



Fire Island National Seashore

Off-Road Vehicle Management

ENVIRONMENTAL ASSESSMENT



May 2024

Cover photo:

Otis Pike Fire Island High Dune Wilderness, Fire Island National Seashore (Source: US Geological Survey)

EXECUTIVE SUMMARY

The National Park Service (NPS) proposes changes to Fire Island National Seashore's (Seashore) 1987 off-road vehicle (ORV) regulations to provide appropriate vehicular access to Seashore lands while protecting Seashore resources and safe visitor experiences, consistent with the Seashore's enabling legislation in 1964. Since 1987, the demographics of Fire Island residents have changed, and requests for driving access have increased in relation to residents' needs and convenience. Furthermore, the breach at Old Inlet created by Superstorm Sandy in 2012 temporarily changed access to the communities and prompted a review of the program and regulations.

The NPS prepared this Environmental Assessment (EA) to evaluate the impacts of no action (alternative A) and of two action alternatives (B and C). It describes the environment that the alternatives would affect and assesses the environmental consequences of implementing the alternatives. The NPS has prepared this EA in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework.

This EA focuses on the impacts of ORV driving that is permitted by the NPS. ORV management on Fire Island is a uniquely complex system with permitting and other management responsibilities under the jurisdiction of the towns of Islip and Brookhaven and the villages of Ocean Beach and Saltaire on the lands within their respective jurisdictions. These ORV management programs were created to protect the vulnerable resources of Fire Island from unmanaged ORV use. ORV permits issued by the NPS (except permits for recreational hunting and fishing access) and by the municipalities are issued to enable access to support viable Fire Island communities that could not otherwise be accomplished by water. The Seashore regulations and any changes made to it only proscribe the ORV management program on NPS administered lands. Each town or village may decide to update its own regulations or ORV program independent of changes made by the NPS.

ALTERNATIVES

Alternative A (no action) would continue the current ORV management under the 1987 regulations and subsequent Seashore management plans. Action alternatives B and C would modify caps (alternative B) or remove caps (alternative C) on the number of permits issued per category and have strict permitting criteria that determine permit eligibility. In the shoulder seasons, alternative B would permit driving during all days in May, and on weekdays and weekend nights in early June and after Labor Day for most categories; alternative C would only permit weekday driving during those periods. Among other changes, alternatives B and C would modify the recreational driving window to reduce conflict with piping plover (*Charadrius melodus*) during its nesting season, permit vehicles with both four-wheel and all-wheel drive, specify that construction debris carting is within the construction/business permit category, and redefine a "trip" as a trip through the Seashore's west or east gate.

EFFECT OF ALTERNATIVES ON NUMBER OF TRIPS

Potential impacts to resources are a function of ORV driving patterns on the Seashore and seasonal driving variability. Factors limiting the amount of driving include the qualification requirements for permit applicants, closures of beaches for resource protection and safety, potential restrictions imposed by the towns and villages, limited parking (i.e., year-round residents would not receive a permit if they do not have a place to park their car on the island), long driving times to some communities, availability of water-based transportation, and sea-level rise that will increasingly affect life on the island. Considering existing driving patterns (based in part on the analysis of the daily driving data collected at the west gate between 2010 and 2021), changes under alternative B could increase the number of trips on the Seashore by roughly 23% along western communities, and by 8% along eastern communities and NPS lands east of Point O' Woods. Increases in the number of trips under alternative C could be at least as much as under alternative B or higher if the towns and village do not regulate further. These percentages are meant to

only serve as a guide because the extent to which limiting factors would apply or be implemented in the future is not accurately predictable. In addition, the superintendent has the authority to restrict driving if it adversely affects resources.

The following sections address resource impact topics, starting with a summary of current conditions (which would continue under alternative A [no action]) for each topic, followed by a summary of potential impacts under alternatives B and C.

DUNE SYSTEMS AND PLANT COMMUNITIES (INCLUDING THREATENED AND ENDANGERED PLANTS)

Sand dunes are integral to the coastal dynamics of Fire Island. The primary dune (or foredune) extends along the beachfront, providing an initial defense against coastal erosion. Secondary dunes extend further upland in some parts of the Seashore. Dunes are regularly reshaped as the barrier island goes through stages of sediment accretion and erosion, particularly during storms and high tides. Vegetation stabilizes the dune. The underground stems (“rhizomes”) of American beach grass (*Ammophila breviligulata*) can extend below the sand to 20 feet from the plants; for that reason, the 1987 regulations prohibit ORV driving within 20 feet of the dune’s toe (commonly referred to as the “rhizome rule”). The Seashore contains four significant natural communities (maritime beach, maritime intertidal gravel/sand beach, maritime dunes, maritime holly forest) that occur within or next to areas with ORV driving. Plants within these communities include the federally threatened seabeach amaranth (*Amaranthus pumulis*) and rare state-listed seabeach knotweed (*Polygonum glaucum*). ORV driving on the beach can cause localized dune erosion and vegetation impacts in locations where drivers violate the rhizome rule. Driving in dune cuts can also cause localized dune erosion and vegetation impacts but is allowed by NPS to enable access between the beach and the interior road. NPS enforces rules for driving on the beach on their lands; these rules preclude driving in vegetated areas and protect threatened and endangered (T&E) plants with symbolic fencing.

Under alternatives B and C, the increase in the number of trips could lead to an increase in the violation of the rhizome rule, and therefore result in a slight increase in the risk of erosion at the toe of the dunes. However, adverse impacts to dune vegetation (including T&E plants) are expected to be mitigated through enforcement of driving regulations, beach closures, and more driver education.

WILDLIFE (INCLUDING BEACH INVERTEBRATES AND THREATENED AND ENDANGERED SPECIES)

The barrier beach and dune vegetation provide feeding and nesting habitats for many species of migrating birds, turtles, marine mammals, and invertebrates. These habitats provide shelter for more than 330 migratory, over-wintering, and resident bird species. Over 20 shorebird species rely on the Atlantic-side beaches and dunes of Fire Island for nesting between March and August. Federally listed birds at the Seashore include the piping plover, roseate tern (*Sterna dougallii*), and red knot (*Calidris canutus rufa*). State-listed birds include the least tern (*Sternula antillarum*) and common tern (*Sterna hirundo*), which may use maritime beaches and dunes. ORV driving can cause temporary disturbance to birds as vehicles pass by. It can also create less suitable conditions for nesting through sand displacement and compaction, loss of vegetation on the primary dune, and an alteration of the natural dune profile. ORV driving can also crush and scatter seaweed and beach invertebrates in the wrack line and the intertidal zone, causing damage to and dispersal of an essential food source for shorebirds. The NPS actively monitors nesting piping plovers and terns, constructs symbolic fencing for their protection from human disturbance, closes or restricts the beach to driving to protect these bird species throughout the Seashore (typically from May to August), and educates the public on the importance of resource protection.

Seals typically migrate from northern waters to the Seashore in late fall and may occasionally come ashore to get warm or to rest. ORVs may disturb seals (noise, displacement) or accidentally hit them. Upland animals include white-tailed deer (*Odocoileus virginianus*); red fox (*Vulpes vulpes*); coyotes (*Canis latrans*); and several species of small mammals, frogs, turtles, and snakes. ORV driving may

disturb individuals while foraging or resting, although most of these animals adapt and move to new suitable habitat, as necessary.

Under alternatives B and C, the types of impacts would be the same as under current conditions, but an increase in ORV driving could increase the disturbance to birds and their habitat and reduce the abundance of beach invertebrates in the wrack line that serve as a food source. If a seal were hauled out onto the beach, a vehicle could accidentally hit it or otherwise disturb it, although the risk would be low because of the currently low frequency of haul-outs. The NPS would maintain the ability to impose and enforce restrictions (such as beach and road closures) for wildlife and resource protection. Compared to current conditions, potential impacts to wildlife from implementing alternatives B and C are expected to be minimal.

SUNKEN FOREST AND SUNKEN FOREST PRESERVE

The Sunken Forest spans the Sunken Forest Preserve (deeded to the NPS in 1955 and 1966) and adjacent NPS-managed land between the preserve and the Sailors Haven Visitor Center. The Sunken Forest and the Sunken Forest Preserve are within the larger NPS-owned Sunken Forest/Sailors Haven tract. Burma Road, a sand trail in this tract, runs along the full length of the toe of the secondary dune (located seaward of the Sunken Forest) and is not within the forest. The forest exists in part because of the unique protection provided by the primary and secondary dunes.

The Sunken Forest is an old-growth maritime forest and a globally rare ecosystem because there are only two such forests dominated by American holly (*Ilex opaca*) known in the world. Animals in the Sunken Forest include deer, fox, and multiple species of birds and smaller animals. A wooden boardwalk weaves throughout. The area around the Sunken Forest is impacted by hard structures along the shore of Great South Bay and by sea-level rise (causing erosion on the bay side, a rising groundwater table, and increasing saltwater intrusion). Deer browsing has reduced recruitment of holly seedlings and prevents the regeneration of the forest.

ORV driving on the beach can cause erosion of the protective primary dune seaward of the Sunken Forest if drivers were to violate the rhizome rule. On Burma Road, driving by permitted vehicles (primarily emergency services, public utilities, and essential services [case-by-case]) can cause puddle formation and can lead to vegetation loss when drivers pull off the road to avoid puddles or let other vehicles pass. Public utilities, essential services, and emergency vehicles are permitted driving access when the beach is closed. Residents, municipal employees, and official vehicles are only permitted access to Burma Road in the Sunken Forest when ferries are suspended and the beach is closed.

ORV driving has increased on Burma Road in the Sunken Forest Preserve and on the beach since Superstorm Sandy and has not impacted the Sunken Forest itself. Under alternative B, a small increase in trips to eastern communities could increase the risk of primary dune erosion if drivers were to violate the rhizome rule. The NPS would continue to permit limited travel on Burma Road; potential impacts to the secondary dune would generally be similar to current conditions because residents, public utilities, essential services, and emergency vehicles are only rarely permitted on Burma Road in this tract. Under alternative C, the types of impacts would be the same as under alternatives A and B; the extent of a potential impact on the primary dune would be a function of the number of eventually issued permits and the corresponding increased risk that a small number of permittees may violate the rhizome rule.

VISITOR USE, EXPERIENCE, AND SAFETY

Per a count in 2022–2023, 433 year-round residents live in 222 households within the 17 communities of the Seashore. The seasonal resident population swells to over 15,000 in the summer. In addition, more than 2.2 million visitors come to the island each year, either to one of the communities or to sites and facilities managed by the NPS. Between 2010 and 2019, 432,000 people visited Seashore sites annually

on average. Most visitors come to the Seashore in July and August and arrive by ferry; others arrive by private boat, walk in, or drive through the east gate in permitted recreational vehicle. Overall impacts on visitor use and experience from ORV driving would be mitigated by the existing driving restrictions and seasonal driving windows (with driving substantially restricted in the summer).

While safety is a concern, incidents involving vehicles and visitors on NPS lands are rare. Over the last few years, one incident with a vehicle fire occurred. The last serious injuries before that occurred in the 1970s or 1980s. There are fewer than a dozen minor accidents per year resulting in a police report. There have not been any vehicle incidents involving pedestrians.

During the summer, effects on visitor experience under alternatives B and C would remain unchanged from current conditions because the number of trips would remain similar. During the non-summer seasons, the experience for some visitors could be affected by seeing additional vehicles, but visitor access and the ability to experience the Seashore would not be impacted. Overall, impacts under alternatives B and C are expected to be mitigated by current visitor use patterns, seasonal driving restrictions, closures for resource protection, and the ability of towns and villages to impose restrictions for driving within communities. Under alternative C, there could be more driving than under alternative B, depending on how many permits are eventually issued.

Similar to what is described for visitor use, factors such as the current low number of reported incidences, visitor use patterns, seasonal driving restrictions, closures for resource protection, and the ability of the towns and villages to impose further restrictions, additional impacts to safety are expected to be low. In the summer when visitation is highest, it would generally be unchanged from current conditions under alternatives B and C.

NPS-MANAGED SECTIONS OF BURMA ROAD AND DUNE CUTS

Burma Road is an administrative resource for the NPS and is vital for managing the Seashore, especially when the beach is closed. NPS staff uses the road for activities such as law enforcement, monitoring, and maintenance, and for seasonal staff in the summer. The NPS maintains Burma Road in the Lighthouse tract and in interstitial lands west of Saltaire by grading and filling in deep holes, and also in the Sunken Forest/Sailors Haven tract by filling in deep puddles.

Under alternatives B and C, the NPS-managed sections of Burma Road and dune cuts would continue to require maintenance. Changes in maintenance requirements would be roughly proportional to changes in the number of trips taken by permitted drivers.

SOCIOECONOMIC RESOURCES

Current conditions preserve the vehicle-restricted character of the Seashore that many residents and visitors prefer but also reduces accessibility among some would-be permittees. Currently, 145 year-round residents and 42 part-time residents have driving permits, with 37 year-round residents on the waiting list as of 2023. Additionally, 80 construction/businesses have driving permits and another 50 are on the waiting list. Qualified applicants on the waiting list typically receive temporary permits to drive for the portion of the year when the Great South Bay is frozen and Fire Island is inaccessible by ferry or boat.

Alternative B would result in more ORV trips relative to current conditions if the towns and villages do not impose new limitations. Alternative B would benefit some Fire Island residents while adversely affecting others. Increasing the permit caps would benefit the limited number of year-round residents that obtain the additional driving permits by increasing accessibility to their homes. Accessibility would also increase during the shoulder seasons relative to current conditions. Fire Island residents with a preference for the current vehicle restrictions at the Seashore may view this as an adverse impact. Because resident driving is only permitted in the non-summer months, there would be no impact from the change in the

year-round resident permit cap in the summer when use of the island by visitors and seasonal residents is at its peak. Alternative B would benefit some construction/business owners, and their customers, while adversely affecting others. More construction/businesses with driving access to Fire Island may benefit some residents and local businesses through increased access to contractors (that have a driving permit because they can demonstrate that they have year-round work) and the potential for cost savings if competition improves. Increasing the permit caps would benefit the limited number of construction/businesses that obtain the additional driving permits by increasing accessibility to the communities. The decreased driving window in May for construction/business permittees could adversely affect them while they adjust business practices to revert back to waterborne transportation earlier in the season. Construction/businesses that currently use an essential services driving permit for construction debris removal could be adversely affected because of the increased cost of doing business. Passenger ferry companies could experience decreased ridership in the non-summer months if construction/businesses and residents relied more on vehicles as opposed to water-based transport. The changes to the number of available permits and trips for residents and contractors may incentivize some increase in development in Fire Island communities, but this could be tempered by existing zoning standards and the ability of the towns and villages to moderate construction activities. Lastly, because alternative B is unlikely to affect visitation relative to current conditions, local businesses serving these visitors (including owners of rental properties) would likely not be affected.

Many of the impacts under alternative B would exist under alternative C as well. Relative to alternative B, more driving permits would be available to qualifying year-round residents and construction/businesses. However, more restrictions on driving in the spring and fall shoulder seasons relative to current conditions may adversely affect year-round residents and construction/businesses by limiting accessibility in those times. The net effect of the increased number of available permits and decreased shoulder season driving allowance is likely to be more ORV trips relative to current conditions, if the towns and villages do not regulate further. This increase in driving on the Seashore and in the communities would adversely affect residents and businesses that prefer the current vehicle restrictions.

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ACRONYMS AND ABBREVIATIONS

ACS	American Community Survey
BTS	Bureau of Transportation Statistics
C/B	construction/business
CFR	Code of Federal Regulations
CMP	Coastal Management Program
Covid	COVID-19
EA	Environmental Assessment
FIMI	Fire Island Inlet to Moriches Inlet
FIMP	Fire Island to Montauk Point
GMP	General Management Plan
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Administration
NYNHP	New York Natural Heritage Program
NPS	National Park Service
NYSDEC	New York State Department of Environmental Conservation
NYSDOS	New York State Department of State
ORV	off road vehicle
PEPC	Planning, Environment and Public Comment
PSEG	Public Service Enterprise Group Inc.
SCWA	Suffolk County Water Authority
Seashore	Fire Island National Seashore
T&E	threatened and endangered
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service

CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The National Park Service (NPS) proposes changes to Fire Island National Seashore's (Seashore) off-road vehicle (ORV) regulations to provide appropriate vehicular access while protecting Seashore resources and providing safe visitor experiences, consistent with the Seashore's enabling legislation.

The NPS prepared this Environmental Assessment (EA), which evaluates two action alternatives, describes the environment affected by the alternatives, and assesses the environmental consequences of implementing the alternatives. The NPS also evaluated the impacts of a no-action alternative, which would be the continuation of current management under existing regulations and operational practices. This EA examines potential impacts on affected resources and complies with the National Environmental Policy Act (NEPA) to (1) provide an analysis of a reasonable range of alternatives to meet objectives of the proposal; (2) evaluate potential issues and impacts on the Seashore's resources and values; and (3) identify mitigation measures to lessen the degree or extent of these impacts. The NPS conducted internal, public, and agency scoping to assist with the development of this document.

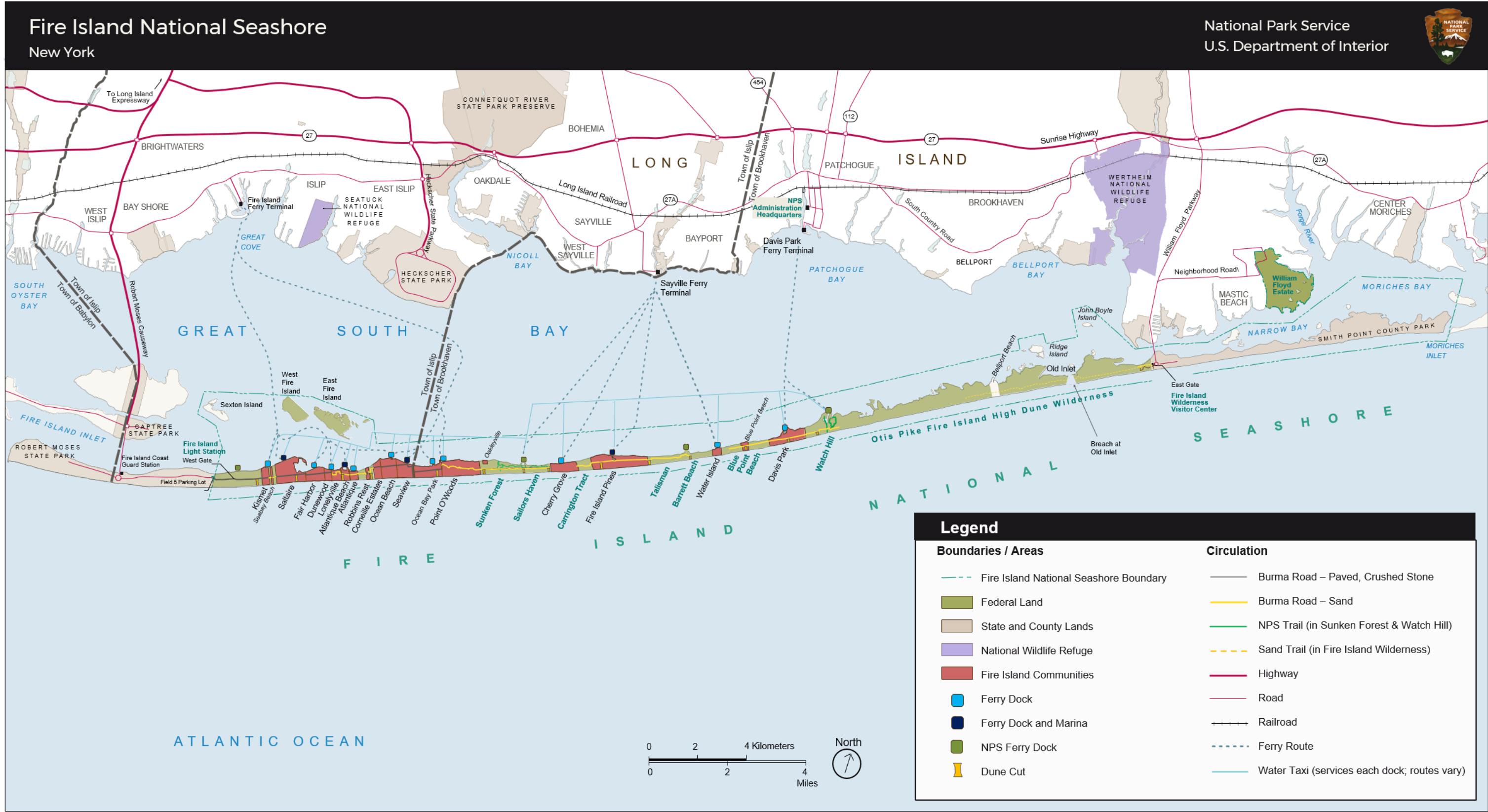
While not addressed in this EA, the NPS review of the ORV driving program also extends to the feasibility of administering the current or updated program for the foreseeable future. Improvements to program administration have been considered throughout the planning process and if new opportunities present themselves in the future, the NPS will consider them, along with any additional environmental review.

1.2 BACKGROUND

1.2.1 Fire Island National Seashore

The Seashore is located along the south shore of Long Island in Suffolk County, New York (figure 1-1). It encompasses 19,580 acres of upland, tidal, and submerged lands along a 26-mile stretch of the 32-mile barrier island, part of a much larger system of barrier islands and bluffs stretching from New York City to the eastern end of Long Island at Montauk Point. The Seashore contains nearly 1,380 acres of federally designated Otis Pike Fire Island High Dune Wilderness ("Fire Island Wilderness"), an extensive dune system, centuries-old maritime forests, solitary beaches, cultural landscapes, and historic structures (including the Fire Island Lighthouse and the Carrington House). The Seashore also includes the William Floyd Estate, the home of one of New York's signers of the Declaration of Independence, on Long Island.

On Fire Island, interspersed among federal lands within the Seashore, are 17 residential communities that predate the Seashore's authorization. According to a winter 2022–2023 count, there are 433 year-round residents living in 222 households on the Seashore (NPS 2023a). The resident population swells to over 15,000 in the summer when seasonal residents return (Newsday 2021; Volpe 2011). In addition, more than 2.2 million visitors come to the island each year, either to one of the 17 communities or to sites and facilities owned or managed by the NPS (NPS 2022a). For example, in 2019 (prior to the COVID-19 pandemic [hereafter referred to as "Covid"]), more than 390,000 recreational visits were made to NPS sites and facilities. The primary NPS visitor facilities located on the island are the Fire Island Lighthouse, Sailors Haven, Talisman/Barrett Beach, Watch Hill, and the Fire Island Wilderness Visitor Center ("Wilderness Visitor Center") (figure 1-1). The Fire Island Lighthouse Preservation Society maintains and offers lighthouse tours and other visitor programming authorized under a signed Cooperative Management Agreement with the NPS. Concessionaires operate the marina and food and beverage services at Sailors Haven, as well as the marina, campground, and food and beverage services at Watch Hill. Located at either end of Fire Island and accessible by motor vehicle are state and county parks with beach operations for high visitation.



1.2.2 Off-Road Vehicle Management

Resort development on Fire Island began as early as 1855, and several communities were established prior to the Great Depression of the 1930s. The Seashore's 1964 enabling legislation (see appendix B for more details) includes provisions for private land to be retained and developed if zoning requirements are met. An intermittent sand and hard surface route (Burma Road) connects the majority of communities to each other. There are bridges at the east and west ends of the Seashore that connect the island to mainland Long Island. Vehicle use is restricted within the boundary of the Seashore, and the communities on Fire Island are accessible mainly by passenger ferry or private boat.

The Seashore's ORV driving regulations (36 Code of Federal Regulations [CFR] §7.20(a)) allow for driving access on NPS lands. The regulations were intended to protect the natural and cultural resources and visitor experience while allowing access to privately owned properties within the Seashore. The regulations were first issued in 1977 and amended in 1987 based on a 1983 EA analysis. These 1987 regulations currently govern driving access on Seashore lands.

The 1987 driving regulations identify several categories of ORV driving permits. In general, these categories include (1) services essential to the functioning of the communities (public utilities including water, electricity, and telecommunications; essential services for municipal waste removal and bottled gas supplies); (2) residential permits, providing access to residences when alternative (waterborne) transportation is not available such as ferries and water taxis; (3) nonessential services that allow access for contractors and businesses for nonessential services that cannot be served by alternative transportation; and (4) recreational vehicles that are allowed access to the eastern end of the Seashore for hunting and fishing. All categories are listed in section 1.5.

Since the establishment of the Seashore in 1964 and the issuance of the 1987 regulations, the development, access, technology, and use of Fire Island has changed while the regulations in place to protect the Seashore's resources have not. Therefore, portions of the regulations do not work as intended for the current conditions of the Seashore. This has complicated the enforcement of the regulations and added strain on NPS resources, while at the same time, the pressure to manage the ORV program has grown with the demand for permits.

Several changes have occurred since 1987. The number of vehicles, size and type of vehicles, and types of user groups have changed. Several factors have contributed to making year-round residency more feasible for some people—many of the homes have been winterized and modernized, younger families have moved in because of a small elementary school (Woodhull School) founded in 1983, and the internet increasingly simplifies working from home. Accordingly, the demographics of Fire Island residents have changed over time, and requests for driving access have increased. Furthermore, the breach at Old Inlet created by Superstorm Sandy in 2012 changed the access by vehicle to Fire Island communities; for the last 10 years, all communities have only been accessible by vehicle from the west side of the island.

Through the years, the NPS has modified how it manages the ORV driving program under the current regulations, and has considered several options for producing new regulations that address current issues. The NPS has concluded that there is a need to update ORV regulations to better reflect the current conditions and uses on the Seashore.

This EA focuses on the impacts of ORV driving that is permitted by the NPS. But ORV management on Fire Island is a uniquely complex system with permitting and other management responsibilities under the jurisdiction of the towns of Islip and Brookhaven and the villages of Ocean Beach and Saltaire on the lands within their respective jurisdictions. These ORV management programs were created to protect the vulnerable resources of Fire Island from unmanaged ORV use. The permits issued by the NPS (except permits for recreational hunting and fishing access) and by the municipalities are issued to enable access to support viable Fire Island communities that could not otherwise be accomplished by water. The

Seashore regulations and any changes made to it only proscribe the ORV management program on NPS administered lands. Each town or village may decide to update its regulations or ORV program independent of changes made by the NPS.

1.3 PURPOSE AND NEED FOR THE ACTION

The purpose of this effort is to review the existing 1987 ORV regulations and accomplish multiple goals: (1) allow appropriate and equitable vehicular access to supplement water-based transportation, which is the primary means of transport to Fire Island and the communities; (2) protect Seashore resources and a safe visitor experience; and (3) improve the administration of the ORV permitting program.

The NPS needs to consider revisions to the existing driving regulations to address changes in development, access, technology, and use on Fire Island, and changes resulting from the dynamic nature of the barrier island (e.g., the breach at Old Inlet caused by Superstorm Sandy in 2012). The updated regulations are intended to provide future flexibility as conditions continue to change. Revisions are further needed to update and clarify the process for obtaining driving permits.

1.4 PROJECT AREA AND JURISDICTION

The EA planning area focuses on NPS owned and administered lands extending from the eastern boundary of Robert Moses State Park eastward to the western boundary of Smith Point County Park, and encompasses the land between Great South Bay and the Atlantic Ocean to the north and south, respectively (figure 1-1). There are seven layers of jurisdiction within the Seashore: federal, state, county, towns, communities (i.e., villages and unincorporated hamlets), private, and non-profit.

Rules codified at 36 CFR Part 28 provide NPS oversight of all zoning and development, private and public, within the boundaries of the Seashore. While the NPS has oversight of zoning on the Seashore, zoning decisions are the responsibility of the towns of Islip and Brookhaven and the villages of Ocean Beach and Saltaire.

