ft
Symbolic Fencing
Plymouth Long Beach
Habitat Conservation Plan
Piping Plover Chick Monitoring
Brood Range Map
Date: _____
Observers:_____
2018 WSP aerial provided for representational purposes only



Plymouth Long Beach Least Tern CMP Monitoring			
Date	Time Begin	Time End	Page 1 of 2
Observer		Weather	

Chick ID	Age	Chick ID	Age
1		9	
2		10	
3		11	
4		12	
5		13	
6		14	
7		15	
8		16	

Circled A = Adult sitting (suspect nest)

Age categories (use age key):

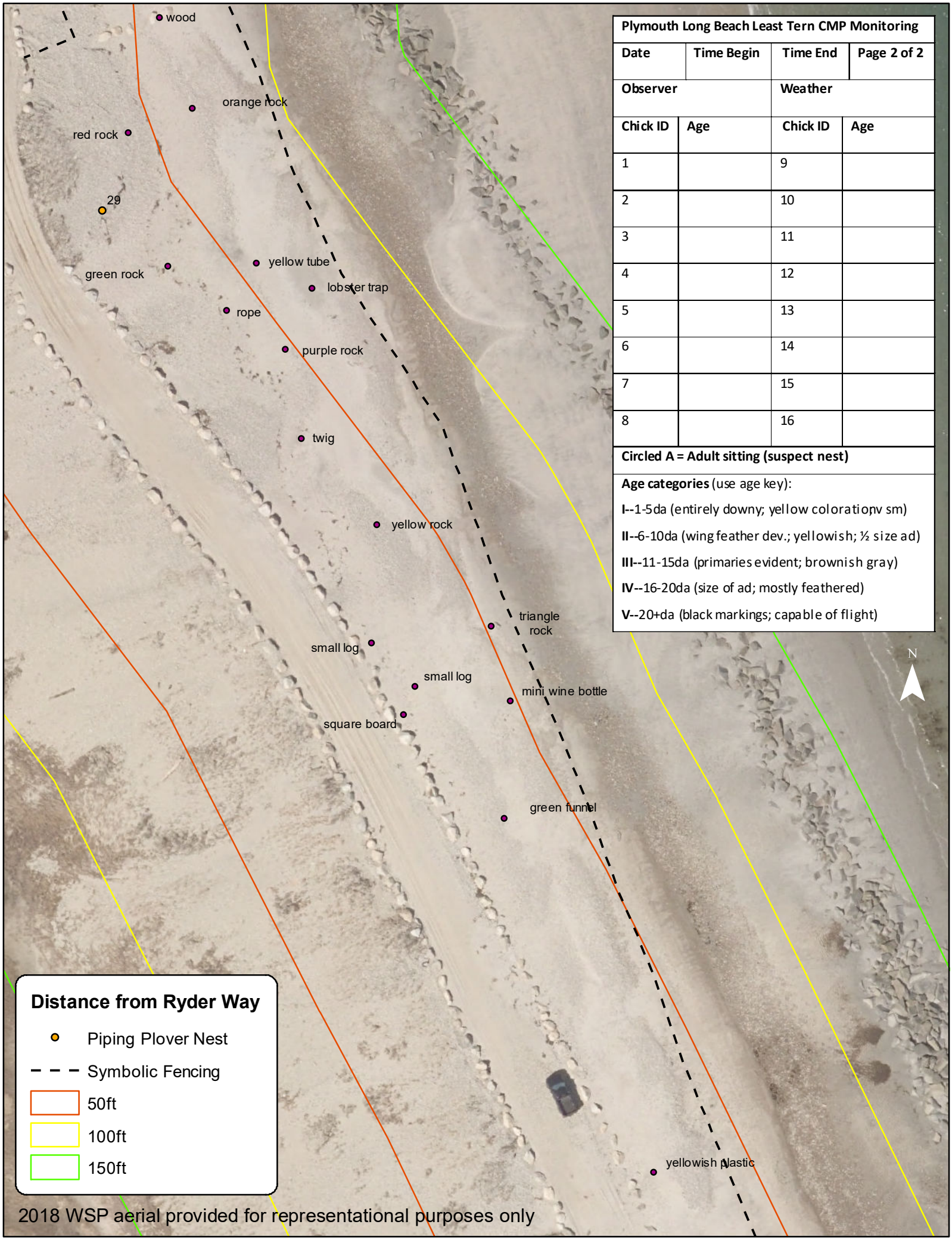
I--1-5da (entirely downy; yellow coloration, v sm)