Regulatory oversight for land use and development, water, sanitation, wildlife, coastal zone management, driving, and public health and safety is distributed across multiple jurisdictions within the Seashore boundary. Aside from the NPS, entities with jurisdiction include the towns of Islip and Brookhaven, the villages of Ocean Beach and Saltaire, Suffolk County, and multiple New York State agencies. The Point O'Woods Association owns all land in Point O'Woods; residents own their homes and have long-term leases on the underlying land. Point O'Woods is an exclusive, gated community that can be closed to pass-through traffic. The NPS and other Fire Island stakeholders coordinate with the Point O'Woods Association for pass-through access during times when the beach is impassable. The Seaview Homeowner Association owns the beachfront up to the mean high-water line, the walkways with a two-foot buffer on each side, and lands not owned by the landowners.

Outside of federal lands, on the ocean side, south of the 17 communities, the NPS has jurisdiction over the beach between the mean high-water line to 1,000 feet into the Atlantic Ocean. The towns, villages, and Suffolk County have jurisdiction (depending on the activity) over the beach upgradient from the mean high-water line and the interior road within the individual communities. The dune cuts managed by the NPS are identified in table D-2 of appendix D.

1.4.1 Federal Tracts of Land

The island includes 11 federal tracts of land that extend from Great South Bay to 1,000 feet into the Atlantic Ocean (figure 1-1). New York State has granted NPS full use and occupancy rights and concurrent jurisdiction over the lands south of the mean high tide line. Permitted driving may occur on the

Atlantic Ocean beach. Permitted driving may also occur along the interior road (Burma Road) on several of the tracts, although most of the driving occurs on the beach. This section describes permissible driving in each tract but the superintendent may further restrict driving in any tract to protect Seashore resources.

Lighthouse tract. This tract begins near the eastern end of Robert Moses State Park where the Robert Moses Causeway connects to the island and extends to the community of Kismet. It is approximately one-mile long from east to west, encompasses a two-lane section of Burma Road, and is made of hard-packed aggregate. The NPS ranger station midway along the road has a gate (west gate) that controls driving access. Driving on the beach in this tract is not permitted at any time. A dune cut (Kismet cut) exists at the eastern end of the tract to allow beach access toward the east.

Federal tracts within western communities (referred to as “interstitial lands”). There are four narrow federal tracts of NPS land within the western communities: between Kismet and Seabay Beach (part of Kismet), between Seabay Beach and Saltaire, between Atlantique and Robbins Rest, and between Robbins Rest and Fire Island Summer Club. Burma Road crosses these tracts, and vehicles from all permit categories use the road as they travel along Burma Road. The road within these tracts is sandy and varies in width between one and two lanes. The beach is open to permitted driving unless closed for resource protection or safety.

Sunken Forest/Sailors Haven tract. This tract is approximately 1.5 miles long and extends between the communities of Point O’Woods and Cherry Grove. Burma Road consists of a one-lane sandy road, with intermittent pull-out areas to allow for oncoming vehicles to pass. A pedestrian concrete path and boardwalk extend close to Burma Road, connecting Cherry Grove with Sailors Haven NPS facilities (a distance of approximately 0.6 miles). A pedestrian wooden boardwalk through the Sunken Forest crosses Burma Road in two locations. Dune cuts to the beach exist on both ends of the tract (Oakleyville cut and Cherry Grove cut) and in the center at Sailors Haven (Middle cut). Driving on the beach is prohibited from March 15 until Labor Day to protect nesting piping plovers (*Charadrius melodus*) and their habitat. Driving on Burma Road in this tract may be permitted only for certain permit categories when the beach is closed because of erosion or nesting shorebirds. Permitted categories consist of emergency services, public utilities, and essential services (case-by-case). Residents, municipal employees, and official vehicles are only permitted access to Burma Road when ferries are suspended and a breach in the island blocks access to eastern communities through the east gate.

Carrington tract. The tract is approximately 0.3 miles long and extends between Cherry Grove and Fire Island Pines. Burma Road is sandy and not well developed in this tract. This road is used as a right-of-way for public utilities between the two communities and may be accessed by Suffolk County Police Department. Vehicles of other permit categories are not permitted on Burma Road. The beach is open to permitted driving unless closed for resource protection or safety.

Talisman/Barrett Beach tract. This tract is approximately 1.3 miles long and extends between Fire Island Pines and Water Island. An NPS boat dock is located in the center. There are two dune cuts between Burma Road and the beach, one adjacent to Fire Island Pines (East Fire Island Pines cut) and one just east of the boat dock (Talisman cut). In Talisman (i.e., the section west of the marine dock), an interior road serves as a right-of-way for public utilities (i.e., Suffolk County Water Authority [SCWA], Verizon, and Public Service Enterprise Group [PSEG]), but access to this portion is on foot unless NPS agrees vehicular access is necessary for maintenance. Barrett Beach (i.e., the section directly south and east of the dock) has a small section of road from Talisman out to the beach. The beach is open to permitted driving unless closed for resource protection or safety.

Blue Point Beach tract. This tract is approximately 1.0 mile long and extends between Water Island and Davis Park. It contains approximately 10 private structures in its center that are part of the enclave of Blue Point Beach. The beach in this tract is open to permitted driving unless closed for resource

protection or safety. Burma Road runs along the eastern section and part of the western section of this tract and can be accessed by the dune cut in the center of the tract (Blue Point cut). Driving on Burma Road along the western section of this tract from the Blue Point cut is limited to accessing houses in Blue Point Beach; there is no dune cut at the western end of this section. Driving on Burma Road along the eastern section of this tract from the center dune cut is permitted when the beach is open to driving (to access the western end of Davis Park) and when the beach is closed.

Watch Hill tract. The Watch Hill tract is approximately 0.7 mile long and extends between Davis Park and the western boundary of the Fire Island Wilderness. Access to Burma Road is from Davis Park in the west and from a dune cut near Watch Hill (Watch Hill cut). Since Superstorm Sandy breached Fire Island at Old Inlet, driving access to Davis Park has been permitted only from the west via the beach (if not closed for resource protection or safety) or via Burma Road, with no driving east of Davis Park.

Tract with Fire Island Wilderness. This tract extends for a distance of approximately 7 miles between Watch Hill and the east gate at the eastern end of the Seashore. The tract encompasses the area from Great South Bay at mean high water in the north to the toe of the primary dune along the Atlantic Ocean in the south. The section of the tract between the toe of the dune and the Atlantic Ocean is not part of the wilderness and permitted drivers are only allowed on the beach (i.e., Great South Beach). The tract includes Bellport Beach (also referred to as Ho Hum Beach), which consists of a 17-acre area owned by the village of Bellport.

Prior to the 2012 breach at Old Inlet, driving was permitted on the beach for nonrecreational permittees to access the eastern communities as far west as Cherry Grove. In addition, recreational permittees were allowed to drive as far west as Long Cove, 6 miles from the east gate. The breach reduced recreational driving to a distance of 1.7 miles from the east gate and prevents access to the eastern communities by permitted vehicles. After the area of the now closed breach is reopened to driving, permitted vehicles will be allowed to access the eastern communities as far west as Cherry Grove from the east gate, and recreational driving may resume to Long Cove (or to a point east of Long Cove in order to avoid potential impacts from recreational driving to the exposed shipwreck *Bessie White*).

1.4.2 Communities

There are 17 communities within the Seashore, 2 incorporated villages and 15 unincorporated hamlets. These communities contain approximately 4,200 community homes. Most owners are seasonal residents, or they rent these homes to seasonal visitors. The communities are almost fully developed and have very few buildable lots left. Over the years, many of the former modest beach bungalows have been reconstructed into larger homes that require more maintenance. In addition, more houses have been winterized and modernized, Verizon has improved internet access, and SCWA installed a water main. The Fire Island communities have retained much of their unique character due in large part to limited access and vehicular traffic and the absence of paved roads.

The 2009 community character analysis by the NPS in association with the National Parks and Conservation Association found that the four most important elements defining community character were based on how Fire Island is experienced (summarized in the 2016 General Management Plan [GMP] [NPS 2015a]). They included a sense of communion with both nature and community (e.g., watching a sunset), a sense of arrival (e.g., disembarking from the ferry), a sense of self-reliance (e.g., use of handcars), and a vehicle-free existence (e.g., boardwalks). The NPS recognizes that driving has occurred on Fire Island even prior to the establishment of the Seashore, and the purpose of the NPS's ORV program is to manage driving activities.

1.5 PERMIT CATEGORIES

The existing ORV regulations (36 CFR 7.20(a)) identify seven categories (A–G) of vehicles that require permits for driving on Seashore lands; permits are not transferable between categories:

- **Year-round residents (Category A):** Persons who are legally domiciled on the island and who, in addition, physically reside in their fixed and permanent homes on the island continuously, except for brief and occasional absences, for 12 months of the year.
- **Part-time residents (Category B):** Persons who held a residential permit as of January 1, 1978, and who physically and continuously reside in their homes on Fire Island for less than 12 months of the year. These permits were created to phase out over time.
- **Holders of reserved rights of use and occupancy (Category C):** This category is no longer applicable and would be removed from any updated regulations.
- **Public utility vehicles (Category D):** Vehicles operated and owned or leased by a public utility or public service company franchised or licensed to supply, on the island, electricity, water, or telephone service.
- **Essential service vehicles (also part of Category D):** Vehicles, other than a public utility vehicle, whose use on the island is essential to the continued use of residences on the island. This may include services such as heating fuel and bottled gas supply, and sanitation waste removal.
- **Construction and business vehicles (Category E):** Vehicles other than a public utility vehicle or essential service vehicle involved in construction, maintenance, or repair of structures on the island or the transportation of materials or supplies to retail business establishments on the island.
- **Municipal employees (Category F):** A year-round resident who is a full-time employee of one of the 17 communities.
- **Recreational vehicles (Category G):** The regulations specify that recreational vehicles may travel between Smith Point and Long Cove along the Atlantic Ocean. The enabling legislation allows the NPS to establish access and seasons for hunting and fishing within the Seashore boundaries. The NPS has long allowed recreational driving as part of this hunting and fishing access between Smith Point and Long Cove, and does not consider driving necessary for any other type of recreational access within the Seashore.

In addition, the NPS permits official vehicles owned by federal and state agencies, Suffolk County, and the towns for driving associated with nonemergency official business. School buses to transport children from the communities to Woodhull School in Cornielle Estates or to schools off-island and emergency services (police/firefighting/ ambulance) are allowed to drive but do not require permits.

There is currently no category allowing for a temporary permit. Instead, 36 CFR 7.20(a)(10)(iv) states that the superintendent may authorize additional trips or travel at other hours—for situations where the restrictions in paragraph (a)(10)(ii) would create a severe hardship.

1.6 DRIVING SEASONS

There are three general driving seasons on the Seashore:

- **Offseason:** This period starts the day after Columbus Day/Indigenous Peoples' Day and lasts until the beginning of May (with different end dates for different permit categories). Vehicle

access is available weekdays and weekends for 24 hours per day. During this season, the occupancy of houses in the communities is low.

- **Summer:** This season occurs between the last day of the Suffolk County public schools in mid-to-late-June to the end of Labor Day. It covers the busy months of July and August when the population on the Seashore swells with seasonal residents and a large number of visitors. Driving is prohibited or very restricted for permitted categories to benefit visitors.
- **Shoulder seasons (spring and fall):** These seasons cover the transition periods in the spring and fall between the offseason and the summer. In the spring shoulder season, the number of visitors gradually increases as summer approaches. After Labor Day, the number of visitors gradually decreases but remains elevated into October. Driving is restricted during the shoulder seasons in various ways for permitted categories.

Details of the existing driving windows for the various permit categories in each season are included in table 2-1 in chapter 2.

1.7 IMPACT TOPICS RETAINED FOR DETAILED ANALYSIS

The impact topics described below are resources in the project area that may be affected either beneficially or adversely by the alternatives analyzed in this EA (described in chapter 2). Impact topics that were considered but not carried forward for detailed analysis can be found in appendix C. Topics were dismissed from further analysis because (1) the environmental impacts to resources or values would not be potentially significant; (2) the impacts were not central to the proposal; and/or (3) a detailed analysis of these impacts was not necessary to make a reasoned choice between alternatives.

Dune systems and plant communities (including threatened and endangered [T&E] plants and significant natural communities). On the beach, changes in the amount of driving could affect vegetation on the primary dune if ORVs drive too close to the toe of the dune. Along the interior road of NPS-managed lands (Burma Road), an increase in the amount of driving could lead to a widening of one-lane road sections as vehicles pull off the road to allow oncoming vehicles to pass. In addition, more vehicles could lead to more wear of the road, including the formation of larger puddles. Since some drivers avoid puddles, larger puddles could encroach into roadside vegetation, unless the road was maintained more frequently. Larger puddles could also result in more salty water spraying vegetation as vehicles drive through the puddles. Finally, dune cuts are susceptible for widening if drivers stray onto existing vegetation.

Wildlife (including beach invertebrates and T&E species). Changes in the number of trips and seasonal driving could affect protected birds (e.g., piping plovers) and other wildlife species, although most of the potential impacts on protected species would be mitigated through beach closures on NPS lands. Increased ORV driving could also affect beach invertebrates, which provide a food source for birds and other wildlife. Seals occasionally haul out of the water and could be in the path of ORV travel. Driving on Burma Road could also affect terrestrial turtles and snakes.

Sunken Forest and Sunken Forest Preserve. The unique and rare Sunken Forest (spanning an area within the Sunken Forest Preserve and adjacent NPS-managed lands to the east of the preserve) requires the two-dune system to persist. Changes to driving could increase erosion of the toes of the primary and secondary dunes along the beach and along Burma Road, respectively. The superintendent has the authority to close the beach and Burma Road to mitigate for adverse impacts, if needed. Added driving through the Sunken Forest area could also impact visitor experience in this unique area; however, most visitations occur during seasons when driving is restricted.

Visitor use, experience, and safety. Changes in the ORV management program could alter the number of vehicle trips and the amount of driving in the offseason and shoulder seasons, which could impact visitor use and experience, as well as safety if driving rules were not followed. Driving would continue to be restricted during high visitation seasons.

NPS-managed sections of Burma Road and dune cuts. Increased driving could have an impact on the condition of Burma Road, affecting access for vehicles for Seashore maintenance and emergency services.

Socioeconomic resources. Fire Island is home to 17 communities with year-round and seasonal residents as well as seasonal visitors. One means of accessing these communities is driving through the Seashore. Therefore, any changes to ORV management within the Seashore could also affect access to these adjacent communities, resulting in indirect impacts. The towns and villages must first grant permits before the NPS would issue a permit, and the towns and villages have jurisdiction over driving and parking within their boundaries. Access through the Seashore is linked with the quality of life of Fire Island residents as well as the operations of and access to the businesses and public utilities that support them.

CHAPTER 2: ALTERNATIVES

2.1 INTRODUCTION

This chapter describes alternatives for ORV management, consistent with the purpose of and need for action. Three alternatives are analyzed: the no-action alternative (alternative A) and two action alternatives (B and C). Elements of the alternatives are compared in table 2-1. Alternative B is the NPS proposed action and preferred alternative. This chapter also lists mitigation measures that would apply to the three alternatives. Other alternatives or alternative elements were identified during internal and public scoping but were dismissed from further consideration, as described in appendix C.

2.2 ALTERNATIVE A – NO ACTION

As stated in the NPS NEPA Handbook (NPS 2015b, sec. 4.3B), “the no-action alternative describes what would happen if current management were to continue into the future and an analysis of the no-action alternative should discuss how the current condition of affected resources would change if current management were to continue.” Therefore, under the no-action alternative, the ORV driving program would continue under current NPS practices. No changes in permit categories, permit caps, current seasonal driving windows, or definitions in the current regulations or vehicle types permitted would occur.

This alternative would maintain the current ORV management practices. The no-action alternative includes modifications to the 1987 regulations, such as variable seasonal driving windows for the permit categories, allowing limited driving by applicants on the waiting list when the Great South Bay is frozen, allowing all-wheel drive vehicles, and allowing limited driving exceptions through the Sunken Forest Preserve to access the eastern communities. Because current ORV management practices have essentially modified the 1987 regulations, the no-action alternative is not selectable. The change in conditions at the Seashore over the last 37 years has led the NPS to believe that some regulatory updates are necessary. Nonetheless, the no-action alternative is analyzed in this document in accordance with NEPA.

2.3 ALTERNATIVE B – PROPOSED ACTION

Alternative B would increase the permit caps for year-round residents and construction/business vehicles and modify other caps and restrictions. Alternative B would simplify the permitted driving schedule by reducing restrictions for year-round and part-time residents and simplifying the shoulder season restrictions related to weekday/weekend driving. However, driving by residents and construction/businesses would continue to be prohibited in the summer to maintain visitor experience and safety and to protect natural resources (including T&E species).

The NPS would remove the current definition of “alternative means of transportation,” shifting the focus to the seasonal availability of transportation methods on Fire Island. Although this current definition would be removed, water-based transportation would still be the primary form of access to Fire Island whenever and wherever feasible throughout the year. For circumstances that do not warrant vehicular travel, the primary means of access to Fire Island would remain ferries and other watercraft. Historically, this has been the method by which most island visitors and residents have reached the Seashore. The island is served by a number of licensed or franchised passenger ferries, whose schedules vary with seasonal demands for travel to the island. These ferries are expected to continue to provide a reasonable transportation alternative to the use of vehicles.

TABLE 2-1. COMPARISON OF ELEMENTS OF THE THREE ALTERNATIVES

Element	Alternative A – No Action	Alternative B – Proposed Action	Alternative C – Alternative Action
Year-round Residents			
Permit cap	145 (1 permit/household)	200 – for qualified applicants (1 permit/household)	No cap – for qualified applicants (1 permit/household)
	<p><i>Qualifications:</i> Per the regulations, persons who are legally domiciled on the island and who, in addition, physically reside in their fixed and permanent homes on the island continuously, except for brief and occasional absences, for 12 months of the year.</p> <p>Currently, there is no formal definition of brief and occasional absences. The NPS relies on information, such as gate records, to determine whether the use patterns (or length and frequency of absences) are consistent with year-round residency.</p>	<p><i>Qualifications:</i> Persons who are legally domiciled on the island and who, in addition, physically reside in their fixed and permanent homes on the island continuously, typically 7 days per week, for 12 months of the year except for brief and occasional absences.</p> <p>Brief and occasional absences are defined as being absent from one's Fire Island residence for no more than a total number of 60 days during the permitted driving period each year, with no more than 30 consecutive days at any one time. The NPS would consider exception requests for irregular extended absences.</p>	
Round trips/day	2	2	2
Seasonal driving	<ul style="list-style-type: none">▪ Driving permitted until the first Friday in May.▪ From first Saturday in May to Friday before Memorial Day:<ul style="list-style-type: none">– Driving permitted on weekdays– Driving permitted on weekends before 9:00 a.m. and after 6:00 p.m.▪ From Saturday before Memorial Day to last day of Suffolk County public schools in June:<ul style="list-style-type: none">– Driving permitted on weekdays before 9:00 a.m. and after 6:00 p.m.– No driving on weekends.– On Memorial Day, driving permitted after 6:00 p.m.▪ From Tuesday after Labor Day to the following Friday:<ul style="list-style-type: none">– Driving permitted before 9:00 a.m. and after 6:00 p.m.– No driving on first weekend after Labor Day.▪ From Monday one week after Labor Day to Sunday before Columbus/Indigenous Peoples’ Day:<ul style="list-style-type: none">– Driving permitted on weekdays.– Driving permitted on weekends before 9:00 a.m. and after 6:00 p.m.▪ No driving on Columbus/Indigenous Peoples’ Day.▪ Driving permitted after 12:00 a.m. on Tuesday after Columbus/Indigenous Peoples’ Day.	<ul style="list-style-type: none">▪ Driving permitted until Friday at 11:59 p.m. before Memorial Day.▪ No driving Saturday or Sunday during Memorial Day weekend.▪ From 6:00 p.m. on Memorial Day until the last day of Suffolk County public schools or the last Friday in June (whichever comes first) at 11:59 p.m.:<ul style="list-style-type: none">– Driving permitted on weekdays.– Driving permitted before 9:00 a.m. and after 6:00 p.m. on weekends.▪ Driving not permitted from the last day of Suffolk County public schools or the last Friday in June (whichever is earlier) at 11:59 p.m. until 6:00 p.m. on Labor Day.▪ From 6:00 p.m. on Labor Day until 9:00 a.m. on Columbus/Indigenous Peoples’ Day:<ul style="list-style-type: none">– Driving permitted on weekdays.– Driving permitted on weekends and on Columbus/Indigenous Peoples’ Day before 9:00 a.m. and after 6:00 p.m.▪ Driving permitted after 6:00 p.m. on Columbus/Indigenous Peoples’ Day.	<ul style="list-style-type: none">▪ Driving permitted until the Friday (until 11:59 p.m.) before Mother’s Day.▪ No driving on Mother’s Day weekend.▪ From 12:00 a.m. on Tuesday after Mother’s Day until the last day of Suffolk County public schools or the last Friday in June (whichever comes first) at 11:59 p.m.:<ul style="list-style-type: none">– Driving permitted on weekdays.– No driving permitted on weekends or on Memorial Day▪ Driving not permitted from the last day of Suffolk County public schools or the last Friday in June (whichever is earlier) at 11:59 p.m. until 11:59 p.m. on Labor Day.▪ From 12:00 a.m. on the Tuesday after Labor Day until 11:59 p.m. on the Friday before Columbus/Indigenous Peoples’ Day:<ul style="list-style-type: none">– Driving is permitted on weekdays.– No driving on weekends.▪ Driving permitted after 12:00 a.m. on Tuesday after Columbus/Indigenous Peoples’ Day.
Part-time Residents			
Permit cap	100	50	50
Round trips/day	2	2	2
Seasonal driving	(same as for Year-round Residents)		

Element	Alternative A – No Action	Alternative B – Proposed Action	Alternative C – Alternative Action
Municipal Employees			
Permit cap	5 permits per village or community except on the basis of documented community need.	<ul style="list-style-type: none">▪ This category would be renamed “Community Employees.”▪ 5 permits per village or community on the basis of documented community need. Up to 2 of these 5 permits per village or community may be issued to employees who are not year-round residents. All other municipal employees must be year-round residents.	
Round trips/day	2	2	2
Seasonal driving	(same as for year-round and part-time residents)		
Public Utilities			
Permit cap	30 (<u>combined</u> cap for public utilities and essential services; each permit is eligible for a fleet of vehicles based on demonstrated need)	<ul style="list-style-type: none">▪ No cap on permits.▪ Category to be separated from essential services.▪ Eligibility based on demonstrated community need from the utility providers.▪ Eligible for fleet permits.	
Round trips/day	1	1	1
Seasonal driving	<ul style="list-style-type: none">▪ Driving to the last day of Suffolk County public schools: Same as for year-round residents.▪ From the last Day of Suffolk County public schools to Friday before Labor Day (i.e., summer):<ul style="list-style-type: none">– Driving permitted before 9:00 a.m. and after 6:00 p.m. on weekdays.– No driving on weekends and federal holidays.▪ From Tuesday after Labor Day to Sunday before Columbus/Indigenous Peoples’ Day: Same as for year-round residents except:<ul style="list-style-type: none">– Driving permitted before 9:00 a.m. and after 6:00 p.m. on the weekend after Labor Day.▪ Driving permitted after 12:00 a m. on Tuesday after Columbus/Indigenous Peoples’ Day.	<ul style="list-style-type: none">▪ From Columbus/Indigenous Peoples’ Day to last day of Suffolk County public schools or the last Friday in June (whichever is earlier): Same as for year-round residents.▪ From the last day of Suffolk County public schools or the last Friday in June (whichever is earlier) to Friday before Labor Day: 24 hours/day access for demonstrated need.	
Essential Services			
Permit cap	30 (<u>combined</u> cap for public utilities and essential services – each permit is eligible for a fleet of vehicles based on demonstrated need)	<ul style="list-style-type: none">▪ Category to be separated from public utilities.▪ No cap on permits.▪ Not eligible for fleet permits but eligible for two permits per business owner.▪ Eligibility based on demonstrated need requested by the communities.▪ Municipal solid waste carters remain in essential services; construction debris carters to be assigned to the construction/business permit category.▪ The superintendent may consider temporarily including services that are typically eligible for construction/business permits (e.g., construction debris carting; plumbers and electricians) as essential in the event of a public health crisis or an emergency with imminent threat to public safety or natural resources.	
Round trips/day	1	2	2
Seasonal driving	(same as for public utilities)	<ul style="list-style-type: none">▪ From Columbus/Indigenous Peoples’ Day to last day of Suffolk County public schools or the last Friday in June (whichever is earlier): Same as for year-round residents.	<ul style="list-style-type: none">▪ From Columbus/Indigenous Peoples’ Day to last day of Suffolk County public schools or the last Friday in June (whichever is earlier): Same as for year-round residents.
		<ul style="list-style-type: none">▪ From the last day of Suffolk County public schools or the last Friday in June (whichever is earlier) to Friday before Labor Day, driving permitted on weekday nights before 9:00 a.m. and after 6:00 p.m.	

Element	Alternative A – No Action	Alternative B – Proposed Action	Alternative C – Alternative Action
Construction/Business			
Permit cap	80	145	No cap
		<ul style="list-style-type: none">▪ Eligibility for a construction/business permit would require proof of work for an extended period of the year (“year-round-work”), consisting of at least 6 months of work total within the construction/business driving season, with up to 3 months from the previous year’s driving season allowed to be used to meet this definition.▪ One-year permits only; the 30-day-per-job permit option currently in the regulations would be eliminated.▪ One permit and one vehicle per construction/business owner and address.▪ Construction debris removal would be included under the construction/business permit category (i.e., it would not be permitted under the essential services permit category).▪ Includes electricians and plumbers.	
Round trips/day	1	2	
Seasonal driving	<ul style="list-style-type: none">▪ Driving permitted until Friday before Mother’s Day.▪ From the day after Mother’s Day to Friday of the week before Memorial Day:<ul style="list-style-type: none">– No weekend driving is permitted.– Weekday driving is permitted only when alternative transportation (i.e., adequate ferry service) is not available.▪ Driving permitted from the Tuesday after Columbus/Indigenous Peoples’ Day.	<ul style="list-style-type: none">▪ Driving permitted until 11:59 p.m. on the first Friday in May.▪ Driving permitted from 12:00 a.m. on the Tuesday after Columbus/Indigenous Peoples’ Day.	<ul style="list-style-type: none">▪ Driving permitted until 11:59 p.m. on the first Friday in May.▪ Driving also permitted from 12:00 a.m. on the first Monday after the first Friday in May to 11:59 p.m. on Friday before Mother’s Day.▪ Driving permitted after 12:00 a.m. on the Tuesday after Columbus/Indigenous Peoples’ Day.
Recreational Vehicles			
Permit cap	5,000 one-way trips per year through the east gate.	Qualified applicants receive a recreational driving permit for entry at the east gate only. Recreational permits would continue to be issued only for the purpose of vehicular access for recreational sportfishing and hunting activities.	
Round trips/day	2	1	
Seasonal driving	<ul style="list-style-type: none">▪ September 15 – December 31, and▪ April 1–June 13	September 15 – January 31	
Other Categories			
Temporary Permits	There is no temporary permit category in the current regulations. For situations where the restrictions for authorized travel (36 CFR 7.20(a)(10)(ii)) would create a severe hardship, the superintendent may authorize trips or travel at other hours, in addition to travel and hours listed under the various categories above.	<ul style="list-style-type: none">▪ Set up as a new permit category.▪ No cap; the number of exceptions would be under the superintendent's discretion. This new temporary category would not be used to allow anyone access for personal convenience, but rather for emergency and unusual circumstances that involve life, safety, resource damage, recent or imminent severe damage to infrastructure, etc.▪ The current practice of temporary permits when Great South Bay is frozen (“ice-over permits”) would be eliminated; this need would be accommodated by changes in caps for various permit categories listed above.	
Official Use	No cap, but the NPS issues a permit. This category applies to nonemergency federal, state, county, town, and village employees, who have some jurisdiction on the island and need to drive for official business.		
School Bus	No cap and no permit required. There are several 4-wheel drive school buses transporting students to the Woodhull School (kindergarten to grade six) in Cornielle Estates and to secondary schools on the mainland.		
Emergency Services	The current regulations do not require a permit for law enforcement vehicles and firefighting apparatus.	<ul style="list-style-type: none">▪ No cap, and a permit unlikely to be required. To be identified in the regulations as a new category (for police, firefighting apparatus, and ambulances).▪ Practices for driving by these vehicles (access, seasonal driving, etc.) to remain unchanged from current conditions.	

2.3.1 Trip

The current regulations define a “trip” as a vehicle travelling from the mainland to Fire Island. A trip would be redefined as a vehicle passing through either the Seashore’s west or east gate. This revision would allow for better enforcement of the daily trip limits at the gates since the NPS has no means of monitoring travel over bridges from the mainland. It would also reduce the amount of back-and-forth driving between the parking lot at Field 5 (i.e., the easternmost parking lot in the Robert Moses State Park) and the Seashore via the west gate.

2.3.2 Main Changes for Permit Categories

Year-round residents. The current cap of 145 permits would be increased to 200 permits under alternative B. This increase considered the current estimate of year-round resident households (222), the applicants on the peak waiting list over the last few years, ice-over permits issued, the updated definition of a trip, and uncertainties and needs for the foreseeable future. The proposed increase also considers that part-time residents would phase out over time, off-setting the overall increase. Alternative B would define “year-round residents” as persons who are legally domiciled on the island and who, in addition, physically reside in their fixed and permanent homes on the island continuously, typically 7 days per week, for 12 months of the year except for brief and occasional absences. Brief and occasional absences are defined as being absent from one's Fire Island residence for no more than a total number of 60 days during the permitted driving period each year, with no more than 30 consecutive days at any one time. The NPS would consider exception requests for irregular extended absences. Permits would continue to be subject to review for eligibility.

Applicants must meet qualification criteria to receive a permit, which includes providing documentation that the applicant has lived full-time on the island the entire prior year. Only one year-round resident permit would be issued per household and permittees would be allowed two round trips per day. The seasonal driving window would end on the last day of Suffolk County public schools in June or the last Friday in June (whichever comes first), and restart at 6:00 p.m. on Labor Day.

Part-time residents. The current definition of the part-time resident driving permit category would not change (i.e., persons who held part-time permits prior to January 1, 1978), consistent with the project’s purpose and need. However, the cap would be reduced to 50 permits, which allows all residents who may be eligible for this type of permit to obtain them. Currently, only 36 permits are issued, and the category is phasing out. The seasonal driving window would be the same as for year-round residents.

Public utilities. This category would be separated from essential services; the current cap of 30 permits (combined for both categories) would be removed. Permits would be issued based on a demonstrated need from the utility providers, such as when the work cannot be supported by waterborne transportation. “Telephone service” would be redefined as “telecommunication services.” The seasonal driving window would be the same as for residents except in July and August when public utilities would have access 24 hours per day, provided they had a demonstrated need. Utilities would remain eligible for fleet permits.

Essential services. This category would be separated from utilities. Permits would be issued based on demonstrated community need. There would not be a set number of permits. Examples of essential services would be municipal solid waste carters, bottled gas and heating fuel supply, and septic pump-out services. Construction debris carters would become part of the construction/business category, as they are in the current regulations. The seasonal driving window would be the same as for residents, except during July and August, when access would be permitted on weekday nights (6:00 p.m. to 9:00 a.m.), remaining the same as current conditions.

Essential services would not be eligible for fleet permits, but they would be eligible for two permits per business. Demonstrated need would not be defined in the regulations, but would be specified in the permit

application and, as practical, the NPS would verify that the work is essential to the communities being served (such as by requiring a letter demonstrating need from the respective homeowner association of those communities that includes an explanation of why water-based transportation is not adequate). This demonstrated need requirement could be adjusted over time, given the dynamic nature of this category, and would be developed and revisited in coordination with the Fire Island communities and municipalities. The NPS would consider an exception and allow for an additional permit per business for serving the east end of the Seashore during periods of restricted driving (with demonstrated need). Having no cap on the number of permits provides the NPS with the flexibility to issue permits if other essential services are needed in the future.

Construction/business. The current permit cap of 80 permits would increase to 145 permits. The increase in the cap accounts for all permits issued currently, applicants on the peak waiting list over the last few years, ice-over permits issued currently, an estimated 8% reduction in the number of trips on a given day by construction/business permittees based on the redefinition of a “trip”, and uncertainties and needs for the foreseeable future. The increase also considers the shift of construction debris carting from essential services to solely being performed by the construction/business category.

Applicants must be able to provide proof of year-round work to be considered for a permit. There would be a limit of one vehicle per qualifying construction/business owner and address, and two trips per day through the gate per permitted vehicle. The seasonal driving window for construction/businesses would end on the first Friday in May and restart on the Tuesday after Columbus/Indigenous Peoples’ Day. For proof of year-round work, an applicant would have to show at least six months of work total within the driving season for this category. Up to three months of work conducted earlier in the previous driving season would count toward this six-month minimum at the time of application for a permit.

Municipal employees. This category would be renamed “community employees” but would otherwise be maintained. It would continue to be capped with up to five permits per community. Requirements to qualify would remain similar to current conditions (i.e., year-round resident of a Fire Island community and full-time employee of the community). In addition, the need for a permit must be demonstrated, including that official use vehicles would not be able to satisfy this need. As is currently the case, requests for community employee permits would have to come from the community, rather than from the person to whom the permit would be issued. The driving window for municipal permittees would be the same as for residents under alternative B. Two of the five permits would be available for full-time staff that live off-island.

Recreational vehicles. All qualified applicants would receive a recreational driving permit. There would not be a set number of annual permits or trips. However, the superintendent has the ability to close the beach to recreational driving for the protection of resources and the safety of the public. One round trip per day per vehicle would be permitted (a change from currently two round trips per day). The seasonal driving window would be September 15 to January 31. The end date aligns with hunting and fishing seasons and does not conflict with beach closures for the protection of piping plovers (see figure D-17 in appendix D). Recreational permits would continue to be issued only for the purpose of vehicular access for recreational sportfishing and hunting activities.

Official use (nonemergency). This category applies to nonemergency federal, state, county, town, and village employees (including NPS staff and building inspectors) who have some jurisdiction on the island and need to drive for official business. This category is not capped now and is permitted differently than other categories. Vehicles are marked as “official” (e.g., on the license plate), and the NPS issues paper permits to track numbers.

Emergency services. This would be a new category recognizing the use of police, firefighting, and ambulance vehicles and other types of emergency vehicles under existing laws. As defined in 36 CFR 1.4,

an authorized emergency vehicle is a vehicle in official use for emergency purposes by a federal agency or an emergency vehicle as defined by state law. The New York State Vehicle and Traffic Law, Article 1, Title 1, Section 101 defines authorized emergency vehicles as every ambulance, police vehicle, firefighting vehicle, civil emergency vehicle, emergency ambulance service vehicle, environmental response vehicle, sanitation patrol vehicle, hazardous materials vehicle, and ordnance disposal vehicle of the armed services of the United States. In nonemergency situations, these vehicles must still adhere to applicable driving restrictions on the Seashore for resource protection under existing federal laws and regulations such as the Endangered Species Act (ESA), Wilderness Act, and specific Seashore closures as authorized by the superintendent.

Temporary permits. This would be a new category and would include temporary permits issued for emergency and unusual circumstances that involve safety, resource damage, and severe damage to infrastructure. As will all other permit categories, activities that *can* be accomplished by water *should* be accomplished by water. There would be no cap, and the number of exceptions would be under the superintendent's discretion. Currently (i.e., alternative A), for situations where the restrictions for authorized travel (36 CFR 7.20(a)(10)(ii)) would create a severe hardship, the superintendent may authorize additional trips or travel at hours outside the permitted driving window. The NPS would outline the conditions under which a temporary permit would be issued. This includes emergency conditions for medical exceptions, and utility and infrastructure-related service needs after major storms. The current practice of issuing temporary ice-over permits would be eliminated; this need would be accommodated by changes in the caps for the various permit categories. This category could not be used to allow anyone access for personal convenience and is not intended for use by seasonal residents.

2.3.3 Permitting Sequence

The towns of Islip and Brookhaven govern the Fire Island communities and issue driving permits separate from the NPS permits. Drivers must have both a permit (or other appropriate authorization) from the NPS and the respective town (or both towns if applicable for applicants) to drive on Fire Island. Under the current process, Islip verifies and provides a permit before the NPS issues a permit. Brookhaven waits until after the NPS verifies qualifications to issue a permit. Stakeholders have expressed a desire for more clarity, transparency, and better ways for the communities and the NPS to cooperate. Under alternative B, the NPS would continue to coordinate with towns to verify year-round residency, but would not issue a permit for driving unless the respective town (or both towns) issues a permit first. The NPS would still independently review and decide whether to issue each driving permit for access to NPS-managed lands. This process also enables the municipalities to establish permit caps below any caps set by the NPS.

2.3.4 Driving Areas

The existing regulations designate routes for vehicle travel on NPS jurisdictional areas broadly under 36 CFR 7.20(a)(2): (1) along the Atlantic Ocean between the water's edge and 20 feet seaward of the American beach grass (*Ammophila breviligulata*) line (i.e., vehicle travel is not permitted if the water is higher than this 20-foot line); (2) along Burma Road within the Lighthouse tract; (3) along Burma Road, extending intermittently the length of the island for limited travel by public utilities and emergency vehicles; and (4) across posted dune crossings from the beach to Burma Road or to pathways within the island.

The revised regulations under alternative B would be more specific and identify the areas where driving may be permitted on the Seashore, depending on conditions. The NPS may choose to not permit, or greatly limit permitted access to these areas, using the compendium (NPS 2023b) if unforeseen impacts or environmental changes (such as erosion) were to occur.

The following are areas where a permit would be required to drive on NPS lands (see figure 1-1 for orientation):

- Burma Road at the Lighthouse tract
- All Atlantic Ocean beaches between the Kismet dune cut and Smith Point
- Interstitial land tracts between several western communities
- Sunken Forest/Sailors Haven
- Talisman/Barrett Beach
- Watch Hill

The revised regulations would also specify the areas where driving would *not* be permitted on NPS lands, except for public utilities with an active right-of-way permit:

- All bayside beaches
- Atlantic Ocean beach in Lighthouse tract (i.e., between the Robert Moses State Park and the Kismet dune cut)
- Fire Island Lighthouse driveway (except for vehicles with a “Disabled” placard)
- Kismet Pond Road (road between the Old Kismet Fire House and the Great South Bay)
- Carrington tract interior (between Cherry Grove and Fire Island Pines)
- Talisman/Barrett Beach interior.
- All designated wilderness areas
- William Floyd Estate

2.3.5 Access Points to Communities and Areas of the Seashore

The narrow dimensions of the Seashore have resulted in breaches of the barrier island in the past, most recently in 2012 at Old Inlet following Superstorm Sandy. Although the breach is now closed, it is likely that overwashes and breaches will continue to occur during extreme storms in the future, especially considering the projected rise in sea level. The revised regulations would accommodate driving conditions with and without a breach. For example, the NPS would weigh distance to access points, stability of driving routes, and the potential for resource damage when permitting access. Depending on the destination, preference could be given to either the west gate or the east gate as access points for permit applicants. The dividing zone could again be the Sunken Forest/Sailors Haven tract.

2.3.6 Enforcement and Monitoring

The current regulations (36 CFR 7.20(a)(12)) specify that failure to comply with the conditions of any permit issued will constitute a violation of these regulations. The NPS intends to maintain and exercise the superintendent’s authority and discretion to suspend/revoke permits when violations occur. The NPS would provide additional driver education via the web, video, class, or other means regarding the responsibilities of driving on the Seashore to protect natural resources and resident and visitor safety.

2.4 ALTERNATIVE C – ALTERNATIVE ACTION

Alternative C would remove the current permit caps for year-round residents and construction/businesses. Compared to alternative B, it would also have different driving restrictions during the spring and fall shoulder seasons for residents, municipal employees, essential services, and construction/business

vehicles as summarized below and in table 2-1. Other elements of alternative C would be identical to alternative B.

Residents, municipal employees, and essential services. Year-round residents who applied and met established criteria would receive a permit if they first received a permit from the towns of Islip or Brookhaven; there would not be a set number of total permits for this permit category. Seasonal driving for year-round and part-time residents, municipal employees, and essential services would be allowed only on weekdays (and not on weekends) in the shoulder seasons from the Saturday (12:00 a.m.) before Mother’s Day to the last day of school or the last Friday in June (whichever is earlier) (11:59 p.m.), and between the day after Labor Day (12:00 a.m.) to the Friday (11:59 p.m.) before Columbus Day/Indigenous Peoples’ Day weekend. The regulations could include language to limit exceptions.

Construction/business. Permits would be issued to all qualified construction/business applicants that could demonstrate the required amount of work on the island in the coming year. There would not be a set number of total permits for this category. Construction/business vehicles would be allowed to drive later into the spring shoulder season as compared to alternative B. Specifically, driving would be permitted until the first Friday in May; from the first Friday in May to the first Friday before Mother’s Day, weekday only would be permitted. No construction/business driving would be permitted after the first Friday before Mother’s Day until the Tuesday (12:00 a.m.) after Columbus/Indigenous Peoples’ Day (same as alternative B).

2.5 MITIGATION MEASURES

Table 2-2 summarizes measures considered in the analysis of alternatives to protect Seashore resources.

TABLE 2-2. RESOURCE MITIGATION MEASURES

Issue	Mitigation Measures
Dune systems and plant communities (including T&E plants and significant natural communities)	<ul style="list-style-type: none"> ▪ Continue to enforce 36 CFR 7.20(2) of the regulations on NPS lands that requires vehicles to stay at least 20 feet from beach grass or the toe of the dunes to protect the underground rhizomes (commonly referred to as the “rhizome rule”). That includes closure of the beach if it is too narrow for vehicles to pass. ▪ Use symbolic fencing at dune cuts and locations if the rhizome rule is repeatedly violated, and at areas of concern or at risk for increased dune erosion. ▪ Monitor dune cuts and other high-traffic areas for signs of native vegetation disturbance and revegetate disturbed areas, using native species. ▪ Expand the permitted driver education program for recreational drivers to other permit categories (as feasible with available staff and funding).
Wildlife (including beach invertebrates and T&E species)	<ul style="list-style-type: none"> ▪ Continue to implement beach closures to avoid adverse impacts to nesting piping plovers and other special-status species. ▪ Employ techniques to reduce impacts on wildlife, including an expanded permitted driver education program, restrictions on driving in areas with sensitive resources, and NPS ranger patrols.
Sunken Forest and Sunken Forest Preserve	<ul style="list-style-type: none"> ▪ Continue to restrict access to Burma Road as needed to protect the toe of the secondary dune and associated plant communities if threatened by driving, such as when vehicles leave the road to avoid water-filled potholes splash salty water onto plants when they driving through the puddles.

Issue	Mitigation Measures
Visitor use, experience, and safety	<ul style="list-style-type: none"> ▪ Continue to communicate information on the purpose and need of management activities and any associated temporary area closures. ▪ Continue to coordinate with towns and villages on safety.
NPS-managed sections of Burma Road and dune cuts	<ul style="list-style-type: none"> ▪ Continue to inspect and assess Burma Road on NPS-managed lands to identify potholes, erosion, and violations by drivers. ▪ Continue to repair potholes to reduce the potential for road widening caused by drivers avoiding wet areas. ▪ Continue to manage sensitive areas of the road by placing barriers to pull-offs (e.g., split-rail fencing) as needed. ▪ Close Burma Road on NPS lands, if needed, during adverse conditions.
Socioeconomic resources	<ul style="list-style-type: none"> ▪ Continue enforcing driving rules and coordinate with towns and villages. ▪ Towns and villages could curtail driving and development in communities by limiting the number of vehicles and construction/business permits they allocate. ▪ NPS could phase in implementation so residents and businesses with existing permits have time to adapt to the changing ORV access regime.

CHAPTER 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This chapter describes the current and expected future condition of resources that may be affected by the implementation of the alternatives described in chapter 2. These resources consist of dune systems and plant communities (including T&E plants and significant natural communities); wildlife (including beach invertebrates and T&E species); Sunken Forest and Sunken Forest Preserve; visitor use, experience, and safety; NPS-managed sections of Burma Road and dune cuts; and socioeconomic resources. Additionally, this chapter analyzes the beneficial and adverse impacts that could result from any of the alternatives described in the EA.

3.2 METHODOLOGY

3.2.1 General Methodology

The impact analysis considered the current driving patterns based on daily records at the west gate from 2010 to 2021 (appendix D) and considered the effect of different scenarios on the number of trips under the three alternatives (section 3.2.2). The “Current and Expected Future Conditions” of each impact topic (sections 3.3 to 3.8) is presented first and includes a discussion of trends and past, present, and reasonably foreseeable future actions that affect each impact topic. The “Environmental Consequences” section evaluates direct, indirect, and cumulative effects from the implementation of each alternative. Direct impacts are impacts that would occur as a result of the proposed action at the same time and place of implementation (40 CFR 1508.8). Indirect impacts are impacts that would occur as a result of the proposed action but later in time or farther in distance from the action, but are still reasonably foreseeable. The analysis of cumulative impacts is addressed in section 3.2.3. More details about the methodologies used for the analysis of each impact topic are provided in appendix E.

3.2.2 Effect of Alternatives on Number of Trips

Impacts from ORV driving are not caused by the issuance of permits but from driving through permitted areas, and this driving can be quantified by the number of trips taken in the affected environment. The number of trips is influenced by the number of permitted vehicles, trips permitted per vehicle, days and times when driving is allowed, driver behavior, and natural and human-made limitations to driving.

Based on existing driving patterns and related factors affecting ORV driving and trips (see appendix D), this section presents a rough assessment of potential changes in the driving patterns and trips under the three alternatives. The driving data analysis demonstrates that most driving occurs along the western communities (Kismet to Point O’Woods) with reduced driving along the eastern communities (Cherry Grove to Davis Park). Driving in the summer would remain prohibited (for the categories residents, municipal employees, construction/business) or restricted (for the categories public utilities, essential services) under all alternatives, which would keep the number of trips by all vehicles similar to current conditions in this peak visitor period. Table 3-1 provides scenarios for estimated increases in the total number of trips annually. Additional details of the approach and assumptions used in the analysis are provided in appendix D.

ALTERNATIVE A – No ACTION

Under alternative A, the current driving patterns and approximate number of trips would continue for all permit categories. Over time, the gradual phasing out of part-time resident permits would reduce the number of total trips by approximately 6% (assuming no changes in driving patterns by other categories from current conditions) (table 3-1). A long-term variable affecting driving patterns and trips is climate

change and the associated change in sea level, which would increase the likelihood of additional erosion and periods of high water, potentially causing more frequent beach closures, and an increase in the frequency and duration of flooding and the size and persistence of puddles on interior routes.

ALTERNATIVE B – PROPOSED ACTION

Under alternative B, the number of trips and driving on the beach would be affected mainly by changes in permit caps, changes to the driving seasons, updated qualifications for permit applicants, and the updated definition of a “trip.” Applicants would be required to obtain a permit from all necessary municipalities before the NPS would issue a permit. The towns or villages may also impose additional or modified restrictions.

The volume of trips by year-round residents would continue to differ between western and eastern communities. Initially, the number of year-round resident permittees could increase by the number of qualified applicants on the waiting list after they demonstrated their full-time residency on the island during the prior year. There were 37 applicants on the waiting list in 2023 with 35 of them from western communities. Any increase in the number of permits issued may be tempered by existing permittees becoming ineligible based on the revised definition of a year-round resident. While 70% of the structures on the Seashore are located in the western communities, the driving data show that 98.8% of all year-round resident trips in 2021 were made to western communities; only 1.2% of the trips were made to eastern communities (see table D-3 in appendix D). This pattern is expected to continue with the higher cap because of greater certainty of access by western community residents to the mainland (i.e., access not or less affected by beach closures). Compared to current weekend restrictions, residents driving seven days per week during the shoulder seasons would add approximately 6% more days of driving, on an annual basis.

For construction/business permittees, with spring driving ending after the first Friday in May, the average number of available driving days per year would decrease by approximately 4%. Most construction/business trips currently are to western communities. In 2021, approximately 85% of the trips were made by construction/businesses permitted to access western communities, while 15% of the trips were to eastern communities. Because beach closures (for resource protection) along the Sunken Forest/Sailors Haven tract and east of Davis Park start on March 15, the reduction of May driving days for construction/businesses may shift these percentages slightly (but not substantially). Currently, construction/businesses access the eastern communities via the west gate (when the beach is not closed for resource protection); once access through the east gate is reopened, access to the eastern communities would be via the east gate (unless the beach is closed for resources protection).

Overall, construction/business vehicles currently account for 15% of the trips through the west gate by *all* nonrecreational permit categories annually. Considering the increase in the construction/business category cap by 65 permits, the reduction in the number of driving days, and reduction in the number of trips by individual permittees on a given day because of the redefinition of a “trip”, the contribution by construction/business vehicles to the total number of trips by *all* nonrecreational permit categories through the gate could increase by roughly 5%, assuming that current driving patterns were maintained and the number of projects available to be serviced by construction/businesses (aside from construction debris carting) were to increase along with the number of permits.

TABLE 3-1. SCENARIOS PROJECTING THE EFFECT ON TOTAL NUMBER OF TRIPS ANNUALLY PER ALTERNATIVE

Alternative (a)		Near-term <i>(first few years after new regulations; number of issued part-time resident permits same as present number)</i>			Long-term <i>(a decade or more into the future; part-time resident permits are fully phased out)</i>		
		Communities (b)			Communities (b)		
		Western	Eastern	All	Western	Eastern	All
A	No Action	0%			-6%	-2%	-6%
B	Proposed Action (c)	23%	8%	22%	16%	6%	15%
C	Alternative Action (<u>example 1</u>) (d)	21%	8%	20%	14%	6%	14%
	Alternative Action (<u>example 2</u>) (e)	31%	17%	30%	46%	20%	44%
<p>a. General Assumptions: Overall driving patterns remain the same as at present. The number of ice-over trips (currently temporary permits) are reduced substantially under alternatives B and C because they would be largely covered by the additional year-round resident and construction/business permits.</p> <p>b. Western communities extend from Kismet to Oakleyville; eastern communities extend from Cherry Grove to Davis Park, and include the larger tracts of NPS-managed lands.</p> <p>c. Alternative B scenario: Based on 200 permits issued to year-round residents and 145 permits issued to construction/businesses. Essential services reduced to 80% of current trips (because of the shift of construction debris carting to construction/business). Trips by other permit categories kept at current levels.</p> <p>Alternative C scenarios (for illustrative purposes only):</p> <p>d. <u>Example 1:</u> Based on 200 permits issued to year-round residents and 145 permits issued to construction/businesses (i.e., same number of permits as with alternative B, but alternative C has different seasonal driving windows). Essential services also reduced to 80% of current trips. Trips by other categories kept at current levels. This scenario evaluates solely the effect of differences in seasonal driving windows between alternatives B and C, both near-term and long-term.</p> <p>e. <u>Example 2:</u> This scenario assumes a higher number of permits than under alternative B. Near term, based on 222 permits issued to year-round residents (i.e., the existing number of year-round resident households), 175 permits issued to construction/businesses, and 80% of current essential services trips. Long term, based on 300 permits issued to year-round residents, 175 permits issued to construction/business owners, and 100% of current trips (now entirely for services that do not entail construction debris carting as this is shifted to the construction/business category). Trips by all other categories assumed to remain at current levels.</p>							
<p>Notes: These percentages are rough estimates, provided for illustrative purposes only, and are based on driving data collected at the west gate. The percentages are meant to serve as a relative <u>guide</u>; they assume that conditions and driving patterns observed in the 2014–2021 driving data remain similar under the three alternatives, as stated above. Variables that would affect the actual percentages include qualifications required by the NPS, towns, and villages for year-round resident and construction/business permit applicants; effects from climate change on the beach; changes in piping plover nesting behavior over time, which could trigger closures of different sections of the beach; and any additional restrictions imposed by towns and villages. In addition, the NPS has the authority to curtail driving if it has adverse impacts to natural resources, safety, or public health. Additional restrictions by the NPS, towns, or villages beyond current restrictions are not reflected in these scenarios and would reduce the percentages above. Also, while the percentages are averages for the full year, the number of trips during the summer (peak visitor season; season with low travel) would remain similar to current conditions along all communities. See appendix D for details of the approach and assumptions used in the analysis.</p>							

For essential services, the need for municipal waste removal and bottled gas deliveries is expected to remain similar to current conditions, and the need for septic system pump-out services may increase. However, the shift of construction debris carting to the construction/business category is expected to decrease the total number of essential services trips. The change from one allowed trip per day to two trips per day for permitted vehicles is not expected to substantially affect the number of trips because essential services already operate with more than one trip per day currently. Seasonally, the modified driving windows in the shoulder seasons (compared to current conditions) could spread trips from currently restricted times to other days of the week (i.e., including weekends), unless restrictions were placed by the towns or villages.

For public utilities, the number of trips is expected to remain generally similar to current conditions (despite the removal of the cap) because the need for their services is expected to also remain generally unchanged, and public utilities would remain eligible for a fleet permit. More available driving days in the spring and fall shoulder seasons for public utilities are not expected to substantially change the number of trips in these seasons or on weekend days. Public utility firms' typical business hours occur during weekdays, and they are expected to continue staging vehicles in the eastern communities.

Trips by other nonrecreational categories (municipal employees; school bus; NPS; official use; emergency services) are also expected to remain similar to current conditions because the need for their services is expected to remain similar as well. For the temporary permit category, the number of trips is expected to substantially decrease because the current practice of temporary ice-over permits would be eliminated; instead, this need would be accommodated by changes in permit caps.

Recreational driving permits would continue to be issued only for the purpose of vehicular access for recreational sportfishing and hunting activities. The modified open period would increase the allowable period of recreational driving that does not conflict with the piping plover nesting season. There would not be a set number of annual permits or trips for qualified applicants. However, the number of annual trips by all permittees is not expected to exceed the current cap of 5,000 trips under alternatives B and C. In 2023, there were approximately 2,100 trips; in the prior four years, there were between approximately 3,000 and 4,000 trips. Alternatives B and C would also reduce the number of trips per day from currently two trips to one trip for each permittee. In addition, the superintendent has the ability to close the beach to recreational driving for the protection of resources and public safety.

Unless additional restrictions were imposed by the towns and villages, the total amount of driving would increase under alternative B. Analysis of 2014–2021 trips through the west gate (and consideration of larger changes to driving under alternative B) suggests that the increase of the total number of nonrecreational trips per year by all categories could be roughly 23% along western communities and 8% along eastern communities, assuming current driving patterns persist (table 3-1). Long term, after part-time resident permits are phased out, the respective increases are estimated at 16% and 6% relative to current conditions. Seasonally, there would be more driving during weekends of the spring and fall shoulder seasons under alternative B than under current conditions; however, driving would be restricted to before 9:00 a.m. and after 6:00 p.m. after Memorial Day and between Labor Day and Columbus/Indigenous' Peoples Day.

ALTERNATIVE C (ALTERNATIVE ACTION)

As with alternative B, the number of year-round resident permittees could initially increase by the 37 applicants on the waiting list (2023 data), after they demonstrated their full-time residency on the island during the prior year. In addition, the lack of a specific limit on driving permits may make year-round residency more attractive. Houses in the communities have changed over the years and an increasing number of houses have been winterized, allowing for longer-term occupation.

The potential increase in the number of year-round resident permit applications would be a function of multiple variables and limitations, which include proof of full-time residency on the island in the prior year, seasonal beach closures for resource protection, beach erosion, and effects from sea-level rise (see sections 9 and 10 in appendix D). Potential applications for additional year-round resident permits may be more concentrated in the westernmost communities (i.e., Kismet to Lonelyville), as suggested by the analysis of existing driving data (section 8 in appendix D). These data show more annual trips and permits in the westernmost communities, conceivably because permitted residents in these communities have the highest certainty for access to the mainland. Certainty of access decreases with distance from the west gate because it becomes more difficult to access the mainland when there are beach closures. Access constraints apply particularly to eastern communities (i.e., Cherry Grove to Davis Park), where beach closures during the piping plover nesting season intermittently block vehicle access to the mainland.