II--6-10da (wing feather dev.; yellowish; ½ size ad)

III--11-15da (primaries evident; brownish gray)

IV--16-20da (size of ad; mostly feathered)

V--20+da (black markings; capable of flight)



Plymouth Long Beach Least Tern CMP Monitoring			
Date	**Time Begin**	**Time End**	**Page 2 of 2**
Observer		**Weather**	

Chick ID	Age	Chick ID	Age
1		9	
2		10	
3		11	
4		12	
5		13	
6		14	
7		15	
8		16	

Circled A = Adult sitting (suspect nest)

Age categories (use age key):

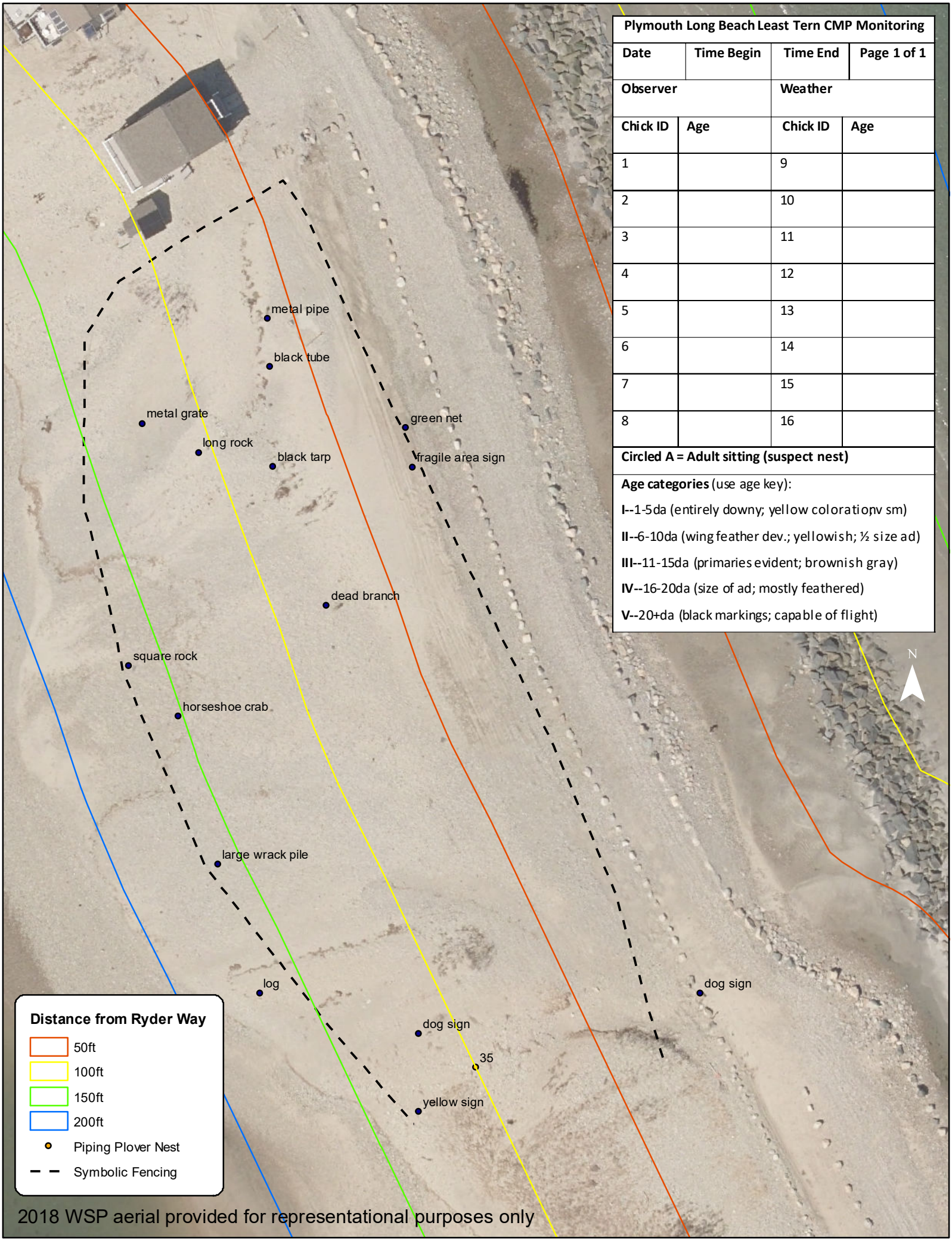
I--1-5da (entirely downy; yellow coloration, v sm)