Seasonally, there would be no driving on weekend days for residents during the spring or fall shoulder seasons, although the total number of days available for driving throughout the year (including the shoulder seasons) is expected to remain similar to current conditions.

Without a cap, the change in trips for the construction/business category would rely in part on the qualifications (including proof of work) and requirements for driving by construction/business permittees by the NPS and the towns and villages, along with other natural and human-made limitations to driving (see sections 9 and 10 in appendix D). If alternative C were to stimulate substantial growth in year-round residency over time, it could trigger more demand for construction/business services, which in turn could result in more construction/business permits and trips. In 2023, there were 50 construction/business applicants on the waiting list.

The need for essential services (and therefore trips) could also increase if the year-round resident population were to increase substantially. This could result in more trips, although initially the number of essential services trips is expected to decrease because of the shift of construction debris carting to the construction/business category. For public utilities, the overall need is expected to generally remain similar to the current level because it is expected to be driven primarily by the needs for all 4,200 structures on the Seashore. Similarly, trips by other nonrecreational categories (municipal employees, school bus, NPS, official use, and emergency services) are expected to remain generally similar to current conditions. The change in recreational driving would be the same as for alternative B.

On balance, a higher number of permits issued specifically for the year-round resident and construction/business categories could increase the number of ORV trips on the Seashore under alternative C if the towns and villages did not impose further restrictions. Table 3-1 presents two scenarios of increases in permits and their effect on the number of trips on the Seashore *for illustrative purposes only*. These rough estimates are based on the 2014–2021 driving data and larger quantifiable changes to driving under alternative C. Example 1 considers 200 permits for year-round residents and 145 permits for construction/business vehicles (i.e., the same number of permits as for alternative B, to solely evaluate the effect of different seasonal driving windows under alternatives B and C). Example 2 considers 222 permits in the near term and 300 permits in the long term for year-round residents, and 175 permits for construction/business vehicles both in the near term and long term. While the total number of trips is expected to increase with the number of permits issued, the overall increase in driving is expected to be limited to some degree. This is because of natural resource constraints, various restrictions already in place by the NPS and the towns and villages, the authority of the superintendent to add further restrictions if resources were observed to be impacted, and the finite needs of the communities.

3.2.3 Cumulative Impact Analysis

As defined in 40 CFR 1508.7, a cumulative impact is “the impact on the environment, which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future

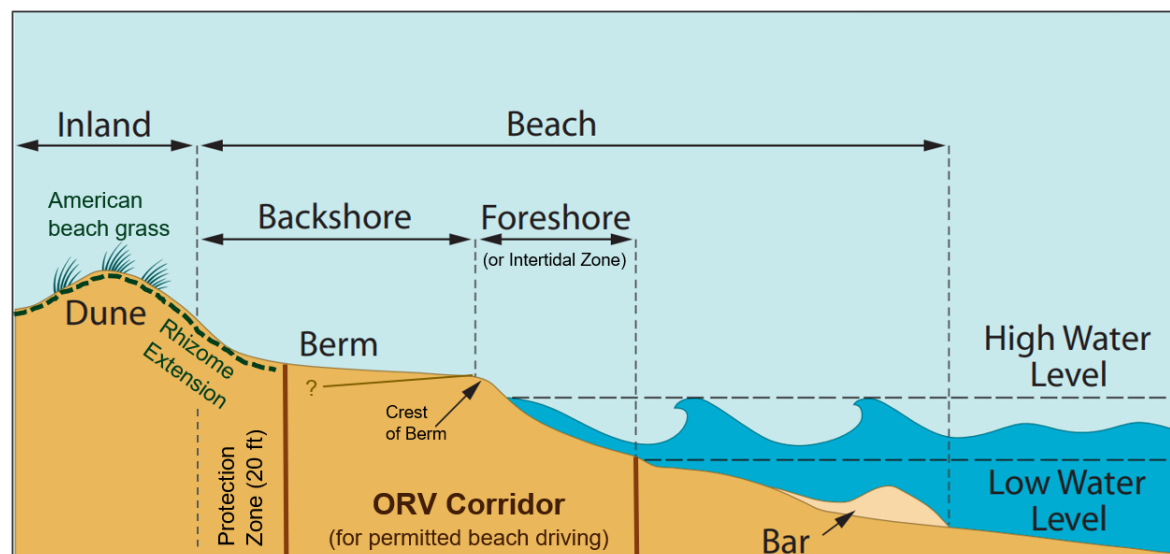
actions regardless of what agency (federal or nonfederal) or person undertakes such other actions.” Cumulative impacts were determined for each impact topic by combining the impacts of the alternative being analyzed and impacts of other past, present, and reasonably foreseeable future actions.

3.3 DUNE SYSTEMS AND PLANT COMMUNITIES, INCLUDING THREATENED AND ENDANGERED PLANTS AND SIGNIFICANT NATURAL COMMUNITIES

3.3.1 Current and Expected Future Conditions

The barrier island ecosystem is dynamic with changing shorelines, dune topography, surface waters, and salinity. Coastal processes (waves, currents, wind) continuously redistribute the sediment and change the topography of the beach and adjacent dunes that are stabilized by vegetation (e.g., Psuty et al. 2015). Periodic natural and human disturbances also change the plant communities, as does a large population of white-tailed deer (*Odocoileus virginianus*). These factors contribute to the diversity and complexity of the vegetation found on the Seashore.

Figure 3-1 illustrates the beach profile and ORV driving corridor to assist with the understanding of the dynamics that can impact dune vegetation. In this EA, the term “beach” generally refers to the toe of the dune to the water’s edge at low tide. The foreshore (or intertidal zone) is under water at high tide and exposed at low tide. The backshore extends from the high tide line to the toe of the dune and includes the berm, which is a shelf of sand. The berm is usually dry and relatively flat, but its profile varies. It may end with a berm crest or berm scarp on its seaward end, which is a steep wall carved out by wave action that leads down to the foreshore. These scarps sometimes become temporary obstacles to ORV driving on the beach.



Source: Modified after Tanski (2012)

FIGURE 3-1. BEACH PROFILE AND ORV DRIVING CORRIDOR

Similar to other parts of the Long Island’s barrier island system, Fire Island contains extensive dune areas that are held in place by vegetation. Dunes are important for the protection of Fire Island communities and habitats that have developed with dune protection. During the 1938 hurricane (see table D-13 in appendix D), some of the summer communities, such as Saltaire, Fair Harbor, and Point O’Woods, were insufficiently protected by dunes and suffered greater damage than other communities (USACE n.d.). The surface topography of Fire Island represents several types of dune formations, with differing plant

communities, described later in this section. The foredune (or primary dune) along the beach is constantly being reshaped by wind and water. In some areas, behind the primary dunes and further inland is another dune ridge (secondary dunes), with an interdunal swale between them. Secondary dunes reflect earlier shoreline positions as the barrier island went through stages of sediment accretion and erosion (e.g., Psuty, Grace, and Pace 2005).

ORV driving on the Seashore is permitted on the beach berm, but no closer than 20 feet seaward of the toe of the dune to protect the rhizomes extending out from the American beach grass below the sand. ORV driving may also occur on the foreshore during low tide when the beach sand is exposed.

Plant communities on Fire Island include five broadly defined vegetation categories: dune grasslands, dune shrublands, interdunal swales, forests/shrublands, and salt marsh. The vegetation is typical of a barrier island, with discrete zones from the ocean to the bay. Immediately adjacent to the ocean is a nonvegetated beach (where ORV driving occurs) that extends to the base of the primary dune. Sparse herbaceous plants are found at the base of the primary dune and the dune face exposed to the ocean (figure 3-2). Vegetation typically increases in cover from the crest of the primary dune and into the interdune (or swale) area, which includes a mosaic of shrubs and grasses. Occasionally, depressional wetlands occur throughout the interdunal zone. Shrubs tend to increase in density toward a secondary dune, although many areas of Fire Island do not have a well-defined secondary dune. When a well-formed secondary dune is present, larger trees often replace shrubs. Beyond the secondary dunes, most of the bay side of the island is salt marsh along undeveloped tracts (Klopfer et al. 2002; Tanski 2012), although some of these marshes are transitioning to tidal flats and open water because of erosion and sea-level rise.



FIGURE 3-2. AMERICAN BEACH GRASS LINES AND STABILIZES THE FOREDUNES ON FIRE ISLAND

Wind and water constantly change the dunes. The foredunes have no soil development and are exposed to salt spray, wind, and occasional overwash. More mature dunes are colonized by plants that collect wind-blown sand and provide stability for the dune structure; the most important plant for dune stability is American beach grass (figure 3-2). Rhizomes of American beach grass can extend underneath the sand for 10 or 20 feet from the plant and can grow 6 to 10 feet annually, sprouting new stems from the rhizome at each node (USDA-NRCS 2002) and advancing the

foredune both horizontally and vertically. Other common dune species include seaside goldenrod (*Solidago sempervirens*), sea rocket (*Cakile edentula*), and wormwood (*Artemisia caudata*) (NPS 2006a). ORV driving regulations at the Seashore are designed to protect dune vegetation by the rhizome rule that applies to any time of the year. A nourishment project by the US Army Corps of Engineers (USACE) of the Atlantic Ocean beach along the 17 communities (see more details in the “Additional Trends and Planned Actions” section below) included the construction of a dune and planting of beach grass, which is still getting established. The larger NPS tracts were not included in the nourishment project and the beach grass on the foredune is already well established.

Studies have demonstrated that ORVs can compact and dry out sand and reduce beach vegetation. For example, Anders and Leatherman (1987a) studied the dune toe south of the Fire Island Wilderness, crossing the impact zone with a vehicle eight times per week. The study found that ORVs impacted the upper beach and dune with as few as one pass per week, with a notable loss of vegetation on the foredune and an alteration of the natural foredune profile. Godfrey, Leatherman, and Buckley (1978) reported inhibited plant growth and compaction of subsurface layers in sandy sediments from ORV traffic in the Cape Cod National Seashore. Godfrey and Godfrey (1980) found that 50 passes of a vehicle are sufficient to stop the seaward growth of the foredune completely, changing the seaward face of the foredune from a more gradual slope to a scarped slope. Other studies at the Cape Cod National Seashore also indicated that ORVs broke underground rhizomes extending seaward from the face of the dune to the depth of 8 inches (Niedoroda 1979). Hosier and Eaton (1980) found on a barrier island in North Carolina that dune vegetation was less dense in the areas with ORV traffic than in areas without ORVs. These studies were used to inform the NPS's current rhizome rule.

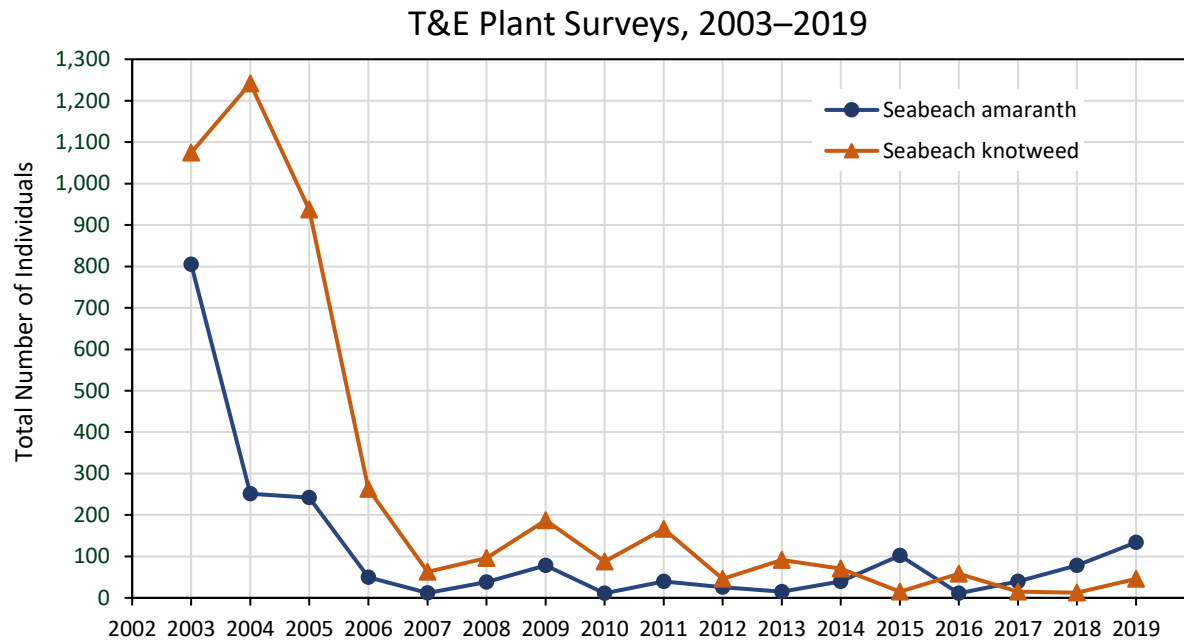
The New York Natural Heritage Program (NYNHP 2022a) identifies four significant natural communities that occur within or next to areas with ORV driving on Fire Island: maritime beach, maritime intertidal gravel/sand beach, maritime dunes, and maritime holly forest. This designation is applied in part because of the occurrence of rare plants such as the federally threatened seabeach amaranth (*Amaranthus pumilus*) and state-listed seabeach knotweed (table 3-2). Both plants grow best without competition, as they are easily outcompeted by more aggressive plant species.

TABLE 3-2. SPECIAL-STATUS PLANT SPECIES AT THE FIRE ISLAND NATIONAL SEASHORE

Species	Federal Listing	State Listing	Occurrence at the Seashore
Seabeach amaranth (<i>Amaranthus pumilus</i>)	Threatened	Threatened	Occurs on beaches that are subject to ORV driving on backshore between the base of the foredune and the wrack line, and on open overwash areas behind foredunes.
Seabeach knotweed (<i>Polygonum glaucum</i>)	Not listed	Rare	Occurs on beaches that are subject to ORV driving, in the sparsely vegetated lower foredunes and beaches.
Sandplain gerardia (<i>Agalinis acuta</i>)	Endangered	Endangered	Requires disturbed habitat in maritime grasslands, which would not be subject to potential impacts.
Hidden dropseed (<i>Sporobolus clandestinus</i>)	Not listed	Endangered	Occurs in the drier swales of the dunes near the Lighthouse, which would not be subject to potential impacts.

A survey for state and federally listed plants within the Seashore is performed annually. Monitoring in 2018 and 2019 documented 78 and 134 seabeach amaranth plants, and 13 and 45 seabeach knotweed plants, respectively (NPS 2018a, 2019a). Although the numbers of seabeach amaranth and seabeach knotweed were slightly higher in 2019 than in 2018, overall populations of both species have been in decline since 2003 (figure 3-3). The NPS installs symbolic fencing for the protection of known seabeach amaranth and seabeach knotweed populations.

There are two other rare plants that may occur at the Seashore, the state-endangered hidden dropseed (*Sporobolus clandestinus*) and the federally endangered sandplain gerardia (*Agalinis acuta*) (table 3-2), which are dismissed from further consideration because ORV driving would not affect their suitable habitat. In addition, the US Fish and Wildlife Service (USFWS) recommends delisting sandplain gerardia because a taxonomic revision is necessary (USFWS 2019a).



Source: NPS 2019a

FIGURE 3-3. COUNTS OF SEABEACH AMARANTH AND SEABEACH KNOTWEED AT THE SEASHORE (2003–2019)

Unless mitigated, unrestricted ORV driving on or adjacent to dune vegetation would directly impact seabeach amaranth and seabeach knotweed by crushing or uprooting plants, causing compaction or disrupting seedling establishment. NYNHP (2002) and USFWS (2023a) indicate that unrestricted ORV driving in areas where seabeach amaranth grows causes locally severe population declines or decreased habitat suitability. Citing Weakley and Bucher (1992) and internal field notes, USFWS indicates that “even in winter, when seabeach amaranth are dormant, extremely heavy ORV use may have negative impacts, such as the pulverization of dormant seeds.” Any disturbance to seabeach amaranth could cause a reduction in the available space for the plants to grow and reproduce. Seabeach amaranth and seabeach knotweed require habitat similar to piping plover and least tern (*Sternula antillarum*) nesting habitat. The NPS maintains symbolic fencing for these birds (see the “Special-Status Wildlife Species, including Federally Listed Species” section within section 3.4.1 below) during the germination period for amaranth and knotweed, which mitigates impacts from ORV driving to these species. Also, seabeach amaranth plants are fenced, when found by NPS, to protect them from deer browsing (NPS 2019a), which also serves to avoid ORV impacts.

The backside of the primary dunes may support low-growing shrubs, such as poison ivy (*Rhus Toxicodendron*), beach plum (*Prunus maritima*), and northern bayberry (*Myrica pensylvanica*). When a well-defined secondary dune is present, larger trees (taller than 30 feet) often replace shrubs. The Seashore contains an old-growth maritime forest ecosystem that generally extends from Point O’Woods to Davis Park where not interrupted by development. This includes the globally rare maritime holly-dominant forest within the Sunken Forest/Sailors Haven tract (see separate discussion in section 3.5). Many of the residential communities are located on the widest parts of the island and are in areas that would otherwise be tall shrubland or maritime forest. Human development has adversely affected natural plant communities, and in some cases eliminated them (Klopfer et al. 2002).

Nine cuts through the primary dunes provide ORV access to the beach on NPS-managed lands (cuts are listed in table D-2 of appendix D. An example of a beach cut is shown in figure 3-4). Driving prevents vegetation from growing within dune cuts. The boundaries of these cuts are not clearly marked. This has

caused some erosion of the dune and destruction of pioneer vegetation along the sides of the cut, particularly if drivers turn in and out early when they go into or out of a cut. The presence of ORV tracks in dune cuts has also been shown to influence the increased rates of storm erosion high on the dune/beach profile because of its destabilizing effect (Psuty et al. 2021).

ADDITIONAL TRENDS AND PLANNED ACTIONS

Following Superstorm Sandy, the beach and dunes along Fire Island were heavily eroded. The USACE, in partnership with New York State, initiated the Fire Island Inlet to

Moriches Inlet (FIMI) stabilization project to reestablish the beach and dunes (see section 3 in appendix E for additional details). The plan included a 90-foot berm and a dune at elevation +15 feet (National Geodetic Vertical Datum of 1929) on the backshore, along with the planting of beach grass (figure 3-2) (USACE 2020a). The placed dune considered the post-Superstorm Sandy dune alignment, which required the acquisition or relocation of approximately 40 homes. Construction along the section between Robert Moses State Park through Saltaire was completed in 2016; the section between Fair Harbor through Seaview was completed in 2017; the beachfill for the final section from Ocean Bay Park through Davis Park was completed in 2020 (USACE 2023). Repairs to the section between Saltaire and Seaview were completed in March 2024. The follow-on Fire Island Inlet to Montauk Point (FIMP) project includes beach and dune renourishment approximately every four years for up to 30 years after project initiation, i.e., up to year 2050, as well as other measures to reduce risk from coastal storms and mitigate project impacts to coastal habitat. Renourishment is planned only along the 17 communities and the interstitial tracts, with a breach management plan in place for all other NPS tracts. FIMI and FIMP also constructed large crossovers on the beach and engineered some driving cuts to reduce overwash. These structures have proven to make the beach or cuts impassible under some post-storm conditions.

To protect dune vegetation and rare plants on NPS-managed lands from tearing and crushing by ORV traffic, the NPS would continue to enforce the rhizome rule and symbolically fence or otherwise restrict access to sensitive areas within NPS jurisdiction. Projections of sea-level rise and increased frequency of high-intensity storms because of climate change may cause increased beach erosion, locally narrower beaches, a steeper foredune, and a loss of dune vegetation (e.g., Ashton, Donnelly, and Evans 2008).

3.3.2 Environmental Consequences

ALTERNATIVE A – NO ACTION

Under alternative A, the patterns and frequency of current ORV driving would continue on the beach. As a result, impacts to dune systems and plant communities would be the same as those described in section 3.3.1 above (“Current and Expected Future Conditions”). Impacts to dune systems and plant communities from driving on Burma Road south of the Sunken Forest (when the beach is closed) are addressed in section 3.5.



FIGURE 3-4. KISMET DUNE CUT (MAY 2022)

Cumulative Impacts

Under alternative A, ORV driving would continue on the beach and portions of Burma Road. There would be no new direct or indirect impacts to dune vegetation and plant communities; therefore, the environment would remain the same as or similar to the conditions described in section 3.3.1 above. Past, present, and reasonably foreseeable actions and their impacts would be the same as those described in section 3.3.1 above. In turn, because there are no direct or indirect effects of the no-action alternative, there would be no cumulative effects associated with the no-action alternative.

ALTERNATIVE B – PROPOSED ACTION

The types of potential impacts to dune vegetation, including T&E plants, under alternative B would be similar to those described under current conditions (alternative A). An increase in the number of trips under alternative B could increase impacts to the dune vegetation along the toe of the primary dune and at dune cuts if drivers were to violate the rhizome rule, impacting American beach grass and other dune plants and increasing the risk of localized erosion at the toe of the primary dunes. To protect dune vegetation against tearing and crushing caused by ORV traffic, the NPS would monitor ORV driving and continue to enforce the rhizome rule on its lands. The NPS would monitor dune cuts for signs of vegetation disturbance and may use symbolic fencing to restrict ORV driving to a narrow track and prevent turning alongshore until beyond the 20-foot rhizome protection buffer. Adherence to the rhizome rule and seasonal closures for piping plover nesting would also continue to limit impacts to seabeach amaranth and seabeach knotweed along the upper beach. Additional mitigation measures to minimize impacts from ORV driving could include closing the beach if it is too narrow for vehicles to pass, using symbolic fencing at dune cuts and locations where the rhizome rule is violated and at areas of concern or at risk for increased dune erosion, revegetating disturbed areas, and expanding the permitted driver education program.

Cumulative Impacts

Overall, the impacts of other past, present, and foreseeable future actions would be the same as those described in the “Current and Expected Future Conditions” section above. The effects of sea-level rise and increased frequency of high-intensity storms due to climate change are expected to cause increased beach erosion, locally narrower beaches, a steeper foredune, and a loss of dune vegetation. Periodic beach renourishment under FIMP could temporarily offset these effects following major erosion events and rebuild primary dunes along the Atlantic Ocean beaches in front of the communities (until storms erode them again), while undeveloped NPS-lands would be left alone to promote natural barrier island processes (such as overwash, longshore transport, and breaching).

As described above, alternative B could contribute a slightly greater adverse increment to the cumulative impacts on dune systems and plant communities if more ORV trips were to lead to more frequent violations of the rhizome rule by drivers. However, restricting driving when the beach is narrow or Burma Road ponding is extensive, using symbolic fencing to protect sensitive areas, and expanding driver education would reduce the likelihood of violations. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, and to current conditions and trends (in particular storms and future sea-level rise), the overall cumulative impact on dune systems and plant communities could be slightly higher if more ORV trips were to lead to more frequent violations of the rhizome rule, but the impact is expected to generally be similar to those impacts described above for the Current and Expected Future Conditions.

ALTERNATIVE C – ALTERNATIVE ACTION

Under alternative C, there could be an increase in ORV trips if the number of year-round resident and construction/business permits were to increase considerably unless further restrictions are imposed by towns and villages, although the increase would be smaller over time after part-time permits are phased

out. The increase in the number of trips would depend on the number of permits eventually issued for year-round residents and construction/business vehicles as these two categories accounted for approximately half of the trips by all permit categories through the west gate between 2014 and 2019. As with alternative B, the two illustrative scenarios in table 3-1 indicate a greater increase in trips along the western communities than along the eastern communities and NPS lands east of Point O'Woods.

The types of impacts to dune vegetation, including T&E plants, would be the same as those described under alternative B. The risk of dune and dune cut erosion and associated vegetation loss could increase as a function of a higher number of ORV trips if drivers were to violate the rhizome rule. Suitable habitat for seabeach amaranth and seabeach knotweed could also be at risk of greater impacts in areas where drivers violate the rhizome rule, but the NPS would continue to monitor suitable habitat and protect known populations with symbolic fencing. In addition, the superintendent has the authority to curtail ORV driving in locations where T&E plants could be potentially impacted. Long-term effects from climate change would be the same as those described under current conditions (alternative A).

Cumulative Impacts

The impact of other past, present, and foreseeable future actions would be the same as those described under alternatives A and B. Relative to current conditions (alternative A) and alternative B, alternative C could contribute a greater adverse increment to the cumulative impact on dune systems and plant communities depending on the number of permits issued (and the number of resulting ORV trips), if drivers were to violate the rhizome rule. However, the NPS would implement the same protections as under alternative B through enforcement to minimize violations of the rhizome rule and other protections of vulnerable resources (e.g., seasonal closures and driver education). When the impacts of alternative C are added to the impacts of present and reasonably foreseeable actions, and to current conditions and trends (in particular storms and future sea-level rise), the overall cumulative impact on dune systems and plant communities could be slightly higher if more ORV trips were to lead to more frequent violations of the rhizome rule, but the impact is expected to generally be similar to those impacts described above for the Current and Expected Future Conditions.

3.4 WILDLIFE, INCLUDING BEACH INVERTEBRATES AND THREATENED AND ENDANGERED SPECIES

3.4.1 Current and Expected Future Conditions

The barrier beach and dune vegetation provide feeding and nesting habitats for many species of birds, turtles, marine mammals, and invertebrates, including several rare, threatened, and endangered species. These habitats are used by more than 330 migratory, over-wintering, and resident bird species and are an important part of the Atlantic Flyway.

This section describes species that could potentially be impacted by changes in ORV driving. The NPS actively monitors special-status species and closes the beach to driving for the protection of these resources in accordance with the Endangered Species Habitat Management Plan approved by USFWS (NPS 1998a, 1998b, 2018b). The current ORV regulations include a provision to allow for closures when needed to protect resources, including special-status species.

SPECIAL-STATUS WILDLIFE SPECIES, INCLUDING FEDERALLY LISTED SPECIES

Federally listed birds at the Seashore include the piping plover, roseate tern (*Sterna dougallii dougallii*), and red knot (*Calidris canutus rufa*), although the piping plover is the only species known to nest within the project area (USFWS 2023b; table 3-3). Piping plovers nest in soft sand along the upper beach and travel to the wrack line and the water's edge to forage for tiny crabs and other beach invertebrates (figure 3-5). The wrack line consists of debris washed up onto the beach, including drying seaweed, terrestrial plant

debris, driftwood, decaying marine animals (such as small crustaceans), and shells. High tides constantly add debris and organisms to the wrack line. Beach invertebrates in the wrack line are an important food source for piping plovers (see the “Beach Invertebrates” section below). Piping plover courtship and mating usually occurs from late March through early June at the Seashore, and chicks hatch a month later. By mid-August, most piping plover nesting activity has ended, and the birds fly south for the winter.

TABLE 3-3. SPECIAL-STATUS ANIMAL SPECIES AT THE FIRE ISLAND NATIONAL SEASHORE

Species	Federal Status	State Status	Potential Occurrence at the Seashore
Birds			
Piping plover (<i>Charadrius melodus</i>)	Threatened	Endangered	May nest and forage on beaches that are subject to ORV driving.
Red knot (<i>Calidris canutus rufa</i>)	Threatened	Threatened	May forage and roost on beaches that are subject to ORV driving during spring and fall migration.
Roseate tern (<i>Sterna dougallii dougallii</i>)	Endangered	Endangered	May roost on beaches that are subject to ORV driving, although no nesting has been documented at the Seashore.
Least tern (<i>Sternula antillarum</i>)	Not listed	Threatened	May nest and forage on beaches that are subject to ORV driving.
Common tern (<i>Sterna hirundo</i>)	Not listed	Threatened	Most nesting occurs on bay islands but may nest and forage on beaches that are subject to ORV driving.
Black skimmer (<i>Rhynchops niger</i>)	Not listed	Special concern*	May nest on beaches that are subject to ORV driving and forage nearby in shallow tidal waters.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Protected by Bald and Golden Eagle Protection Act	Threatened*	May occur in beach and dune habitats in transit between nesting and foraging habitats. The NPS complies with the Bald and Golden Eagle Protection Act.
Peregrine falcon (<i>Falco peregrinus</i>)	Not listed	Endangered*	May forage over beach and dune habitat in transit between nesting and foraging habitats, mainly in September and October. ORV management may disturb some prey species but does not adversely impact peregrine falcon foraging.
Osprey (<i>Pandion haliaetus</i>)	Not listed	Special concern*	Occurs in beach and dune habitats in transit between nesting and foraging habitats but is relatively tolerant of human activity and ORV management does not adversely impact ospreys.
Mammals			
Northern long-eared bat (<i>Myotis septentrionalis</i>)**	Endangered	Not listed*	May roost and forage at the Seashore but ORV driving does not affect bats.
Tricolored bat (<i>Perimyotis subflavus</i>)**	Proposed Endangered	Not listed	May roost and forage at the Seashore but ORV driving does not affect bats.

Species	Federal Status	State Status	Potential Occurrence at the Seashore
Reptiles			
Eastern box turtle (<i>Terrapene carolina carolina</i>)	Not listed	Special concern	Use a variety of upland and wetland areas and could occur on sections of Burma Road that are subject to ORV driving.
Eastern mud turtle (<i>Kinosternon subrubrum subrubrum</i>)	Not listed	Endangered	Breed in shallow muddy wetlands and salt marshes and brackish ponds along the coast, but they also make extensive use of upland habitats for nesting and hibernation and could occur on sections of Burma Road that are subject to ORV driving.
Northern diamondback terrapin (<i>Malaclemys terrapin terrapin</i>)	Not listed	Not listed	Found in brackish waters of bays and inlets around Long Island. They nest on Fire Island and could occur on sections of Burma Road that are subject to ORV driving.
Eastern hog-nosed snake (<i>Heterodon platirhinos</i>)	Not listed	Special concern	Use areas with sandy soils, including fields, open grassy areas adjacent to woodlands, and various forest types, and could occur on sections of Burma Road that are subject to ORV driving.
Invertebrates			
Monarch butterfly (<i>Danaus plexippus</i>)	Candidate	Not listed	Require milkweed for host plants and abundant wildflowers as nectar sources, neither of which occur in areas that would be subject to ORV driving.
Northeastern beach tiger beetle (<i>Cicindela dorsalis dorsalis</i>)	Threatened	Threatened	Extirpated from New York (USFWS 1994) and not identified by USFWS (2023c) as potentially occurring at the Seashore.

* New York State has proposed changing the status for these species but changes have not been finalized (NYSDEC 2023a): black skimmer (from special concern to threatened), bald eagle (from threatened to special concern), peregrine falcon (from endangered to special concern), osprey (from special concern to not listed), and northern long-eared bat (from not listed to threatened).

** ORV driving does not impact bats and they were dismissed from further consideration, as described in appendix C.

During the seven-year period of 2013–2019, the piping plover population increased by 186% (Robertson et al. 2019). In 2023, 73 nesting pairs were documented on the Seashore, an increase from 11 pairs in both 2017 and 2018 (NPS 2017a, 2018a, 2019a, 2023c) (figure 3-6). Productivity reached a record high in 2022, with 64 breeding pairs fledging 101 chicks at the Seashore. This increase is largely attributed to abundant nesting habitat created by Superstorm Sandy (Robinson et al. 2022). Piping plovers have been found to nest at different locations from year to year, but the Fire Island Wilderness, in the vicinity of Old Inlet, provides the most popular nesting sites (NPS 2019a). Storm overwash, predation, and abandonment have all been factors in nest failures in the years since annual surveys started in 1993 (NPS 2015a).



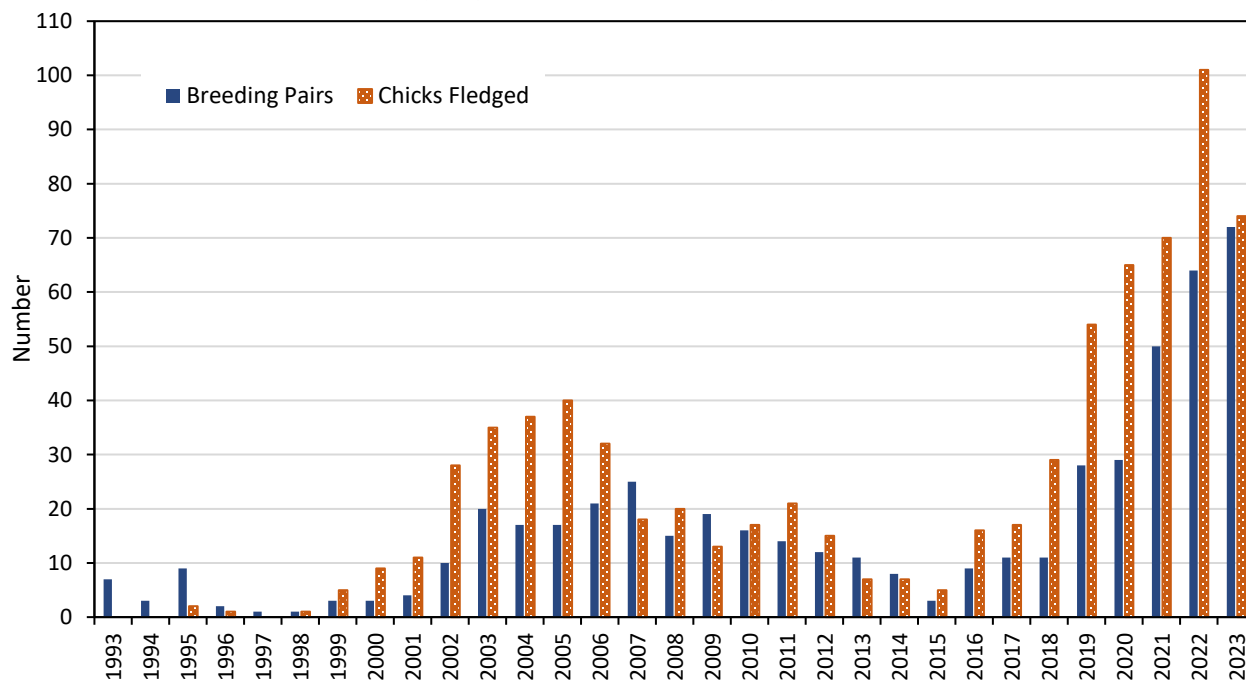
FIGURE 3-5. PIPING PLOVER AND SANDERLINGS FEEDING IN THE WRACK LINE

No roseate terns have been reported at the Seashore in recent years during annual gull and wading bird surveys (NPS 2018a, 2019a). Breeding colonies are found mostly on small islands off Long Island's north shore (with over 95% nesting on Great Gull Island) and are a mix of the common tern (*Sterna hirundo*) and the roseate tern. The numbers on Great Gull Island appear to have increased from the 1980s (range of 700 to 1,200 pairs) and have remained relatively stable, with high year-to-year variation (NYNHP 2023).

The red knot does not nest on the Seashore but could occur on beaches subject to ORV driving during its migration in spring (mid-May through

early June) and fall (late-July through November). Red knots have not been detected in shorebird surveys by the NPS. Red knots require abundant, high-quality prey, timed to occur when birds stop during their transcontinental migration. Foraging areas are intertidal from the wrack line seaward to a water depth of 0.8 to 1.2 inches (USFWS 2023d).

Piping Plover Productivity, 1993–2023



Source: NPS 2023c

FIGURE 3-6. PIPING PLOVER PRODUCTIVITY AT THE SEASHORE (1993–2023)

State-listed birds include the least tern and common tern (NYSDEC 2023b, 2023c), which both also rely on maritime beaches and dunes for nesting between March and July. The annual waterbird surveys by the New York State Department of Environmental Conservation (NYSDEC) on Fire Island and bay islands within the boundaries of the Seashore have produced variable counts of least tern and common tern colonies from year to year. For example, during the three years of 2017–2019, the maximum number ranged from 165 to 495 for least terns and from 616 to 873 for common terns (NPS 2017a, 2018a, 2019a). Least terns have similar nesting habitat requirements as piping plovers but tend to require wider beaches and larger areas of sparsely vegetated dunes. Least terns have recently nested in the Fire Island Wilderness, east of the breach at Old Inlet (NPS 2019a). Common terns breed in colonies, primarily on islands within the Great South Bay. NPS (2019a) reported nesting on Long Cove, Ridge Island, and East Fire Island.

The black skimmer (*Rhynchops niger*) is protected in New York State as a species of special concern and may forage or loaf in areas subject to ORV driving. Although it has nested on the Seashore's bay islands and beach habitats, black skimmers were not observed on Fire Island during NPS surveys in recent years (NPS 2018a, 2019a).

The bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), and osprey (*Pandion haliaetus*) are designated by the state of New York as threatened, endangered, and special concern, respectively, and occur on the Seashore. Additionally, of the 46 migratory birds that the USFWS (2023b) identifies as Birds of Conservation Concern in the area, one shorebird may nest in areas subject to ORV driving: the American oystercatcher (*Haematopus palliatus*). NPS reported two nesting American oystercatcher pairs in 2008 and thirteen nesting pairs in 2019 (NPS 2018a, 2019a).

ORV driving on the beach may disrupt special-status shorebird breeding activity and foraging. ORV use may affect the beach through sand displacement and compaction, loss of vegetation on the foredune, and an alteration of the natural foredune profile (Anders and Leatherman 1987b; Schlacher and Thompson 2008). These changes may create less suitable habitat for piping plover nesting (Cohen et al. 2005). The ruts of ORV tire tracks could be impassable to chicks, causing them to become entrapped even if driving has been discontinued during brood rearing. If nesting areas are unprotected, chicks could be crushed in ORV tire tracks. However, this is rare, with occurrences last documented for two piping plover chicks at Watch Hill and Sailors Haven in 1991 and 1992 (Melvin, Griffin, and MacIvor 1991; USFWS 2023a), prior to the Endangered Species Habitat Management Plan (NPS 1998a, 1998b, 2018b) that addresses concerns about chick and vehicle interactions. The rhizome rule reduces this potential impact in proximity to the primary dune by restricting ORV driving too close to suitable nesting habitat for piping plovers, least terns, and American oystercatchers. Seashore visitors are also urged to respect fenced areas and stay clear of bird nesting areas, and the NPS can reduce impacts where necessary through beach closures by the superintendent. ORV driving can also reduce beach invertebrate diversity and abundance at the wrack line (Kluft-Steinback 1999). A reduction in this food source could affect the survival and reproduction of piping plovers and other shorebirds (see the “Beach Invertebrates” section below).

ORV driving may occur on beaches at the Seashore during months when small numbers of red knots are present (during spring and fall migration stopovers). ORVs that disturb the red knots could cause behavioral changes that result in less time resting or foraging, shifts in feeding times, decreased food intake, or more time and energy spent in alert postures or fleeing from disturbance (Burger et al. 2004). Red knots also feed on beach invertebrates and could be affected if beach invertebrates are reduced from ORV traffic. However, there are large areas of beach with sufficient foraging habitat (and without ORVs) that the red knot can use; therefore, any impacts from ORV driving are discountable.

The NPS monitors terns annually as part of the Long Island Colonial Nesting Waterbird Survey and performs surveys for piping plover breeding, nesting, and fledging activities throughout the breeding season. Piping plover nesting areas are closed to beach driving for their protection during the breeding

season in consultation with the USFWS (figure 3-7). Beaches subject to annual closure (i.e., beaches where piping plover nesting typically occurs) include the Sunken Forest/Sailors Haven tract and Great South Beach (south of the Fire Island Wilderness) (NPS 2019a). Closures typically occur from March 15 to September 15 (see figure D-17 in appendix D) and remain in effect until the chicks are fledged (approximately 35 days after hatching). The closures include a 0.6-mile (1-kilometer) buffer on each side of a nest. Since the Old Inlet breach, driving on Great South Beach has been for administrative purposes only. Now that the area of the breach has closed, driving is expected to be allowed again in the future—with seasonal closures for habitat protection. Piping plovers also nest on the Lighthouse tract beach; driving on this beach is not permitted at any time. The driving restrictions increase piping plovers' reproductive success at the Seashore because the restrictions reduce ORV and other human-activity disturbance.



Note: Piping plover nest is located in the background within a wire cage. The beach is closed.

FIGURE 3-7. PIPING PLOVER SYMBOLIC FENCING IN SUNKEN FOREST/SAILORS HAVEN TRACT (JULY 2022)

NPS also installs predator exclosures and symbolic fencing and provides public education to protect nests and deter human disturbance (NPS 2006a, 2015a). The NPS typically installs symbolic fencing in early April, prior to the onset of the breeding season. The fencing consists of a string with orange flagging and is installed based on nest locations from previous years, early season plover observations, and visual habitat assessments. If the NPS identifies adverse impacts to piping plover or other special-status species, it may prohibit ORV driving over the wrack line or on wet sand or it may close additional beaches. These mitigation measures prevent direct

mortality or harassment of piping plovers, eggs, and chicks on beaches where vehicles are permitted, as required for compliance with the USFWS (1996) Recovery Plan. If any incidental take were to occur, NPS would work with the USFWS to develop reasonable and prudent measures, or terms and conditions resulting from an ESA Section 7 consultation.

BIRDS

The Seashore is one of more than 40 NPS sites that are recognized as a “Globally Important Bird Area” (NPS 2023d). Audubon (2023) also identifies the Seashore as an important bird area. The Seashore provides a resting and feeding area for migratory birds traveling the Atlantic Flyway. Over 20 shorebird species, including several that are federally listed and/or state-listed (discussed above in section “Special-Status Wildlife Species, including Federally Listed Species”), rely on the beaches and dunes of Fire Island along the Atlantic Ocean for nesting between March and August. In total, 67 bird species are known to nest on the Seashore, and over 250 more species have been documented NPS (2015a).

Potential impacts of ORV driving on other shorebirds are similar to those described above for piping plover and other special-status birds. ORV driving may damage habitat or cause shorebirds to avoid preferred habitats, adversely affecting the birds' energy balance and reducing the amount of available prey. ORVs could indirectly impact the shorebirds through a reduction of invertebrate prey and by

disturbing the shorebirds in their primary foraging area (Forgues 2010). Blodget (1978) reported that ORVs caused the greatest disturbance to roosting shorebirds in the upper beach on Cape Cod. Tarr et al. (2008) found that ORV driving at the Cape Lookout National Seashore reduced the proportion of shorebirds using wet sand areas on the beach and increased their use of the swash zone in response to vehicle disturbance, although the two most abundant species of shorebird (sanderling [*Calidris alba*] and willet [*Tringa semipalmata*]) did not show a significant decrease in abundance in response to disturbance. On Assateague Island National Seashore during spring and fall migration, Forgues (2010) demonstrated that, with increasing distance from the beach ORV entry point, beach driving decreased while shorebird abundance and richness increased. Species richness and abundance of some species (sanderling, willet, ruddy turnstone [*Arenaria interpres*], black-bellied plover [*Pluvialis squatarola*], and whimbrel [*Numenius phaeopus*]) declined with increased ORV frequency, as did the number and size of roosts. While ORV driving may cause small changes to local bird population abundance and structure, the maritime beach habitat within the Seashore remains functional and supports sustainable bird populations.

BEACH INVERTEBRATES

The Seashore beach ecosystem is home to many beach invertebrates that form a valuable link in the coastal food chain. Beach invertebrate abundances are highest in the summer, followed by spring and fall (Kluft-Steinback 1999). The wrack line, in particular, provides habitat for invertebrates such as beach flies, snails, sea hoppers (amphipods), roly polies (isopods), spiders, and beetles. Shorebirds and other animals rely on these invertebrates for food, as stated above (figure 3-5). Other beach and intertidal invertebrates within the Seashore beach ecosystem include ghost crabs, mole crabs, snails, clams, horseshoe crabs, worms, and jellyfish.

ORVs cause mortality of individual beach invertebrates, although not all invertebrate species are susceptible to impacts from ORVs. Wolcott and Wolcott (1984) studied ORV effects on beach invertebrates in North Carolina and found that the organisms in the sand (e.g., mole crabs and coquina clams) tended not to be affected by ORV traffic, whereas organisms on the surface that emerged from their burrows to feed were crushed. Steiner and Leatherman (1981) reported that fewer ghost crabs were found on ORV-used beaches of the Assateague Island National Seashore than on beaches where ORVs were prohibited. Findings were similar on beaches with high and low ORV driving intensity. Schlacher, Richardson, and McLean (2008) found that beaches with ORV use in Southern Queensland, Australia had substantially fewer species of invertebrates at reduced densities than non-ORV beaches.

ORV driving over the wrack line can crush and scatter seaweed, shells, and macroinvertebrates, causing damage to and dispersal of an important source of food and habitat for many beach invertebrates. Kluft-Steinback (1999) investigated the ocean beach invertebrates on Fire Island and the effects of ORV disturbance in four zones (intertidal, wrack, supratidal, and beach grass) located in six locations (Kismet, Sailors Haven, Talisman, Long Cove, Old Inlet, and Smith Point). The study found substantial differences in the diversity of the wrack community because ORV driving can cause desiccation by dispersing organic material across the beach surface. Kluft and Ginsberg (2009) studied beaches on Cape Cod (Massachusetts) and compared results with the Fire Island study. The two studies found that the overall abundances of beach macroinvertebrates were consistently lower (roughly by 50%) on sandy beaches subjected to ORV traffic. While driving reduced the overall abundance of wrack-dwelling invertebrates, the number of invertebrates within intact (i.e., not driven over) wrack clumps did not differ between traffic and non-traffic beaches. Kluft and Ginsberg (2009) concluded that ORV use can lower beach invertebrate numbers but that the seasonal beach closures are potentially sufficient to sustain sandy beach invertebrate populations at the Seashore.

Based on the above evidence from Fire Island and other sandy beaches on the Atlantic coast, ORV driving causes impacts to some beach invertebrate populations at the Seashore along beaches that are open to driving because of mortality of invertebrates or loss of food and habitat. The main mechanism for

potential impacts on invertebrate abundances is that traffic lowers the overall amount of wrack on the beach, which is the most essential resource for beach invertebrates. Although the amount of wrack is reduced by ORV driving, not all of it is crushed, scattered, or buried, and clumps of intact wrack remain in places. Also, wrack clumps are regularly replenished by the tides, and the wrack is undisturbed on beaches that are seasonally closed, protecting this food source when it most valuable for foraging by nesting shorebirds.

MAMMALS, AMPHIBIANS, AND TERRESTRIAL REPTILES

A total of 19 species of marine mammals, including whales, porpoises, dolphins, and seals, have been recorded within the boundary of the Seashore (NPS 2022b). While whales and dolphins remain well offshore and would not be affected by ORV driving, adult seals and pups recently weaned occasionally rest on Fire Island's beaches or swim just offshore during the spring. Common seal species include harbor seal (*Phoca vitulina*), harp seal (*Phoca groenlandica*), grey seal (*Halichoerus grypus*), ringed seal (*Pusa hispida*), and hooded seal (*Cystophora cristata*). Seals typically migrate from northern waters to the Seashore from mid-November to December. They may occasionally come ashore to get warm from the sun, avoid rough waters, or to rest. Seals are protected by the Marine Mammal Protection Act. ORV driving may cause noise disturbance and potential displacement of seals where they occur, typically during winter. This disturbance could cause stress in seals, which could adversely affect their health, reproductive success, and overall well-being. Seals are at risk of being accidentally hit by vehicles.

Terrestrial mammals also include white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), coyotes (*Canis latrans*), and small mammals such as cottontail rabbit [*Sylvilagus*], raccoon [*Procyon lotor*], white-footed mouse [*Peromyscus leucopus*], meadow vole [*Microtus*], muskrat [*Ondatra zibethicus*], Norway rat [*Rattus norvegicus*], and masked shrew [*Sorex cinereus*]. ORV driving may disturb individuals while foraging or resting, affecting their behavior and increasing energy expenditure. However, most mammals at the Seashore adapt and move to new suitable habitat, as necessary.

Amphibians at the Seashore include three frogs: Fowler's toad (*Anaxyrus fowleri*), southern leopard frog (*Lithobates sphenoccephalus*), and American bullfrog (*Lithobates catesbeianus*). ORV driving may result in direct injury and mortality of individual frogs in locations where established vehicle courses bisect wetland dunal swales and nearby surface water ecosystems. Enforcement of rules for driving on the Seashore minimizes these potential impacts.

Driving on Burma Road could also affect turtles and snakes, including three species protected by New York State (eastern box turtle [*Terrapene carolina carolina*], eastern mud turtle [*Kinosternon subrubrum subrubrum*], and eastern hog-nosed snake [*Heterodon platirhinos*]). Individuals could occasionally experience direct injury and mortality from being crushed by vehicles, but occurrences are expected to be low because of the mobility of these animals and slow vehicle speeds on Burma Road.

ADDITIONAL TRENDS AND PLANNED ACTIONS

The FIMP project adversely affects piping plover and seabeach amaranth at the time of implementing the beach nourishment (and includes mitigations), but is unlikely to affect the red knot. The conservation measures for piping plover include: (1) continuing consultation with the USFWS throughout the life of the project; (2) general construction modifications of the material to be used in dune and beach nourishment; (3) specific modifications of construction practices to minimize impacts on piping plovers; and (4) monitoring and management of piping plover and piping plover habitat. For seabeach amaranth, specific construction modifications and monitoring were identified to reduce and offset any potential impacts (USFWS 2019b).

Beach nourishment also temporarily disturbs other wildlife at the Seashore. It also buries or crushes beach invertebrate species in the work area on the beach; however, most species found in the intertidal zone,

such as the mole crabs and coquina clams, recover quickly. The recovery of beach invertebrates would vary depending on the timing of the beach nourishment, as areas renourished during the fall would likely have a longer recovery period than areas renourished in the winter and early spring (USFWS 2019b). The sand replenishment and new beach areas likely attract nesting shorebirds and colonial shorebirds (e.g., least terns, piping plovers, and roseate terns), although renourishment projects alter the profile of beaches and might alter habitat over the long term. Impacts of future beach nourishment events would depend on their timing and duration and on the longevity of the nourished beach sections before they are eroded again by storms. The planned Smith Point Bridge replacement project is not expected to have measurable effects on wildlife at the Seashore.

Conservation efforts and management programs will continue to benefit wildlife and offset some adverse impacts from ORV driving at the Seashore by monitoring, maintaining, and restoring habitats, controlling detrimental non-native species, and managing visitor access. For example, through the T&E Species Monitoring Program, the NPS will continue to meet its obligations under the NPS Organic Act and the ESA to both proactively conserve listed species and limit impacts to their habitat.

Long term, climate change may affect many of the Seashore's wildlife species because it may cause shifts in abundance, geographic distribution, and seasonal patterns of nesting and migration. In addition, new species may come to use the Seashore. Potential human responses to the effects of climate change, especially coastal shoreline armoring, would also affect the quantity, quality, and distribution of wildlife habitat.

3.4.2 Environmental Consequences

ALTERNATIVE A – NO ACTION

Under alternative A, the patterns and frequency of current ORV driving would continue on the beach, and intermittently on Burma Road in NPS-managed areas if the beach is closed. As a result, impacts to wildlife, including beach invertebrates and T&E species, would be the same as those described in section 3.4.1 above ("Current and Expected Future Conditions").

Cumulative Impacts

Under alternative A, ORV driving would continue on the beach, and intermittently on Burma Road in NPS-managed lands where and when access is permitted. There would be no new direct impacts to wildlife; therefore, the environment would remain the same as or similar to the conditions described in section 3.4.1 above. Past, present, and reasonably foreseeable actions and their impacts would be the same as those described in section 3.4.1 above. In turn, because there are no direct or indirect effects of the no-action alternative, there would be no cumulative effects associated with the no-action alternative.

ALTERNATIVE B – PROPOSED ACTION

The types of impacts to wildlife under alternative B would be similar to those described under current conditions (alternative A), with the possibility of slightly more frequent disturbances.

Special-Status Wildlife Species and other Birds

Under alternative B, the types of impacts to special-status species and other birds would be similar to those described above in the "Current and Expected Future Conditions" section; however, they could be slightly more frequent depending on the time of year; impacts would be concentrated along the western communities where most ORV driving already occurs (table 3-1). The NPS would continue to close beach segments to provide for piping plover nesting or other resource protection.

Alternative B could also increase the number of trips to communities located to the east of Point O'Woods (table 3-1), but to a lesser degree than to the western communities. Beach driving in much of this area is closed seasonally for piping plover nesting and other resource protection (see figure D-17 of appendix D), mitigating adverse impacts to the red knot, least tern, and other special-status birds that have similar habitat preferences as the piping plover. These protections would remain under alternative B, and the superintendent has the authority to close any portions of the Seashore, including driving on the beach and Burma Road, to mitigate for impacts from driving. Overall, the expected frequency of vehicles traveling on the beach and Burma Road is expected to remain low along the eastern communities and NPS tracts east of Point O'Woods; therefore, the effect of additional trips on these species would be similar to those described above in "Current and Expected Future Conditions" section. The NPS could mitigate the effects by closing beaches and Burma Road in NPS-managed areas, enforcing driving regulations, and educating permitted drivers. Although there may be occasional adverse impacts to individual animals, the NPS would continue to monitor disturbance and survey for protected species, and implement additional closures as needed to minimize adverse impacts.

Beach Invertebrates

More driving could increase the potential for beach invertebrates to be crushed or disturbed. Impacts would also be greater along the western communities where most driving occurs. This potential exists mostly during the winter and shoulder seasons and would be minimal or absent during the summer because of driving restrictions and closures of the beach for nesting plovers and special-status wildlife species protection.

Mammals, Amphibians, and Terrestrial Reptiles

An increase in the number of trips could increase the risk that a seal hauled out of the water is disturbed or accidentally hit by a vehicle. Considering that seal haul-outs are typically close to the water's edge, the low frequency of haul-outs on the beach, and the potential increases in ORV trips under alternative B (table 3-1), the added risk of an accident or disturbance of seals from changes in the number of trips under alternative B is considered low.

Mammals, amphibians, terrestrial reptiles may be disturbed, but impacts would be negligible within the larger NPS tracts (i.e., east of Point O'Woods) because of the estimated small changes in the number of trips, the limited access for residents to Burma Road, no access to construction/business vehicles to Burma Road, and the mobility of these animals. Compared to the eastern communities, impacts could be greater on Burma Road in the four small interstitial lands within the western communities and on the hard-packed section between the Field 5 parking lot and the Kismet Cut because of more vehicle driving. Although an ORV could disturb individual animals on occasion, or infrequently run over small animals, no population-level effects would occur.

Cumulative Impacts

Overall, the impact of other past, present, and foreseeable future actions would be the same as those described above in the "Current and Expected Future Conditions" section. This includes the impacts of climate change on wildlife distribution, abundance, and seasonal behavior. Although there is uncertainty about how storm frequency or intensity will change relative to historical trends, sea-level rise alone will increase coastal flooding during storm surges and amplify rates of habitat change on Fire Island. An increase in the frequency and intensity of storms during the breeding season could directly affect piping plover breeding success by increasing long-term rates of nest inundation, nest abandonment, or chick mortality (NPS 2018c). Periodic beach renourishment by the FIMP project would impact the habitat along the communities but not the NPS-tracts, which would not be nourished by the FIMP project.

As described above, alternative B could contribute a slightly greater adverse increment to the cumulative impact on wildlife (including special-status species, beach invertebrate, and seals) from an increased frequency in disturbance. Driving would only occur in areas where it is currently allowed, driving restrictions would remain in place during the summer, and important habitat areas would be closed to driving, for example, during plover nesting season. The superintendent has the ability to further restrict driving at any time for protection of park resources, including wildlife. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, the overall cumulative impact on wildlife, while possibly slightly higher, is similar to those impacts described above for the Current and Expected Future Conditions.