II--6-10da (wing feather dev.; yellowish; ½ size ad)

III--11-15da (primaries evident; brownish gray)

IV--16-20da (size of ad; mostly feathered)

V--20+da (black markings; capable of flight)



Plymouth Long Beach Least Tern CMP Monitoring			
Date	**Time Begin**	**Time End**	**Page 1 of 1**
Observer		**Weather**	

Chick ID	**Age**	**Chick ID**	**Age**
1		9	
2		10	
3		11	
4		12	
5		13	
6		14	
7		15	
8		16	

Circled A = Adult sitting (suspect nest)

Age categories (use age key):

I--1-5da (entirely downy; yellow coloration, v sm)

II--6-10da (wing feather dev.; yellowish; ½ size ad)

III--11-15da (primaries evident; brownish gray)

IV--16-20da (size of ad; mostly feathered)

V--20+da (black markings; capable of flight)

Appendix C – Least Tern Aging Key

Least Tern Aging Key

Reformatted from key developed by Mass Audubon & MassWildlife

Age Class 1-5 days

About 2 Days Old

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

A. entirely downy

B. yellow coloration with brown spots

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

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

Age Class 6-10 days

About 9 Days Old

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

A. coloration is still yellowish with brown mottles

B. feather development seen on the wings

C. at age 10 days, chick is about 1/2 the size of an adult

D. will be spending more time in vegetation

Age Class 11-15 days

About 11 Days Old

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

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

B. primaries continue to develop & elongate

C. at age 15 days, chick is about 2/3 the size of an adult

D. majority of time will be spent in vegetation hiding

E. when running, will resemble a bowling pin, head will be erect

Least Tern Aging Key

Reformatted from key developed by Mass Audubon & MassWildlife

Age Class 16-20 days

About 18 Days Old

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

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

B. will be more visible and will spend more time near shoreline

C. cannot fly

Age Class 21+ days - Fledged

Fledged tern chicks are distinguished by:

A. similar in size and shape to an adult

B. forehead and top of head brownish gray

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

D. capable of sustained flight

E. may still be fed by an adult

Appendix D – 2020 Predator Management Plan & Wildlife Services Proposal

Plymouth Long Beach 2020 Predator Management Plan

Purpose

To work with the U.S. Department of Agriculture's Wildlife Services (USDA-WS) to conduct a predator management project that effectively reduces avian and mammalian predation for nesting piping plovers, least terns, and other coastal waterbirds nesting at Plymouth Long Beach.

Scope of Services

The USDA-WS program will provide wildlife damage management assistance to alleviate problems caused by avian and mammalian predators on Plymouth Long Beach. The benefits expected from the WS program include WS expertise through evaluation and enhancement of existing damage management strategies, organizational support, and provision of additional predator management activities and equipment through operational assistance.

Conflict resolutions will be sought using an integrated approach. The determinations of methods employed will depend on considerations of selectivity, humaneness, human safety, effectiveness, practicability, and cost.

Damage Management Strategies: Operational work in authorized areas will be conducted using integrated nonlethal and lethal strategies. USDA-WS program personnel will direct operational work toward specific depredating individual animals or local populations by selecting the time, location, technique and specific application of management methods in collaboration with the Town of Plymouth's Department of Marine and Environmental Affairs (DMEA) staff.

Damage Management Methods and Techniques: The basic operational methods incorporated under this project for managing avian and mammalian predation will include and be limited to: (1) placement and monitoring of live traps (box traps), (2) assisting in the placement, and monitoring of exclosures and other exclusionary or predator scaring devices and equipment, (3) using night vision equipment, shooting with handguns and /or suppressed weapons for onsite euthanization, (4) shooting with shotguns and non-toxic shot, (5) using the avicide DRC-1339 in and around areas where depredation has occurred by avian predators, and (6) destruction of the nests of predatory gulls.

DMEA will request renewal for the 2020 season of U.S. Fish and Wildlife Service (USFWS) migratory bird depredation permit MB18536C-0 for the removal of black-crowned night-herons and for egg and nest treatment of the herring gull colony at the point of Long Beach. USDA-WS will be named as a sub-permittee in the permit application.

Depending on the circumstances at any given time, the use of a particular method may have advantages and disadvantages. Therefore, these methods will be used in various combinations and degrees of intensity depending on local conditions and history of specific damage situations or other circumstances.

USDA-WS will deploy 1 to 2 Wildlife Biologists/Technicians (or more if deemed necessary) for 1 to 4 day intervals to be determined collaboratively between DMEA and USDA-WS prior to and during the nesting season in 2020. The exact dates of these sessions are to be determined collaboratively between DMEA and USDA-WS.

Based on consultation with USDA-WS and past experience at this site, the budget commitment for 2020 implementation will be $12,285. For the purpose of determining mitigation we are requesting that the Massachusetts Division of Fisheries and Wildlife and USFWS approve a 2020 budget and work plan of $12,285. Predator species that may be removed include, but may not be limited to, red fox, gray fox, Eastern coyote, raccoon, striped skunk, mink, and Virginia opossum, American crow and fish crow. Activities will be conducted on lands owned and managed by the Town of Plymouth and on private property where written authorization of the property owner may be obtained.

Financial Plan

The predator management program will be fully funded by the Town of Plymouth for the 2020 season. A proposed work plan provided by USDA-WS describing the recommended selective predator management work to be carried out for the 2020 season is attached to this COI request (Appendix D).

The estimated total for program activities this season, including administrative costs, is $12,285. At this level of funding, WS will provide a minimum of 12 control visits. A general breakdown of these costs is included below. Pooled job costs include administrative costs for USDA-WS at the regional and headquarters level for services such as National Environmental Policy Act compliance and public relations. Indirect costs include administrative costs for the program such as contracting.

Estimated Plan Implementation Costs:

Personnel Compensation	$7,394.47
Vehicles	$1,499.40
Other Services	$169.86
Supplies and Materials	$187.73
Equipment	$410.36
Subtotal (Direct Costs)	$9,661.82
Pooled Job Costs	$1,062.80
Indirect Costs	$1,560.38
Total Estimated Costs	**$12,285.00**

Destruction of the nests of predatory gulls will be conducted by DMEA staff with guidance from USDA-WS. This work is expected to take 2-3 man-hours every 2 weeks for 6-8 weeks until predatory gulls no longer attempt to nest. This work will be conducted by existing DMEA staff, so there will be no additional costs for this work.

ATTACHMENT A
WORK PLAN

Introduction

In accordance with the Cooperative Service Agreement between the Town of Plymouth, Massachusetts and the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS), this Work Plan sets forth the objectives, activities and budget of this project during the period of this agreement 1 February 2020 to 31 August 2020.