ALTERNATIVE C – ALTERNATIVE ACTION

Alternative C could result in more ORV trips along the beach if the number of year-round resident and construction/business permits were to increase considerably (unless further restrictions are imposed by the towns and villages), although the increase would be smaller over time as part-time permits are phased out. The types of impacts to wildlife under alternative C would be similar to those described under alternatives A and B, but their intensity would be a function of the eventual increase in the number of issued permits and resulting trips. The estimated increase in ORV trips, and associated potential impacts on wildlife, would be larger along the western communities than along the eastern communities, as illustrated in the two example scenarios of potential increases in ORV trips in table 3-1. Similar to alternative B, wildlife could experience detectable impacts under alternative C. Although there could be more trips on the beach than under current conditions, the NPS would continue to implement mitigation measures (including seasonal closures for piping plover nesting) and would have the ability to implement additional closures for resource protection.

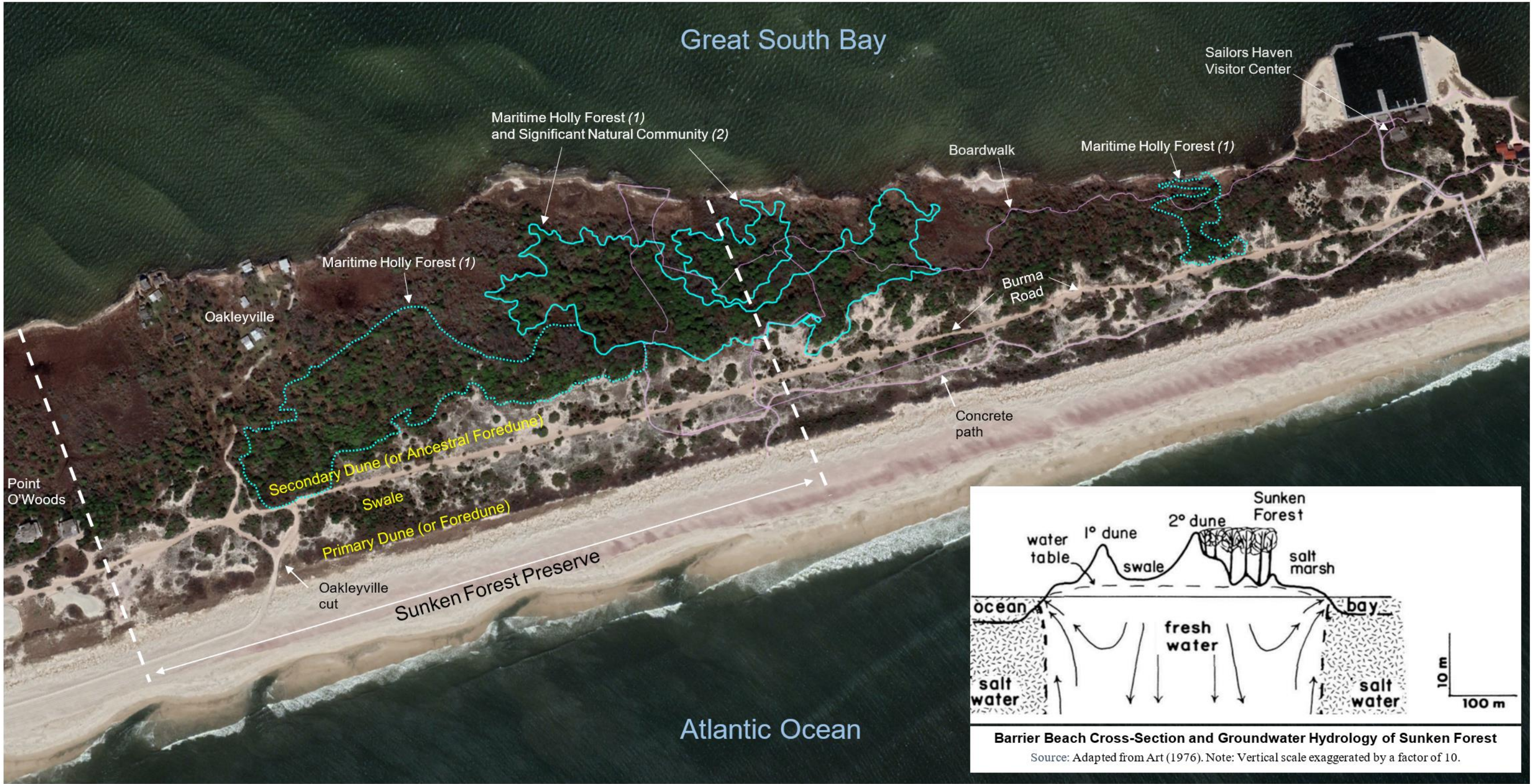
Cumulative Impacts

The impacts of other past, present, and foreseeable future actions would be the same as impacts under alternatives A and B. As described above, alternative C could contribute a greater adverse increment to the cumulative impact on wildlife (including special-status species, beach invertebrate, and seals) from an increased frequency in disturbance. Driving would only occur in areas where it is currently allowed, driving restrictions would remain in place during the summer, and important habitat areas would be closed to driving, for example, during plover nesting season. The superintendent has the ability to further restrict driving at any time for protection of park resources, including wildlife. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, the overall cumulative impact on wildlife, while possibly higher, is similar to those impacts described above for the Current and Expected Future Conditions.

3.5 SUNKEN FOREST AND SUNKEN FOREST PRESERVE

3.5.1 Current and Expected Future Conditions

The Seashore's old-growth maritime forest ecosystem extends from Point O'Woods to Davis Park (as stated in section 3.3) and is best exemplified by the Sunken Forest. This 200- to 300-year-old American holly-shadblow-sassafras maritime forest is one of only two such forests known in the world. The Sunken Forest is located within the Sunken Forest Preserve (an area deeded to the NPS in 1955 and 1966) and on adjacent NPS-managed land between the preserve and the Sailors Haven Visitor Center (figure 3-8). The New York Natural Heritage Program has designated half of the approximately 21-acre Sunken Forest as a significant natural community and ranked it as globally rare (NYNHP 2022b).



Sources: Google Earth (date of photo: April 28, 2022); (1) boundary from Klopfer et al. 2002; (2) area designated by NHNHP (2022b) and boundary obtained from NYS GIS (2024)

FIGURE 3-8. AREA OF THE SUNKEN FOREST AND SUNKEN FOREST PRESERVE

SUNKEN FOREST PRESERVE

The Sunken Forest was first protected from development in the early 1950s by a concerned group of private citizens (NPS 2022c). In 1952, approximately 50 acres of beach, dunes, and ancient holly forest was assembled through a fundraising campaign spearheaded by the Wildlife Preserves, Inc. and The Nature Conservancy. In 1960, the Sunken Forest Sanctuary was officially dedicated as the Sunken Forest Preserve. The Sunken Forest Preserve, Inc. donated the property to the Fire Island National Seashore, established in 1964, under the condition that the property must always be maintained in its natural state and operated as a sanctuary, and that no public road or highway would be built through it. The Sunken Forest Preserve covers the western third of the Sunken Forest/Sailors Haven tract (see boundaries in figure 3-8). The preserve extends from the high-water line (i.e., mean high water) in the Atlantic Ocean to the high-water line in Great South Bay. Approximately two thirds of the area of the Sunken Forest lies within the preserve.

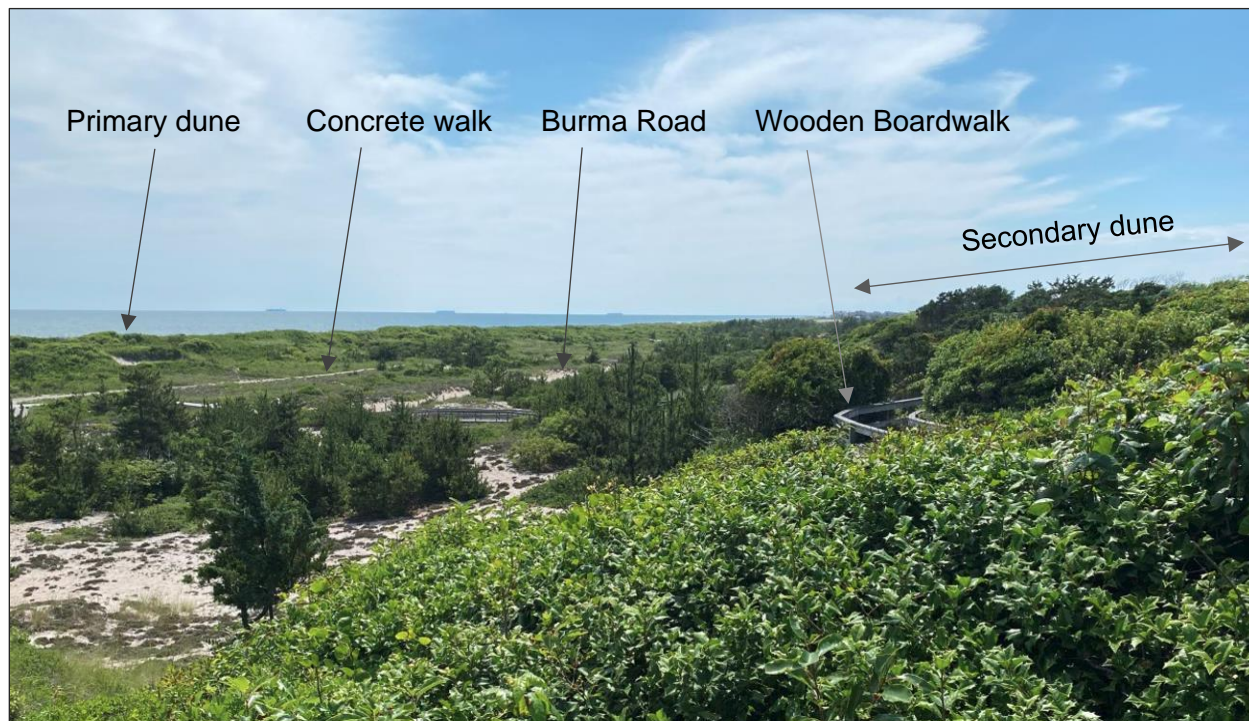
The 1964 enabling legislation for the Seashore and the deed for the six parcels of the Sunken Forest Preserve also state that the wildlife and natural habitat within it must be preserved from bay to ocean in as nearly its present state as possible, without developing roads therein, but continuing the present access via existing and limited new trails to allow visitors to explore and appreciate this portion of the Seashore (see appendix E for excerpts of the documents).

SUNKEN FOREST ECOSYSTEM

It took approximately 200 to 300 years for the mature maritime forest to develop on Fire Island (Art 1976). The forest formed because of the unique protection afforded by the two-dune system in the area, consisting of a primary dune adjacent to the ocean, followed by a swale behind the primary dune, and then a higher secondary dune (figures 3-8 and 3-9). From the ocean going inland, the gradually diminishing adverse effect of salt spray, wind disturbance, and sand movement has resulted in the vegetational cover and structural complexity seen in the Sunken Forest. None of the trees in the Sunken Forest typically grow taller than the unique double dune system in this area, which protects the trees from the leaf “pruning” effect by the sea spray and wind and explains the name “sunken” (i.e., behind the dunes).

The forest is unique and required several plant successions to gradually accumulate sufficient nutrients in the sand dunes before the current plant assemblage of the forest could grow. The area appears to have been stable over the last 150 to 200 years, with apparently only localized changes in the dune-swale and salt marsh communities at their interfaces with the Atlantic Ocean and Great South Bay, respectively; otherwise, the spatial relationship between the various vegetative communities is relatively constant with no indication of succession between communities (Art 1976). Because of this stability, the Sunken Forest is also referred to as a climax forest. It was never logged (i.e., it is an old-growth forest).

The old-growth maritime forest of the Sunken Forest is comprised mainly of American holly (covering approximately 38% of the area), sassafras (23% of the area), shadbush or junberry (19% of the area), and other hardwoods such as black oak (*Quercus velutina*), post oak (*Quercus stellata*), black cherry (*Prunus serotina*), and pitch pine (*Pinus rigida*) (Art 1976). The understory includes shrubs such as highbush blueberry (*Vaccinium corymbosum*), bayberry, and black huckleberry (*Gaylussacia baccata*), especially at the margins of the forest (NYNHP 2022b). Common ground layer herbs include wild sarsaparilla (*Aralia nudicaulis*), starry Solomon's seal (*Maianthemum stellata*), and Canada mayflower (*Maianthemum canadense*). Small, boggy depressions include plant species such as blackgum (*Nyssa sylvatica*), serviceberry, highbush blueberry, and chokeberry (*Photinia melanocarpa*). The significant natural community delineated by NYNHP (2022b) encompasses 10.4 acres of maritime holly forest that is “old growth” and taller than 15 feet, while vegetation mapping by Klopfer et al. (2002) indicates that shorter maritime holly forest (<15 feet) covers nearly an additional 10 acres (figure 3-8).



Note: The secondary dune is followed by the swale in the center and the primary dune in the left-center distance adjacent to the Atlantic Ocean. A pedestrian boardwalk weaves through the area.

FIGURE 3-9. SUNKEN FOREST AREA, VIEWED FROM THE SECONDARY DUNE (JULY 2022)

Animals in the Sunken Forest include deer, fox, and smaller animals such as mice, muskrat, two species of snake (eastern garter snake [*Thamnophis sirtalis*] and northern black racer [*Coluber constrictor constrictor*]), eastern box turtle, and multiple bird species.

ACCESS AND ENVIRONMENTAL CONDITIONS

Burma Road runs along the full length of the toe of the secondary dune through the Sunken Forest Preserve and seaward (but outside) of the Sunken Forest (figures 3-8 to 3-10). It is the same sandy trail that was in place when it was named in the enabling legislation. ORV access to Burma Road in this tract is permitted only when the beach is closed because of piping plover nesting or an eroded beach. Aside from NPS vehicles, permitted categories consist of emergency services, public utilities, essential services (case-by-case). Residents, municipal employees, and officials are only permitted access when ferries are suspended and a breach in the island blocks access to eastern communities through the east gate. Ruts from ORV driving on Burma Road contribute to, or exacerbate, puddle formation (see section 3.7). In addition, drivers leave the road to drive around wet areas or to pass other vehicles, widening the road (EA Engineering, Science, and Technology 2021). Overall, the effect on adjacent vegetation is considered small because of the limited size of the affected area and the infrequent occurrence. While ORV driving has increased on Burma Road in the Sunken Forest Preserve since Superstorm Sandy, it is sporadic (on the order of a few trips per day when the beach is closed) and has not impacted the Sunken Forest itself.

On the Atlantic Ocean beach, drivers may cause erosion and impact the rhizomes of the stabilizing American beach grass if they violate the rhizome rule and drive too close to the toe of the primary dune. Similarly, beach grass can be damaged in the Oakleyville dune cut within the preserve if ORVs drive too close to the vegetated edge of the cut. Overall, the risk of dune erosion and vegetation loss is limited because the area is subject to seasonal closures for piping plover nesting (see figure D-17 of appendix D)

and the ability of the superintendent to close the beach (and Burma Road) at any time, if needed, to avoid or minimize impacts.

Most visitors access the Sunken Forest via the Sailors Haven marina. A wooden boardwalk weaves through the Sunken Forest and over the secondary dune with views to the ocean (figures 3-8 and 3-9). This boardwalk connects to a concrete path within the swale, and from there to another wooden boardwalk that crosses the primary dune and provides access to the ocean beach.



FIGURE 3-10. BURMA ROAD IN THE SUNKEN FOREST PRESERVE, WITH A PULL-OUT SPACE FOR PASSING VEHICLES (JUNE 2022)

ADDITIONAL TRENDS AND PLANNED ACTIONS

The barrier island setting of the Sunken Forest makes the area vulnerable to both natural catastrophic events and anthropogenic alteration that could change, reduce, or eliminate it, despite being protected and actively managed by the NPS. Hard structures along Great South Bay and sea-level rise affect the Sunken Forest area by causing erosion of the bay shore. Sea-level rise also raises the groundwater table and increases saltwater intrusion. Low-lying areas of the Sunken Forest area are increasingly flooded, with canopy species dying off (Raphael 2014; Misut and Dressler 2021). In addition, Forrester, Leopold, and Underwood (2006) and NPS (2020) concluded that because of increasing deer herbivory, particularly on seedlings, holly trees have not been able to grow into the canopy for many years, which could lead to an altered maritime holly forest composition with dominance toward a higher percentage of black cherry, one of the most tolerant browse species.

The planned intermittent beach renourishment by the FIMP project of the Atlantic Ocean beaches of communities adjacent to the Sunken Forest/Sailors Haven tract help protect the primary dune seaward of the Sunken Forest by providing for a wider berm for ORV travel (through the process of longshore transport of the sand). Maintaining the primary dune in this area is important because, combined with the secondary dune, its topography dictates the structure of the maritime holly forest.

Once nonrecreational driving is allowed again through the east gate (now that the breach area has closed), the need for travel by permitted vehicles on Burma Road through the Sunken Forest Preserve and seaward of the Sunken Forest to access eastern communities could decrease slightly because these communities can then be accessed via the east gate.

Long term, sea-level rise may lead to more frequent closures of the beach along the Sunken Forest/Sailors Haven tract, necessitating more frequent travel on Burma Road by permitted vehicles or closures to all travel through this area. Sea-level rise will also impact the water table elevation, increasing puddle development and persistence, which will impact the ability to drive through this area.

3.5.2 Environmental Consequences

ALTERNATIVE A – NO ACTION

Under alternative A, the patterns and frequency of current ORV driving would continue on the beach, and intermittently on Burma Road through the Sunken Forest Preserve and seaward of the Sunken Forest if

the beach is closed. As a result, impacts on the Sunken Forest and the Sunken Forest Preserve would be the same as those described in section 3.5.1 above (“Current and Expected Future Conditions”).

Cumulative Impacts

Under alternative A, ORV driving would continue on the beach, and intermittently on Burma Road through the Sunken Forest Preserve and seaward of the Sunken Forest if the beach is closed. There would be no new direct impacts to the Sunken Forest; therefore, the environment would remain the same as or similar to the conditions described in section 3.5.1 above. Past, present, and reasonably foreseeable actions and their impacts would be the same as those described in section 3.5.1 above. In turn, because there are no direct or indirect effects of the no-action alternative, there would be no cumulative effects associated with the no-action alternative.

ALTERNATIVE B – PROPOSED ACTION

Alternative B could slightly increase the number of trips along the beach to communities located to the east of Point O’Woods. The percent increases in the example scenario presented in table 3-1 suggest that the Sunken Forest/Sailors Haven tract could experience only a relatively small increase in vehicle traffic (during periods when travel is permitted). More driving on the beach could cause erosion of the toe of the dune and impact the rhizomes of the stabilizing American beach grass if drivers were to violate the rhizome rule. However, the primary dune in front of the Sunken Forest is among the largest and most persistent at the Seashore and they could not be adversely affected by a small increase in driving, especially with the implementation of the mitigation measures for the benefit of piping plovers and potential closure of the beach to driving if it were too narrow for vehicles to pass. The persistence of this primary dune would therefore continue to protect the Sunken Forest ecosystem against storm surges and the effects of salt spray exposure.

No new roads would be built under alternative B, and driving would not occur in any new areas. On Burma Road, more ORV use could increase the frequency of pull-outs to allow for passing vehicles or to avoid puddles, which could form more frequently and persist longer under future sea-level rise conditions. If pull-outs occurred in unpermitted areas, it could damage protective vegetative cover and expose the ground (i.e., loose sand) to wind and erosion. These impacts would be concentrated to the area where driving occurs; any increase in the amount of driving would not impact the overall health of the Sunken Forest. Driving access would remain very limited on Burma Road within the Sunken Forest, even to the point of complete restriction, depending on conditions of the road.

Cumulative Impacts

Overall, the impact of other past, present, and foreseeable future actions would be the same as those described in the “Current and Expected Future Conditions” section above. Sea-level rise and deer herbivory threaten the maritime American holly forest (NPS 2020). Sea-level rise and shoreline erosion along the bay are expected to bring saltwater closer to the depressions in the Sunken Forest and impact the water table. Intermittent beach renourishment by the FIMP project along the beaches of adjacent communities is expected to help protect the primary dune.

As described above, alternative B could increase the frequency of pull-outs to allow for passing vehicles or to avoid puddles, and if pullout occur in unpermitted areas, it could damage protective vegetative cover. However, these impacts would be concentrated to the areas where driving occurs, and the potential increase in driving through the Sunken Forest/Sailors Haven tract is limited to the number of permittees only needing access to the eastern communities. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, the cumulative impact on the Sunken Forest could be slightly higher in localized areas along the road, but overall would have negligible cumulative impacts on the health of the forest.

ALTERNATIVE C – ALTERNATIVE ACTION

Alternative C could result in more frequent driving along the beach if the number of year-round resident and construction/business permits were to increase considerably (unless restrictions are imposed by the towns and villages), although the increase would be smaller over time as part-time permits are phased out. The types of impacts would be the same as those under alternative B. More trips would increase the risk of primary dune erosion and associated vegetation loss if drivers were to violate the rhizome rule. On Burma Road, vegetation could be impacted adjacent to pull-outs if ORV driving increased on Burma Road (during times of beach closure). ORV driving could increase if the number of year-round residents were to increase in the eastern communities of the Seashore, requiring more services from categories permitted to drive on Burma Road in this tract (i.e., emergency services, public utilities; and essential services). However, as for alternatives A and B, potential effects could be mitigated by enforcement of driving regulations and by closures of the beach and Burma Road. As with alternative B, no new roads would be built under alternative C, and driving would not occur in any new areas.

Cumulative Impacts

Overall, the impact of other past, present, and foreseeable future actions would be the same as those described in the “Current and Expected Future Conditions” section above. Sea-level rise (causing saltwater intrusion and shoreline erosion) and deer herbivory threaten the maritime American holly forest (NPS 2020). Intermittent beach renourishment by the FIMP project along the beaches of adjacent communities is expected to help protect the primary dune.

As described above, alternative C could increase the frequency of pull-outs to allow for passing vehicles or to avoid puddles, and if pullout occur in unpermitted areas, it could damage protective vegetative cover. However, these impacts would be concentrated to the areas where driving occurs, and the potential increase in driving through the Sunken Forest/Sailors Haven tract is limited to the number of permittees only needing access to the eastern communities. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, the cumulative impact on the Sunken Forest could be slightly higher in localized areas along the road, but overall would have negligible cumulative impacts on the health of the forest.

3.6 VISITOR USE, EXPERIENCE, AND SAFETY

The Organic Act, which created the NPS in 1916, states that a fundamental purpose of the national park system is to provide opportunities for the public enjoyment of park resources as long as the resources are conserved unimpaired for the enjoyment of future generations. The NPS is committed to the public’s appropriate use and enjoyment of park resources, although visitor use is limited to those activities that can be sustained without causing unacceptable impacts to park resources or values (NPS 2006a).

The existence of federal and nonfederal property on Fire Island and the various types of visitor uses make it difficult to count the number of recreational visitors and all forms of visitor experiences. People who take ferries (through park waters) to the communities are not included in the counts of Seashore visitors, although residents and their guests may become Seashore visitors when they use the beach or NPS lands. Residents are considered nonrecreational visitors (see more details on types of visitors in appendix E).

3.6.1 Current and Expected Future Conditions

The population of 433 year-round residents (per count in 2022–2023) swells to approximately 15,000 persons residing in the Fire Island communities in the summer (NPS 2023a; Newsday 2021; Volpe 2010). In addition to the year-round and seasonal (i.e., part-time) resident population, more than 2.2 million recreational visitors come to the island each year, either to one of the 17 communities or to sites and facilities managed by the NPS (NPS 2022a). Visitors arrive mostly by ferry. A small number of visitors

arrive by private boat, walk in from Field 5, or drive (permitted) recreational vehicles through the east gate. Many visitors seek to experience the Seashore through some of the following activities:

- Swimming
- Surfing
- Walking
- Admiring the unique aesthetics and sounds (such as the ocean, wind, and birds)
- Viewing sunrises and sunsets
- Night-sky viewing
- Fishing and hunting
- Hiking trails
- Camping
- Boating
- Practicing photography
- Touring historic sites
- Staying in NPS vacation rental properties

The total number of recreational visitors to NPS lands, as counted by the NPS between 1967 and 2021 (55 years), was on average 520,000 per year (figure 3-11). Visitor numbers have declined since the peak in 2004; the average annual count during the 10 years before the Covid-19 pandemic (2010–2019) was 432,000 visitors.



FIGURE 3-11. TOTAL COUNTS OF RECREATIONAL VISITORS TO NPS LANDS BETWEEN 1967 AND 2021 (55 YEARS) – PER YEAR

Visitation to some NPS facilities at Fire Island occurs year-round, but much of the activity is seasonal. Most visitors come to the Seashore in July and August, followed by a reduced number of visitors (approximately half) in June and September, and by a further reduced number of visitors in May and October (figure 3-12). The average count of visitors in each summer month of the 21-year period of 1979 to 1999 was approximately 160,000; the average count of visitors during the 22-year period of 2000 to 2021 was approximately 130,000. On sunny days in the summer, beaches along the communities and at specific locations on NPS tracts of land (such as Sunken Forest/Sailors Haven, Talisman/Barrett Beach, and Watch Hill) (e.g., figure 3-13). There were fewer than 20,000 visitors during the six offseason months of the year (November to April). It is likely that the seasonal patterns of visitors arriving by ferry to the communities reflects a similar seasonal pattern of visitors to NPS lands. Ferries provide travel to and from the island, seven days per week. They run this full schedule from Memorial Day-Labor Day. During the shoulder seasons and offseason, ferry companies continue to provide service to most communities, but at reduced schedules.

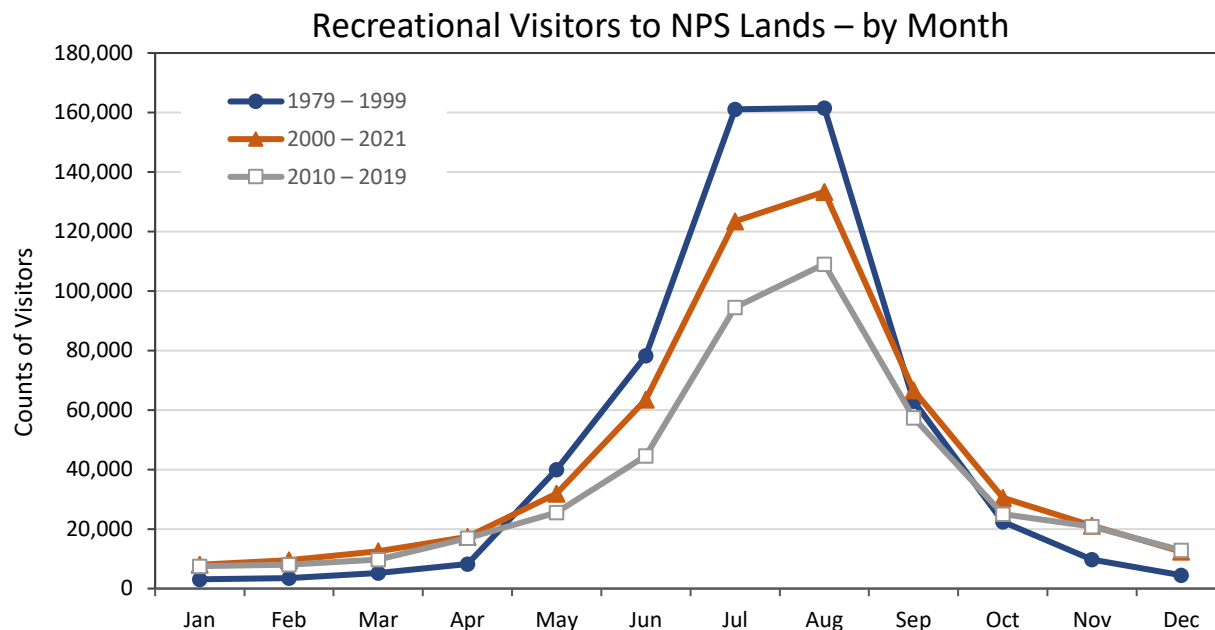


FIGURE 3-12. RECREATIONAL VISITORS TO NPS LANDS FOR THREE TIME PERIODS – MONTHLY AVERAGES



FIGURE 3-13. BEACH VISITORS ALONG THE VILLAGE OF OCEAN BEACH (JULY 12, 2022)

Although many visitors come to Fire Island because of its roadless character, visitors know that vehicles are allowed and driving is permitted for access to the private communities. Current levels of driving may interfere with visitor experience, but the degree of potential interference likely differs for each visitor.

Ruts from driving on the beach could affect visitor experience by restricting ease of movement for foot traffic and beach carts, and some individuals may consider the ruts to be a visual intrusion. However, the time of year when ruts would be more of an issue is during the offseason and shoulder seasons, when

visitation is substantially lower than in the summer. Ruts on the beach berm typically fill in during high tides and storms and are largely gone before the summer peak season. Rutting during the summer is lessened because several beaches are closed for natural resource protection and driving is permitted only for a few permit categories (such as NPS, public utilities, essential services, official use, and emergency services), and some communities mark a travel lane (figure 3-13).

ORV use as authorized under the 1987 regulations does not impact visitor access or the ability to experience the Seashore, either along the beach or on Burma Road, although visitors may have different opinions of ORV use on the Seashore. Generally, visitors prefer not to encounter vehicles on Fire Island or see ruts on the beach from tire tracks, but they may also understand the need for some driving to access and maintain the communities. Overall, adverse impacts to visitor experience are limited by seasonal driving windows and existing driving restrictions.

ORV RECREATIONAL VISITORS THROUGH THE EAST GATE

ORV recreational driving is only permitted on the east end of the Seashore, through the east gate. The number of recreational ORV trips annually by all permittees is currently capped at 5,000 under the present regulations. There are two seasonal driving windows throughout the year: September 15 to December 31, and April 1 to June 13. Per the Seashore's Endangered Species Habitat Management Plan (NPS 1998a, 1998b, 2018b), the recreational driving area is closed to driving from March 15 to Labor Day each year for piping plover breeding, which effectively eliminates recreational driving from April 1 to June 13. Recreational permits begin in September of each year. Annual recreational vehicle trip counts commence in September of each year and conclude the following June or when the 5,000-trip limit is reached, whichever occurs first. No more than two round trips per day are permitted per vehicle.

Between 1996 and 2021, an average of 272 permits were issued annually, ranging widely between 49 permits in 2009 and 655 permits in 2000 (figure 3-14). The number of annual trips by all permittees has remained below the cap of 5,000 trips. In 2023, there were approximately 2,100 trips. In the four prior years, the approximate number of trips was as follows: 3,400 in 2019; 3,100 in 2020; 3,800 in 2021; and 4,000 in 2022.

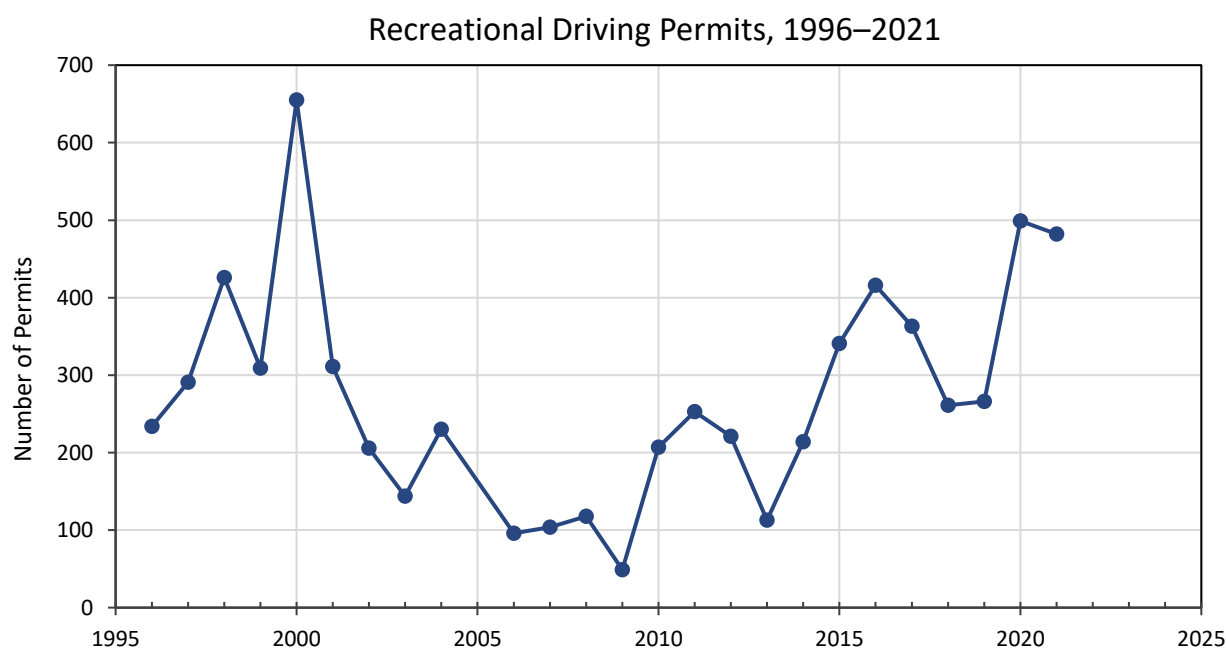


FIGURE 3-14. RECREATIONAL DRIVING PERMITS (ENTRY ON EAST GATE) BETWEEN 1996 AND 2021 – BY YEAR

Prior to the 2012 breach at Old Inlet, recreational permittees were allowed to drive as far west as Long Cove, six miles from the east gate. The breach reduced recreational driving to a distance of 1.7 miles from the east gate and prevents access to the eastern communities by permitted vehicles. After the area of the now closed breach is reopened to driving, recreational driving may resume up to Long Cove.

HUMAN SAFETY

The NPS does not independently manage activities of visitors to Fire Island. Regulatory oversight for public health and safety is distributed across multiple jurisdictions within the Seashore boundary, including the two incorporated villages (Saltire and Ocean Beach), two Long Island–based municipalities (the towns of Islip and Brookhaven), Suffolk County, and various New York State agencies.

Most ORV driving occurs in the offseason (approximately 6,600 trips monthly through the west gate between 2014 and 2019), with reduced driving in the spring and fall shoulder seasons (6,000 trips monthly), and substantially fewer trips (2,300 trips monthly) in the summer. Several categories (public utilities, essential services, official use, NPS, emergency services) are permitted to drive on the beach in the summer, when the number of Seashore visitors is highest and visitors spend extended time on the beach. Public utilities and essential services are only able to drive on NPS-managed lands before 9:00 a.m. and after 6:00 p.m. on weekdays to mitigate the visitor conflict; these two categories account for approximately one-third of the trips on the beach or Burma Road in the summer.

In general, visitor safety can be affected by vehicles traveling along the beach and on Burma Road (figure 3-15). Approaching vehicles on the beach are often not audible until they are close because the sound of the engine is typically masked by the sound of waves. This effect would increase with the increasing use of quieter electric vehicles. In addition, drivers are often partially focused on the beach and staying within the rut they are traveling in to avoid getting stuck. At the same time, beachgoers can be focused on the natural scenery. Risks to human safety are different at night; while a beachgoer is far less visible to a driver at night, approaching vehicles can be easily spotted by a beachgoer by the vehicle's headlights on the dark beach. The higher-risk times may be dawn and dusk, with reduced daylight and vehicle headlights potentially turned off.



FIGURE 3-15. APPROACHING VEHICLE AND BEACH VISITOR (LEFT) NEAR DUNEWOOD (MAY 2022)

On Burma Road, risks to visitor safety are primarily related to the narrow roads, shared by vehicles, all-terrain vehicles, and pedestrians (on foot or on bicycles) on NPS lands, where vehicles are allowed, and inside the communities.

While safety is a concern, reports of incidents involving vehicles and visitors on NPS lands have been rare (NPS 2022d). Over the last few years, there was only one rollover (with minor injuries) that occurred on paved road where ORV permits do not apply, there was one vehicle incident on the beach with a vehicle fire, and a few vehicles became stuck in the intertidal zone and were damaged by water. Before then, the last serious injuries occurred in the 1970s or 1980s. Minor accidents occur, sometimes when vehicles pull out other vehicles that are stuck in the sand. An estimated dozen minor accidents per year result in a police report and no vehicle incidents involving pedestrians have occurred. In 2022, NPS enforcement officers issued citations for violations such as lack of a valid permit, closure violations, failure to comply with conditions of a permit, and failure to comply with a traffic control device (e.g., stop sign). The towns and villages also have the ability to impose driving restrictions to address any safety concerns within their jurisdictions.

ADDITIONAL TRENDS AND PLANNED ACTIONS

The intermittent renourishment of the Atlantic Ocean beach (and primary dune) may reduce the frequency of beach closures from sea-level rise and create a wider beach area for visitors to experience. While the Atlantic Ocean beaches of NPS tracts east of Point O'Woods are not intermittently nourished, longshore drift transports some of the sand from the nourished beach sections in front of communities to adjacent NPS tracts. Although beach sections that are actively being nourished may be closed to visitors while the work is taking place, and visitors adjacent to the renourishment area may experience temporary construction noise, the work typically happens from October to March, when visitation is low.

Now that the area of the breach at Old Inlet has closed, driving will likely be allowed again for permitted vehicles to access eastern communities once driving across the breach area is determined to be safe. At that time, some of the current trips to eastern communities will shift from the west gate to the east gate. This traffic pattern could have an impact on visitors that are used to the minimal recreational driving that currently happens on the east end of the island and who prefer to not see vehicles on the beach. However, this type of driving would be permitted when visitation is low. Permitting driving in the area of the breach would also reopen a longer stretch of Great South Beach to recreational driving allowing visitors with these permits to experience a larger area for sportfishing and hunting.

Projections of sea-level rise and the increased frequency of high-intensity storms may increase beach erosion, locally reducing the width of the beach for ORV driving and beachgoers. It may also impact NPS infrastructure used by visitors, resulting in potentially more frequent closures of the beach or NPS facilities. Long term, some sections of NPS tracts may become permanently submerged by water, changing the visitor uses of such areas.

3.6.2 Environmental Consequences

ALTERNATIVE A – NO ACTION

Under alternative A, the patterns and frequency of ORV driving on the beach and on portions of Burma Road would continue. As a result, impacts to visitor use, experience, and safety would be the same as those described in section 3.6.1 above ("Current and Expected Future Conditions").

Cumulative Impacts

Under alternative A, the patterns and frequency of ORV driving would continue on the beach and on Burma Road. There would be no new direct impacts to visitor use, experience, and safety; therefore, conditions would remain the same as or similar to the conditions described in section 3.6.1 above. Past,

present, and reasonably foreseeable actions and their impacts would be the same as those described in section 3.6.1 above. In turn, because there are no direct or indirect effects of the no-action alternative, there would be no cumulative effects associated with the no-action alternative.

ALTERNATIVE B – PROPOSED ACTION

Under alternative B, driving on the beach and Burma Road, where permitted, could increase. However, the revised permit caps also considered the current amount of driving, the effect on driving from the updated definition of a trip, the elimination of driving under the ice-over permits, and the phase-out of driving by those who hold part-time residential permits (see section 3.2.2). The effect of ORV driving on visitor use, experience, and safety from a change in the number of ORV trips would vary geographically and seasonally.

Visitor Use and Experience

Geographically, and if the towns and villages did not impose further driving restrictions, it is estimated that the increase in the number of trips would be larger along the western communities than along the eastern communities. The percent increases in the example scenario presented in table 3-1 suggest that the visitors to the Sunken Forest/Sailors Haven tract could experience only a relatively small increase in vehicle traffic (during periods when travel is permitted). The percentages for the western communities could decrease slightly once access to the eastern communities is permitted again through the east gate.

Seasonally, impacts to visitor use and experience are expected to be as follows:

- **Summer:** Impacts would remain similar to current conditions during the peak visitor period because driving by residents, construction/businesses, and municipal employees would remain prohibited. The total number of trips and the seasonal driving pattern by the other permit categories are expected to remain generally similar to current conditions because the need for services and authorized driving times would remain similar to current conditions.
- **Offseason (Columbus/Indigenous Peoples' Day through April):** If the towns and villages did not regulate further, there could be an increase in the total number of trips with the higher permit caps for year-round residents and construction/businesses. Impacts to visitor use and experience would be limited because this is the season with the lowest number of visitors.
- **Shoulder seasons (May and June; September and October):** Driving by residents, municipal employees, public utilities, and essential services would be permitted on all days of the week before Memorial Day. From Memorial Day until the last day of Suffolk County public schools (or the last Friday in June, whichever comes first, and from Labor Day until Columbus/Indigenous Peoples' Day, additional restrictions would apply (see table 2-1).

Public utilities, essential services, and municipal employees may maintain a roughly similar driving pattern and a similar total number of trips as under current condition because (1) their staff may prefer driving during weekdays to mirror their work week (unless the need for services is urgent) and (2) the need for their services is expected to remain similar. For residents, it is expected that there could be additional trips because they can drive on weekdays and weekend nights, and there would be more year-round resident permits available. For the construction/business category, there would be a decrease in driving in May by an average nine days (varies because Mother's Day occurs on different dates from year to year) because driving under alternative B would end on the first Friday in May rather than on the Friday of the week before Memorial Day (alternative A). The experience for some visitors could be impacted from seeing additional vehicles during additional days of the week in the spring shoulder season, but access by visitors and their ability to experience the Seashore would not be impacted.

Overall, under alternative B, an increase in ORV trips could cause additional adverse impacts to visitor experience in the shoulder seasons and offseason compared to current conditions (alternative A), both along the beach and on NPS-managed sections of Burma Road. However, there would generally be no new impact to visitor experience in the summer because driving would remain limited. During the non-summer seasons, visitors could experience more ORV driving along western communities and a comparatively small increase in driving along eastern communities and NPS lands east of Point O'Woods. Impacts to visitors are expected to be mitigated by the current visitor use patterns, seasonal driving restrictions, and closures for resource protection.

Safety

Potential impacts to safety would also be a function of the change in the number of trips, both geographically and seasonally. Overall, under alternative B, an increase in ORV trips could increase risks to safety along the beach and on NPS-managed sections of Burma Road if drivers did not follow their permit conditions. If concerns about safety in the communities were to arise, the towns and the villages also have the ability to regulate. An increase in driving could be greater along western communities and comparatively small along eastern communities and NPS lands east of Point O'Woods. However, safety concerns from any additional trips under alternative B are expected to be negligible because of the current low number of reported incidences, more driver education, and the ability of towns and villages to impose driving restrictions to address safety concerns within their jurisdictions.

Cumulative Impacts

Overall, the impacts of other past, present, and foreseeable future actions would be the same as those described in the "Current and Expected Future Conditions" section above. Visitors will continue to encounter vehicles on Fire Island and see ruts on the beach from tire tracks, but they may also understand the need for some driving to access and maintain the communities. Adverse impacts to visitor experience are limited by seasonal driving windows and existing driving restrictions. The intermittent renourishment by the FIMP project will require temporary closures during construction, but provides for a wider beach for recreation within Seashore boundaries. Projections of sea-level rise and the increased frequency of high-intensity storms may increase beach erosion, locally reducing the width of the beach for ORV driving and beachgoers. It may also impact NPS infrastructure used by visitors, resulting in potentially more frequent closures of the beach or NPS facilities.

As described above, alternative B could contribute a slightly greater adverse increment to the cumulative impacts on visitor experience; however, they would be concentrated to times outside of the high-visitation summer season. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, and to current conditions and trends (in particular the FIMP project and future sea-level rise), the overall cumulative impact on visitor use and experience could be slightly higher in non-summer driving seasons.

For safety, under alternative B, there could be additional concerns along the beach and on NPS-managed sections of Burma Road if an increased number of drivers did not follow their permit conditions. Also, the intermittent renourishment by the FIMP project would locally close the beach to driving, which could shift traffic onto Burma Road within the communities locally during the construction period (except for Cherry Grove and Water Island that do not have an interior road). If concerns about safety in the communities were to arise, the towns and the villages also have the ability to regulate. On the beach, the risk to safety is limited because nourishment typically occurs outside of the visitor peak season. In addition, the FIMP project could provide a safer environment because a wider beach makes it easier to avoid vehicles.

As described above, alternative B could contribute a slightly greater adverse increment to the cumulative impacts on safety if drivers did not follow their permit conditions, or if there were an increase in traffic in the communities and the towns and villages did not regulate further. However, the additional driving that

would occur is outside of the busy season, and permittees will receive additional driver education. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, and to current conditions and trends (in particular the FIMP project and future sea-level rise), the overall cumulative impact on safety could be slightly higher, but expected to remain negligible with a similarly low number of safety incidents to what is described above for the Current and Expected Future Conditions.

ALTERNATIVE C – ALTERNATIVE ACTION

As with alternative B, the effects of ORV driving on visitor use, experience, and safety would depend on the number of permits that were issued for year-round residents and construction/business vehicles. This number could be at least as much as for alternative B, but may be higher if the towns and villages do not regulate further. In addition, other limitations for this number would be beach closures for resource protection and for health and safety concerns. As with alternative B, effects would vary geographically and seasonally.

Visitor Use and Experience

Geographically, an increase in trips (and thus effects on visitor use and experience) would differ between community groups. The example scenarios presented in table 3-1 illustrate that the number of trips would increase with more permits issued, but as with alternative B, increases in trips could be greater along western communities than along eastern communities and NPS-managed lands east of Point O'Woods (including along the Sunken Forest/Sailors Haven tract). The number of trips along western communities could decrease slightly once access to the eastern communities is permitted again through the east gate.

Seasonally, impacts are expected to be as follows:

- **Summer:** Impacts to visitor use and experience would generally remain similar to current conditions; visitors would generally not be impacted.
- **Offseason (Columbus/Indigenous Peoples' Day through April):** There could be an increase in the total number of trips as a function of the number of eventual additional permits for year-round residents and construction/business vehicles. If the removal of permit caps resulted in a substantial number of new year-round residents moving to the Seashore, it could also incrementally increase the number of essential services trips. The additional vehicles could impact experience of some offseason visitors, but access by visitors and their ability to experience the Seashore would not be impacted, and the number of visitors during this season is low.
- **Shoulder seasons (May and June; September and October):** Travel would be permitted only on weekdays for residents, municipal employees, public utilities, and essential services. However, the number of weekday trips by residents could increase along with the greater number of permits issued. For the construction/business category, there would be a decrease of on average six days in the number of available driving days in May (compared to current conditions). As for the offseason, the experience for some visitors during the shoulder seasons could be impacted from seeing additional vehicles during weekdays, but access by visitors and their ability to experience the Seashore would not be impacted.

Overall, under alternative C, there could be an increase in ORV trips on the beach and NPS-managed sections of Burma Road, impacting visitor use and experience in the offseason and shoulder seasons compared to current conditions. However, there would generally be no impact to visitor use and experience in the summer because driving would remain limited. The impact during the non-summer seasons could be larger along western communities (unless the towns and villages imposed driving restrictions) and smaller along eastern communities and NPS lands east of Point O'Woods. The magnitude of the impacts would be a function of the increase in the number of permits issued to year-

round residents and construction/business vehicles and the number of trips taken, which would depend in part on restrictions and qualification requirements managed by the NPS and towns and villages (as well as closures for resource protection).

Safety

As with alternative B, potential impacts to safety would also be largely a function of the change in the number of trips, both geographically and seasonally. Overall, under alternative C, an increase in ORV trips could add risks to safety, both along the beach and on Burma Road. Any impacts may be larger along western communities and comparatively small along eastern communities and NPS lands east of Point O' Woods. However, the impacts to safety from any additional trips under alternative C is expected to be small to minimal because of the current low number of reported incidences, more driver education, and the ability by towns and villages to impose driving restrictions to address any safety concerns within their jurisdictions.

Cumulative Impacts

Overall, the impacts of other past, present, and foreseeable future actions would be the same as those described in the "Current and Expected Future Conditions" section above. Visitors will continue to encounter vehicles on Fire Island and see ruts on the beach from tire tracks, but they may also understand the need for some driving to access and maintain the communities. Adverse impacts to visitor experience are limited by seasonal driving windows and existing driving restrictions. The intermittent renourishment by the FIMP project will require temporary closures during construction, but it provides for a wider beach for recreation within Seashore boundaries. Projections of sea-level rise and the increased frequency of high-intensity storms may increase beach erosion, locally reducing the width of the beach for ORV driving and beachgoers. It may also impact NPS infrastructure used by visitors, resulting in potentially more frequent closures of the beach or NPS facilities.

As described above, alternative C could contribute a greater adverse increment to the cumulative impacts on visitor experience than under alternative B if the number of issued permits (and consequently the number of ORV trips) was greater under alternative C. However, impacts would also be concentrated to times outside of the high-visitation summer season. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, and to current conditions and trends (in particular the FIMP project and future sea-level rise), the overall cumulative impact on visitor use and experience could be in non-summer driving seasons.

For safety, under alternative C, there could be additional concerns along the beach and on NPS-managed sections of Burma Road if an increased number of drivers did not follow their permit conditions. Also, the intermittent renourishment by the FIMP project would locally close the beach to driving, which could shift traffic onto Burma Road within the communities locally during the construction period (except for Cherry Grove and Water Island that do not have an interior road). If concerns about safety in the communities were to arise, the towns and the villages also have the ability to regulate. On the beach, the risk to safety is limited because nourishment typically occurs outside of the visitor peak season. In addition, the FIMP project could provide a safer environment because a wider beach makes it easier to avoid vehicles.

As described above, alternative C could contribute a greater adverse increment to the cumulative impacts on safety if drivers did not follow their permit conditions, or if there were an increase in traffic in the communities and the towns and villages did not regulate further. However, the additional driving that would occur is outside of the busy season, and permittees will receive additional driver education. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, and to current conditions and trends (in particular the FIMP project and future sea-level rise), the overall cumulative impact on safety could be higher, but expected to remain negligible with a similarly low number of safety incidents to what is described above for the Current and Expected Future Conditions.

3.7 NATIONAL PARK SERVICE—MANAGED SECTIONS OF BURMA ROAD AND DUNE CUTS

3.7.1 Current and Expected Future Conditions

Burma Road is a historic sand lane that can be followed intermittently from east to west for much of the Seashore. With the development of the communities over the years, this route was either maintained or purposely obstructed. Burma Road can be followed through the western section of the Seashore from Robert Moses State Park to Point O'Woods. Burma Road continues intermittently through parcels of federal and community land until Watch Hill, where the Fire Island Wilderness area prohibits interior ORV use and where a remnant trail can only be followed on foot.

Burma Road on NPS-managed lands consists of a two-lane, graded, hard-packed road within the Lighthouse tract; one- or two-lane sandy sections in the four interstitial land tracts within the western communities; and a single-lane sandy route in the other tracts east of Point O'Woods. This interior road is an administrative resource for the NPS and is vital for managing the park at all times, specifically when the beach is closed for natural resource protection. NPS management activities include law enforcement, monitoring, maintenance, and part-time staff access to facilities in the summer.

The current regulations restrict driving on Burma Road on NPS lands, allowing only "limited travel by public utility and law enforcement vehicles and firefighting apparatus" and at "posted dune crossings from the beach to the 'Burma Road' or to pathways within the island communities" (36 CFR 7.20(2)). The deed for the Sunken Forest Preserve states that the road is for administrative use only (not to be built on or used by the public). A summary of ORV use of the interior road on the various NPS tracts is provided in section 1.4.1.

The predominant road maintenance activities by the NPS consist of the following:

- **Lighthouse tract:** Most of the road maintenance that occurs on Burma Road (>97%) takes place on the Lighthouse tract; the road experiences rutting, particularly after rainstorms.
- **Interstitial land tracts:** NPS occasionally repairs potholes and other road damage in these tracts.
- **Sunken Forest/Sailors Haven tract:** Occasional maintenance in the Sunken Forest/Sailors Haven tract consists of pumping water out of deep puddles in low spots on the road and adding sand to raise their elevation. Vehicles trying to pass one another or driving around puddles widen the road and increase the footprint of the disturbed area.
- **Blue Point Beach tract:** Roadbed maintenance is typically not needed within the Blue Point Beach tract between Water Island and Davis Park, although the road may require some tree pruning. There are a few low spots in the road, but overall, the road is at a higher elevation than in the Sunken Forest/Sailors Haven tract, limiting the formation of puddles.
- **Talisman/Barrett Beach tract:** The road in the Talisman/Barrett Beach tract is not maintained by the NPS because it is only used by public utility vehicles (i.e., PSEG, SCWA, Verizon) under NPS-approved circumstances.
- **Dune cuts:** Dune cuts are typically only maintained following storms if wave erosion created a scarp of several feet, making the cut temporarily unusable for ORVs. Also, some of the cuts have been engineered with riprap and geofabric by the USACE in recent years. Shifting sand in those cuts might expose the materials, and they become obstacles to ORV driving, requiring maintenance or removal to avoid vehicles from driving around them and widening the cuts. NPS-managed dune cuts are listed in table D-2 in appendix D.

ADDITIONAL TRENDS AND PLANNED ACTIONS

Sea-level rise may increase the frequency of erosion events on the beach, potentially increasing maintenance needs for dune cuts and the use of NPS-managed sections of Burma Road by permitted categories, which could result in more road maintenance. Sea-level rise is also expected to raise the groundwater table and to gradually increase the frequency of puddle formation in low spots on Burma Road, incrementally increasing maintenance needs. While driving around and through puddles may increase local erosion or rutting, the rising groundwater table will likely have a greater impact on Burma Road than ORV use. Eventually, the effects from the rising groundwater table may become too difficult to mitigate and the NPS may decide to eliminate or further restrict ORV use in these areas.

Maintenance of Burma Road may also include maintain mitigation measures to protect vegetation (as discussed in section 3.3 “Dune Vegetation and Plant Communities”), such as installing split-rail fencing. The need for, and maintenance of, such mitigation may increase as puddles if puddles in Burma Road become larger or persist longer due to the rising groundwater table and changes in storm frequency and intensity.

3.7.2 Environmental Consequences

ALTERNATIVE A – NO ACTION

Under alternative A, patterns and frequency of ORV driving on the beach and on Burma Road would continue. As a result, impacts to NPS-managed sections of Burma Road and dune cuts would be the same as those described above under “Current and Expected Future Conditions.”

Cumulative Impacts

Under alternative A, the patterns and frequency of ORV driving would continue on the beach and on NPS-managed sections of Burma Road. There would be no new direct impacts to NPS-managed sections of Burma Road and dune cuts; therefore, conditions would remain the same as or similar to the conditions described in section 3.7.1 above. Past, present, and reasonably foreseeable actions and their impacts would be the same as those described in section 3.7.1 above. In turn, because there are no direct or indirect effects of the no-action alternative, there would be no cumulative effects associated with the no-action alternative.

ALTERNATIVE B – PROPOSED ACTION

A potential increase in the total number of ORV trips under alternative B could increase the need to perform maintenance on the NPS-managed sections of Burma Road and the dune cuts. Overall, under alternative B, Burma Road through the Lighthouse tract would continue to experience rutting, particularly after rainstorms. Other sections of the road may continue to widen if vehicles try to pass one another or drive around puddles but this behavior can be addressed in new permit conditions and/or with symbolic fencing in sensitive areas. For the section of Burma Road in the Sunken Forest/Sailors Haven tract, the example scenario presented in table 3-1 suggests that there would be a relatively small increase in vehicle traffic (during periods when travel is permitted). Furthermore, once the NPS determines that the breach area is stable, access through the east gate will likely be allowed for those needing to access the eastern communities, which would result in less driving on Burma Road through this tract.

Overall, the increase in the number of permits, the updated definition of a trip, the elimination of the ice-over permits, the phase-out of part-time residential permits and the changes to the driving season could increase maintenance requirements of Burma Road in the Lighthouse tract and in dune cuts along the western communities but are not expected to cause noticeable changes to the NPS-managed sections of Burma Road and the dune cuts east of Point O’Woods, compared to the amount of driving that currently occurs and compared to the impacts of storms and the rising groundwater table. If unexpected impacts to the NPS-managed sections of Burma Road were to occur, the superintendent could restrict driving further.