Program Objective

To conduct a wildlife damage management project that provides professional services to alleviate avian and mammal predation to nesting piping plovers and least terns on Plymouth Long Beach, Plymouth, MA. This predator reduction will enable The Town of Plymouth and adjacent nesting beaches to receive necessary operational support to efficiently and effectively reduce wildlife damage adversely impacting federally threatened and state endangered bird species and their nesting activities on the property.

Plan of Action

WS program will provide wildlife damage management assistance to alleviate problems caused by avian and mammalian predators on The Town of Plymouth property and nesting beaches. The benefits expected from the WS program include WS expertise through evaluation and enhancement of existing damage management strategies; organizational support; and provision of additional predation management activities and equipment through operational assistance to the cooperator experiencing wildlife damage problems.

Conflict resolutions will be sought using an integrated approach. The determination of methods to alleviate damage will depend on considerations of selectivity, humaneness, human safety, effectiveness, practicability, and cost.

Damage Management Strategies: Operational work in authorized areas will be conducted using integrated nonlethal and lethal strategies. WS program personnel will direct operational work toward specific depredating individual animals or local populations by selecting the time, location, technique and specific application of management methods or tools.

Damage Management Methods and Techniques: The basic operational methods incorporated under this project for managing avian and mammal predation will include and be limited to: (1) shooting with suppressed weapons and night vision equipment, (2) shooting with shotguns and nontoxic shot, (3) placement and monitoring of live traps and (4) using the avicide DRC-1339 in and around areas where depredation has occurred by avian predators.

WS will assist the Town of Plymouth in applying for any required state or federal permits for take of predators and WS will be listed as subpermittees. Any animals taken under this agreement will be disposed of at WS discretion based on requirements of applicable permits.

Depending on the circumstances at any given time, the use of a particular method may have advantages and disadvantages. Therefore, these methods will be used in various combinations and degrees of intensity depending on local conditions and history of specific damage situations or other circumstances.

The WS State Director or immediate next line supervisor located in Amherst, Massachusetts will provide WS project direction. One primary WS personnel will be assigned the responsibility for conducting the wildlife damage management work at The Town of Plymouth facility and the organization and scheduling of additional assistance when cooperatively determined between WS and The Town of Plymouth.

The estimated cost for services to be provided by the WS Massachusetts Program for the 2020 field season on Plymouth Long Beach is $12,285.00. WS will deploy 1 to 4 Wildlife Biologist/ Technicians for 1 to 2 day intervals to be determined collaboratively between The Town of Plymouth and WS prior to and during the nesting season (February to August).

The budget for this agreement is for up to 14 control visits to Plymouth Long Beach to address mammalian and avian predation. Fewer visits may be conducted based on control activities required for control. The Town of Plymouth agrees to reimburse the WS Massachusetts program the total cost of this project. If the actual cost will exceed $12,285.00, then a signed modified agreement will be required by both parties.

Effective Dates

The cooperative agreement shall become effective on 1 February 2020, and shall expire on 31 August 2020.

FINANCIAL PLAN

Cost Element		Full Cost
Personnel Compensation		$7,394.47
Vehicles		$1,499.40
Other Services		$169.86
Supplies and Materials		$187.73
Equipment		$410.36
Subtotal (Direct Charges)		$9,661.82
Pooled Job Costs [for non-Over-the Counter projects]	11.00%	$1,062.80
Indirect Costs	16.15%	$1,560.38
Agreement Total		$12,285.00
The distribution of the budget from this Financial Plan may vary as necessary to accomplish the purpose of this agreement, but may not exceed: **$12,285.00**		

Financial Point of Contact

The Town of Plymouth: Kerin McCall, Environmental Technician
Department of Marine and Environmental Affairs
26 Court Street
Plymouth, MA 02360
Phone: (508)747-1620 x10201
Email: KMcCall@townhall.plymouth.ma.us

APHIS, WS: Dawn Wanczyk, Budget Analyst
USDA, APHIS, Wildlife Services
463 West Street
Amherst, MA 01002
Phone: (413) 253-2403 ext. 3
Fax: (413) 253-7577
Email: Dawn.M.Wanczyk@usda.gov