Cumulative Impacts

Overall, the impacts of other past, present, and foreseeable planned actions are described above in the “Current and Expected Future Conditions” and “Additional Trends and Planning Actions” sections. Sections of Burma Road and dune cuts would continue to experience rutting and other sections may experience widening as vehicles try to pass one another or avoid puddles. Additionally, sea-level rise are expected to increase the need for maintenance of parts of Burma Road.

Along the western end of the Seashore, an increase in trips under alternative B could increase maintenance needs for Burma Road and dune cuts along the west end of the Seashore but is not expected to incrementally contribute noticeable changes or adverse impacts to the NPS sections of Burma Road or the dune cuts east of Point O’Woods, compared to the amount of driving that currently occurs and compared to the impacts of storms and the rising groundwater table. Driving would continue to occur in areas where driving is already permitted, and there would be less driving on NPS-managed sections of Burma Road in the Sunken Forest/Sailors Haven tract when permittees are allowed to access the eastern communities through the east gate. Additionally, the NPS would continue to enforce driving behavior that causes the most impacts. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, the overall cumulative impacts on NPS-managed sections of Burma Road and dune cuts are slightly higher than those impacts described above under “Current and Expected Future Conditions” but can be mitigated by additional maintenance.

ALTERNATIVE C – ALTERNATIVE ACTION

As with alternative B, the effects of ORV driving on NPS-managed sections of Burma Road and dune cuts would depend on the number of permits that were issued for year-round residents and construction/businesses. This number could be at least as much as for alternative B, but may be higher if the towns and villages did not regulate further. Overall, as with alternative B, the increase in the number of permits, the updated definition of a trip, the elimination of the ice-over permits, the phase-out of part-time residential permits and the changes to the driving season could increase maintenance requirements of Burma Road in the Lighthouse tract and in dune cuts along the western communities but are not expected to cause noticeable changes to the NPS-managed sections of Burma Road and the dune cuts east of Point O’Woods, compared to the amount of driving that currently occurs and compared to the impacts of storms and the rising groundwater table. If unexpected impacts to the NPS-managed sections of Burma Road were to occur, the superintendent could restrict driving further.

Cumulative Impacts

As with alternative B, alternative C could increase maintenance needs for Burma Road and dune cuts along the west end of the Seashore; however, is not expected to incrementally contribute noticeable changes or adverse impacts to the NPS sections of Burma Road or the dune cuts east of Point O’Woods (compared to current conditions) because the proposed action would not represent a meaningful increase in the number of trips in this area. Driving would continue to occur in areas where driving is already permitted, and there would be less driving on NPS-managed sections of Burma Road in the Sunken Forest/Sailors Haven tract when permittees are allowed to access the eastern communities through the east gate. When the impacts of the proposed action are added to the impacts of present and reasonably foreseeable actions, the overall cumulative impacts on NPS-managed sections of Burma Road are slightly higher than those impacts described above under “Current and Expected Future Conditions” but can be mitigated by additional maintenance.

3.8 SOCIOECONOMIC RESOURCES

3.8.1 Current and Expected Future Conditions

Impacts to socioeconomic resources considered in this analysis include effects on quality of life of Fire Island residents, the costs of living and doing business on Fire Island, and the potential for regional economic impacts. The NPS does not independently manage activities on Fire Island, and regulatory oversight is distributed across multiple jurisdictions within the Seashore boundary, including the two incorporated villages (Saltaire and Ocean Beach), two Long Island–based municipalities (the towns of Islip and Brookhaven), Suffolk County, and various New York State agencies. The towns of Islip and Brookhaven govern the Fire Island communities and issue driving permits separate from the NPS permits. Drivers must have both a permit (or other appropriate authorization) from the NPS and the respective town (or both towns if applicable for applicants) to drive on Fire Island. Under the current process, Islip verifies qualifications and provides a permit before the NPS issues a permit. Brookhaven waits until after the NPS verifies qualifications to issue a permit.

RESIDENTS OF FIRE ISLAND COMMUNITIES

This section characterizes the residents of the 17 communities on Fire Island. As driving through the Seashore is one means of accessing these communities, Fire Island residents are indirectly affected by the management of driving at the Seashore. Detailed demographic information is not available at the communities-level for the Fire Island communities. This assessment accordingly summarizes available information at the census block group level. As shown in table 3-4, there are three census block groups that collectively capture all 17 Fire Island communities. Though the block groups extend beyond the westernmost and easternmost communities, limited development occurs in the areas outside of the communities. Therefore, the block group level demographic profiles reflect the demography of the 17 communities and the two enclaves (Oakleyville and Blue Point Beach) well.

TABLE 3-4. SUMMARY OF CENSUS DATA USED IN THIS ANALYSIS

No.	2020 Census Block Group Number (GEOID)	Included Communities and Enclaves on Fire Island (west to east)
1	15000US361031470041	Kismet, Saltaire, Fair Harbor, Dunewood, Lonelyville, Atlantique, Robbins Rest, Fire Island Summer Club, Corneille Estates, Ocean Beach, Seaview (partial)
2	15000US361031595101	Seaview (partial), Ocean Bay Park, Point O'Woods, Oakleyville, Cherry Grove, Fire Island Pines
3	15000US361031595102	Water Island, Blue Point Beach, Davis Park

The American Community Survey (ACS) represents the best available information describing the number of residents on Fire Island. However, the US Census defines an individual as a “resident” if they have been or will be staying at an address for more than two months of the year. This definition differs from the definition of “year-round resident,” which the towns on Fire Island and the NPS use to determine eligibility for driving permits. According to the ACS 5-year estimate for the period from 2017 to 2021, 414 residents lived in the three census block groups (table 3-5). This estimate closely aligns with a count of year-round residents conducted in April 2023 for NPS, which totaled 433 across 222 households (NPS 2023a), suggesting that the two entities capture roughly the same population, despite using different definitions of residency. In the ACS 5-year estimate for the period 2012 to 2016, the census identified 312 residents in the same three block groups, indicating a 33% increase in resident population in the five years between 2016 and 2021. This upward trend may demonstrate the movement toward more homeowners spending more time on the island in recent years. Across the three block groups, most residents are found in Block Group 1 and Block Group 2. These residents represent a small fraction of the over 15,000 people

that spend time in Fire Island communities during the summer as seasonal residents (Newsday 2021; Volpe 2011).

The three block groups were similar across most of the demographic metrics reported in table 3-5. Residents of all three block groups were predominantly white and report poverty rates near or below the New York state poverty rate. Block Group 3 reported a poverty rate that was slightly above the state average. Applying the share to the total resident population for the block group suggests that four of 27 total residents reported incomes below the poverty line. The block groups reported median household incomes near or above the New York state median income. The median age of residents on Fire Island was substantially above the New York state median age.

Because the census is unlikely to capture most part-time residents of Fire Island, including those whose primary residences are on the mainland, this assessment also summarizes the findings of the NPS's Visitor Services Project 2008 survey of Fire Island residents and homeowners (Papadogiannaki 2009). The survey was delivered to 658 households and had a response rate of 39%, for a total of 258 respondents. About 17% of respondents were full-time residents (the term used in the survey to mean residing on the island year-round); the remaining respondents were seasonal residents (81%) or live on Fire Island several days a week all year round (2%). The survey found that 99% of respondents were white, and 99% were not Hispanic or Latino. The median age was between 46 and 50. The survey did not collect information on income level. These findings generally align with those reported in the census in more recent years (2017 to 2021).

TABLE 3-5. DEMOGRAPHIC INFORMATION FOR FIRE ISLAND BY CENSUS BLOCK GROUP, VARIOUS YEARS

Census Block Group	Total Residents (ACS 2012-2016)	Total Residents (ACS 2017-2021)	ACS 2017-2021							
			Share Black	Share White	Share Asian	Share 2+ Races	Share Hispanic or Latino	Median Age	Median Household Income	Share in Poverty
1	142	140	7%	92%	0%	0%	0%	59.6	\$77,886	2%
2	153	247	21%	67%	0%	12%	34%	47.9	\$115,948	6%
3	17	27	0%	100%	0%	0%	0%	56.3	\$275,704	15%
Total/Average*	312	414	15%	78%	0%	7%	20%	52.4	\$102,915	6%
New York State**	N/A	N/A	18%	69%	10%	3%	20%	39	\$83,834	14%

Sources: US Census Bureau 2024a, 2024b.

Notes: All monetary values are expressed in 2023 dollars.

* The Total/Average row sums across the population counts for the three census block groups on Fire Island and presents averages across all other metrics weighted by population.

** The New York State row presents averages for all metrics at the state level.

According to the census, there are 4,290 total housing units in three block groups that comprise the 17 Fire Island communities (table 3-6). This approximation closely aligns with NPS's estimated 4,200 structures on the island (see appendix D). An estimated 129 of these housing units are considered "occupied" (approximately 3%), defined by the census as units with at least one resident at the time of the survey who considers the unit to be their primary residence. All other units (97%) are considered vacant by the census. The low occupancy rates across the three block groups suggest that most residential properties on Fire Island are second homes or vacation rentals. The block groups report median home values that are near or above the New York state median home value (US Census Bureau 2024b).

Consistent with the median household income gap between the two block groups, Block Group 3 has a higher median home value than Block Group 1.

The NPS's Visitor Services Project 2008 survey of residents and homeowners asked respondents to indicate what forms of transportation they used to access the Seashore during the preceding 12-month period, recognizing that individuals may take different modes of transport at different times of year and therefore may identify multiple types. About 93% of respondents indicated they had used the ferry, 31% had used a vehicle, 24% had used a private boat, and 10% had used a water taxi (Papadogiannaki 2009). When considering which final mode of transportation to reach the Seashore was used most frequently, 60% of respondents said they used a public ferry 76% to 100% of the time while 8% of respondents said they used a vehicle 76% to 100% of the time. Other respondents relied on a mix of transport modes depending on the trip. Once on the Seashore, most respondents (66%) rely on water taxis to move around the island. Absent more recently collected data, these percentages represent current Fire Island residents and homeowners.

TABLE 3-6. HOUSING INFORMATION FOR FIRE ISLAND BY CENSUS BLOCK GROUP, 2017–2021

Census Block Group	Total Housing Units	Owner-Occupied	Renter-Occupied	Vacant Units	Lower Quartile Home Value*	Median Home Value***	Upper Quartile Home Value***
1	2,394	2%	1%	97%	\$30,217	\$377,768 ****	\$725,319
2	1,548	3%	1%	96%	\$382,565	\$471,231	\$625,625
3	348	3%	0%	97%	\$574,344	\$781,121	\$1,068,403
Total/Average*	4,290	3%	1%	97%	\$222,082	\$449,854	\$711,699
New York State**	N/A	54%	46%	11%	\$177,111	\$375,617	\$684,404

Sources: US Census Bureau 2024a.

Notes: All monetary values are expressed in 2023 dollars.

* The Total/Average row sums across the housing units, presents occupancy rates for the entire area, and provides averages across home values weighted by the number of occupied housing units for the three census block groups on Fire Island.

** The New York State row presents averages for all metrics at the state level.

*** Home values are limited to owner-occupied homes.

**** The census does not report a median home value for Block Group 1. The median presented here is the average of the lower and upper quartile.

ORV management at the Seashore can affect how residents access their communities. Residents have differing opinions and preferences for how driving happens on the Seashore lands and in the communities. In 2023, 145 year-round residents and 36 part-time residents had driving permits; 37 year-round residents were on the waiting list for a residential driving permit, 35 of whom resided in the western communities. The size of the waiting list may reflect a lower-bound of unmet demand for year-round resident driving permits because some residents may not apply for a permit because of awareness of the limitations imposed by the current cap. At the same time, not all residents on the waiting list may meet the requirements for a driving permit.

While some residents seek more vehicle accessibility, other residents prefer the current culture of limited driving activity on the Seashore in the non-summer months. While data do not exist identifying how many residents fall into this category, the NPS's Visitor Services Project 2008 survey of residents on Fire Island provides some insight (Papadogiannaki 2009). When asked to rate the importance of specific

qualities and resources of the Seashore, 80 of 249 respondents (32%) rated the car-free environment as “very important” or “extremely important.”

Residents may also have differing preferences about the rate of renovation and construction on the island. For residents (and all other property owners) that seek to update their homes, they may find that the current cap on construction/business driving permits slows the pace of planned construction projects or other business endeavors or increases costs. For residents (and other property owners) that prefer less development on the Seashore, the current cap on construction/business driving permits may help to preserve the qualities of the island that they appreciate.

BUSINESSES SERVING FIRE ISLAND COMMUNITIES AND VISITORS

Businesses on and serving Fire Island residents and visitors also are affected by ORV management at the Seashore. Census data describing business activity at the census block group level are unavailable. This assessment relied on information in the online Fire Island Fact Finder Business Directory (2024), which includes both businesses on the island and businesses serving Fire Island communities. Some of the businesses listed in the directory may be eligible for a construction/business driving permit, although some businesses that are on the directory would not qualify for permits and some businesses that may qualify are not listed in the directory.

As of March 2024, the directory contained 371 businesses. Using the business category classification from the online directory, table 3-7 aggregates the businesses by Bureau of Labor Statistics industry classification system. The businesses most likely to have a demand for construction/business driving permits include the 86 businesses accounted for in the “construction,” “transportation and warehousing,” and “other services” industries. Because the business directory is not necessarily comprehensive, it is not possible to determine the total number of businesses in these categories. Further, many Fire Island homeowners maintain their properties as rentals for visitors, representing a business income stream not captured in table 3-7. However, because seasonal visitors are ineligible for driving permits, and because driving is precluded during the summer when most visitors are present, ORV management has a very limited impact on visitor access to Fire Island rental properties and owners of rental properties.

Businesses with existing construction/business driving permits for the Seashore have a competitive advantage because of their current access to and ability to move between the communities. Currently, that applies to the 80 construction/business owners with a driving permit. Thus, the current permitting scheme limits competition and access among other businesses that can only access and/or move throughout the Seashore by water due to the permit cap. In 2023, 50 businesses were on the waiting list for construction/business driving permits; table 3-7 includes these businesses using the same industry sectors classification. As shown, most businesses on the waiting list fall into the “construction” and “other services” categories. Under current conditions, these waitlisted companies may work on the Seashore regardless of their permit status, and instead of driving, they may use ferries to access the Seashore and have limited mobility while on the Seashore.

Under current conditions, most construction/business permittees operating in the western communities use qualifying businesses with existing essential services driving permits to remove their construction debris during the permitted driving season however, in some cases, this occurs without the NPS’s authorization. Otherwise, construction debris is removed via barge. Construction/business permittees operating in the eastern communities rely on water transport for more movement of people, materials, and debris removal and are therefore less affected by the management of driving through the Seashore. As evidence, in 2021, only 15% of construction/business permittees listed business in the eastern communities on their application. Under the existing regulations, the intent and practice is to remove all construction debris by barge. However, the emergency conditions and large amounts of debris created by Superstorm Sandy presented an urgent need to address construction debris, requiring the superintendent to use discretion to permit it to be removed in a manner similar to municipal waste (i.e., as an essential

service). It took several years for residents to repair the damage to structures on the island, and construction debris transportation did not return to its formerly permitted category. Treating it as an essential service continues today, inconsistent with the regulations, with and without the NPS's permission.

TABLE 3-7. COUNTS OF BUSINESSES OPERATING ON FIRE ISLAND AND ON THE CONSTRUCTION/BUSINESS DRIVING PERMIT WAITING LIST, 2023 AND 2024

Industry Sector (US Bureau of Labor Statistics)	Count in Directory (2024)*	Count on Permit Waiting List (2023)
Accommodation and Food Services	72	--
Administrative and Support, and Waste Management and Remediation Services	2	3
Agriculture, Forestry, Fishing, and Hunting	--	1
Arts, Entertainment, and Recreation	27	--
Construction	35	18
Finance and Insurance	7	--
Health Care and Social Assistance	6	1
Information	1	--
Other Services (e.g., Electricians, Mechanics, Repair Services)	36	7
Professional, Scientific, and Technical Services	14	2
Public Administration	6	--
Real Estate and Rental and Leasing	45	1
Retail Trade	78	1
Transportation and Warehousing	15	1
Utilities	2	2
Uncategorized	25	13
Total	371	50

*Source: Fire Island Fact Finder Business Directory 2024

Notes: Industry sectors include relevant sectors of US Bureau of Labor Statistics (2024). Businesses were assigned to industry sectors based on professional judgement.

Most transportation of people and freight to and from the Seashore is facilitated by water, and ferries are a primary means of accessing the island. Currently, there are five entities that offer ferry services to and from specific destinations on the Seashore: Fire Island Ferries, Davis Park Ferry Company, Sayville Ferry Service, Bay Point Navigation, and the village of Bellport. Table 3-8 provides available information about the destinations these entities serve as well as their annual ridership using the most recently available public information. Under current conditions, passenger ferry companies transport construction crews for contractors without driving permits as well as for construction companies with driving permits and crew sizes that exceed the limit of their vehicles. In the non-summer months, when Fire Island visitation is at its lowest, much of the business on passenger ferries is likely construction related.

The ferry services and other local businesses described above also depend on revenue from visitors at the Seashore and in Fire Island communities. In 2022, 394,000 Seashore visitors spent an estimated \$19.6 million during their stays, including \$5.5 million on lodging, \$4.5 million on restaurants, \$3.5 million on

gas, \$2.8 million on groceries, and \$1.4 million on retail goods (NPS 2022e). This spending translates into roughly \$50 per Seashore visitor. The current driving permit management scheme is unlikely to affect most visitors at the Seashore because most visitation occurs in the summer when driving on the beach is not allowed for residents and construction/business permittees, and several sites of interest at the Seashore are accessible by vehicle year-round (i.e., Fire Island Lighthouse, Wilderness Visitor Center, and the William Floyd Estate). Therefore, this EA does not analyze impacts to Seashore visitor spending.

TABLE 3-8. FERRY SERVICES PROVIDING TRANSIT TO AND FROM FIRE ISLAND

Ferry Service	Destinations	Most Recent Year with Data	Number of Passengers in Most Recent Year with Data
Fire Island Ferries, Inc.	Kismet, Saltaire, Fair Harbor, Atlantique, Dunewood, Ocean Beach, Seaview, and Ocean Bay Park	2019	2,026,000
Sayville Ferry Service, Inc.	Cherry Grove, Fire Island Pines, Sailors Haven, and Water Island	2006	469,000
Davis Park Ferry Company	Davis Park and Watch Hill	2015	169,290
Bay Point Navigation Corp.	Point O'Woods	2015	40,000
Village of Bellport	Ho Hum Beach	None*	None

Sources: BTS 2019, 2022; USACE 2020b.

* Ridership information is not publicly available for the ferry operated by the village of Bellport.

ADDITIONAL TRENDS AND PLANNED ACTIONS

Based on trends evident in census data as well as conversations with NPS staff, it may be becoming more common for residents to spend more time in their Fire Island homes given the lengthening shoulder season (due to climate change related warming) and the ease and acceptance of working from home following the Covid-19 pandemic. This has resulted in an increased demand for year-round residential driving permits as well as a higher demand for construction on homes, which in turn results in a higher demand for construction/business driving permits.

Beach erosion caused by sea-level rise and the increasing frequency of storms renders accessing Fire Island communities via beach driving unreliable. Intermittent beach nourishment through the FIMP project has the potential to reduce the frequency of beach closures. However, nourishment activities may also adversely affect these groups because of noise and temporary beach closures. Replacing the Smith Point Bridge benefits future residents and businesses on Fire Island by modernizing the current means of accessing the east side of the island by vehicle. The bridge would also include a pedestrian walkway that provides other beneficial amenities.

3.8.2 Environmental Consequences

ALTERNATIVE A – NO ACTION

Under alternative A, patterns and frequency of ORV driving on the beach and on Burma Road would continue. As a result, indirect impacts to socioeconomic resources would be the same as those described in section 3.8.1 above (“Current and Expected Future Conditions”).

Cumulative Impacts

Under alternative A, the patterns and frequency of ORV driving would continue on the beach and on portions of Burma Road. There would be no new direct or indirect impacts to socioeconomic resources; therefore, conditions would remain the same as or similar to the conditions described in section 3.8.1 above. Past, present, and reasonably foreseeable actions and their impacts would be the same as those described in section 3.8.1 above. In turn, because there are no new direct or indirect effects of the no-action alternative, there would be no cumulative effects associated with the no-action alternative.

ALTERNATIVE B – PROPOSED ACTION

Alternative B would provide varying degrees of indirect impacts within the communities, depending in part on how the towns and villages choose to regulate driving.

Year-round Fire Island residents without driving permits would benefit if they obtained one of the new 55 permits in this category offered under alternative B. The residents most likely to benefit from the change are the qualified residents currently on the waiting list, although the change may encourage others to apply as well. These year-round residents with unmet demand for driving permits may currently receive temporary permits during ice-over conditions, so vehicle access is unlikely to be entirely new. For these residents, access to a driving permit may result in time savings from reduced travel time and overall easier access to residents' homes during non-summer months, increasing overall quality of life. Furthermore, all existing and potential future residential permittees would benefit from increased driving access to the Seashore in the shoulder season as well as a simplified access schedule for this permit category provided in alternative B. For residents that see increased vehicle accessibility as desirable, the increase in year-round resident permits may encourage some residents to spend more time in their Fire Island homes to qualify for the permits. If more residents spent more time on Fire Island, demand for essential services and other services could increase.

Businesses currently on the waiting list for a driving permit would benefit if they obtained one of the additional 65 permits in the construction/business category under alternative B. The businesses most likely to benefit are the qualified applicants currently on the waiting list, although the change in requirements may result in new residential and business construction demand on the Seashore and therefore more businesses applying for driving permits in the future. Not all of these additional permits are anticipated to go to new businesses because of the shift in construction debris removal from the essential services permit category to the construction/business permit category, meaning some of the businesses likely to obtain a new permit operated vehicles on Fire Island previously under a different permit category.

Some residents and local businesses may benefit from the increased number of construction/business driving permits under alternative B if they are able to seek services in a timelier manner and from a greater diversity of qualified businesses. If increasing the number of available permits to this group increases the number of businesses that can offer services on Fire Island or reduce costs to contractors associated with transport to or on the island, then residents and local businesses may also benefit from reduced construction costs if costs are currently elevated because of access restrictions. Further, increased driving permits available to essential service providers may benefit residents and local businesses if demand for propane delivery and municipal waste removal services increases as people spend more time on the island. Similarly, residents benefit from the inclusion of septic pump-outs and the flexibility for essential services needed in the event of an emergency.

While some residents and businesses benefit from increased Fire Island accessibility provided by alternative B, other residents and businesses prefer the vehicle- and development-restricted nature of the Seashore currently and would therefore be adversely affected. As illustrated in the scenarios presented in section 3.2.2, alternative B may increase the number of driving trips up to 22% in the near term and 15% in the long term as part-time resident permits are phased out (see scenario in table 3-1) if the towns and

villages did not regulate the number of permits further. Most of these new trips would occur along western communities as opposed to eastern communities, assuming current driving patterns (see appendix D). Adverse, indirect impacts stemming from driving within the communities could accrue because of a change in culture or aesthetics if the towns and villages did not regulate further. If alternative B results in more homeowners undertaking construction that is compliant with town and village building and zoning regulations, residents with a preference for less change on the Seashore would be adversely affected. However, adverse impacts associated with more development attributable to the alternative could be tempered by enforcement of local zoning standards and building codes, and by the NPS oversight of zoning in Fire Island communities per 36 CFR Part 28. Because driving by residents and construction/business vehicles is only permitted in the non-summer months, these adverse impacts would cease in summer when use of the Seashore, including among seasonal residents, is at its peak.

Current construction/business permittees may be adversely affected by the decreased driving window in May for this permit category relative to current conditions (alternative A), particularly if May is a month of frequent or future planned work; however, they can still bring resources and staff to the island by water. The changed requirements for transporting construction debris off the Seashore could have cost-related adverse effects on construction-related businesses who would have to rely on water-borne transportation for more of the year. In the long term, these adverse impacts are likely to be mitigated by the increased availability and accessibility of barge removal options and the increased number of trips per day afforded to construction/business permittees. Further, companies owning barge or other freight garbage removal options may benefit from increased demand for their services. The change in municipal waste and construction debris removal from the Seashore is unlikely to adversely impact residents because construction/business permittees are likely to update their operations quickly. In the event of a public health crisis or other emergency, the superintendent would continue to have discretion to allow additional construction debris removal permits.

An increase in the number of construction/business permits has the potential to adversely affect companies operating passenger ferries in the non-summer months. As under current conditions, much of the business to the passenger ferries in non-summer months is sustained by construction and other contract businesses. If this customer base is displaced because of driving, then passenger ferry companies would generate less revenue and may reduce the frequency of their services, which would adversely affect the residents and visitors that rely on passenger ferries for their transport. At the same time, these ferry companies may benefit from the more restrictive driving times available to construction/business permittees in the shoulder seasons, potentially increasing ridership in the spring and fall months.

Fire Island residents are unlikely to be measurably affected by the more precise definition of “brief and occasional” absences from their Fire Island homes, in part because the definition adopts the definition currently used by the town of Islip. Under alternative B, during the driving season, year-round residents could only be absent from their Fire Island homes for 60 days per year, for no more than 30 days at any one time. People who no longer meet the definition of year-round resident would have to adapt to how they move around Fire Island or become compliant with the new definition. Changing the definition could result in more qualifying year-round residents accessing permits if some residents gave up their existing permits because they did not meet the more precise definition of year-round resident.

Alternative B may affect property values on Fire Island. Easier access among a limited number of residents and businesses that serve communities has the potential to increase the desirability of living on Fire Island. Increased demand for Fire Island homes has the potential to increase property values because opportunities to meet increased demand with new development is limited. This potential effect is unlikely to be large in magnitude given the relative number of households that may experience an increase in accessibility relative to the total number of homes, including seasonal rentals, on the island. However, more driving on the Seashore has the potential to change the vehicle-restricted character of the communities in a way that makes homeownership less desirable and could decrease property values as a

result, if the towns and villages chose not to impose any needed restrictions. Much of the economics literature focused on the relationship between accessibility and property values is drawn from cities and suburban areas that do not have the unique attributes of Fire Island; therefore, the existing literature is unable to provide perspective on the extent to which property values may be affected, if at all, by alternative B. Property values are influenced by factors other than accessibility, including size and usable space of the home, age and condition of the home, upgrades and updates, zoning regulations, and housing market conditions.

Lastly, because alternative B is unlikely to affect visitation relative to current conditions (see section 3.6.2), local businesses serving these visitors (including owners of rental properties) would likely not be affected. However, some local businesses, including, but not limited to, restaurants and other food establishments, may benefit from increased demand from construction workers and others with new driving permits or increased demand for their services from residents spending more time on the Seashore because of increased year-round resident accessibility.

Cumulative Impacts

As discussed in Section 3.8.1, longer shoulder seasons and greater acceptance of working from home have resulted in an increased demand for year-round residential driving permits and a higher demand for construction on homes, resulting in a higher demand for construction/business driving permits. Beach erosion caused by sea-level rise and the increasing frequency of storms has meant that beach driving can be unreliable, and there may be temporary closures from beach nourishment actions. The planned Smith Point Bridge replacement will benefit residents and businesses by modernizing vehicle access to the east side of the island.

As discussed above, implementing alternative B would provide varying impacts within the communities, depending in part on how the towns and villages choose to regulate driving further. Year-round Fire Island residents and businesses without driving permits would benefit from increased access if they obtained one of the new permits. Some residents and local businesses may benefit from the increased number of construction/business driving permits by obtaining services in a timelier manner, having access to a greater diversity of qualified businesses, and possibly obtaining services at a reduced rate from current conditions, if the cost of doing business decreases from having increased access. The businesses providing water-based transportation services may benefit from increased service demand when construction/business driving is not allowed.

Others who prefer the current driving restrictions may be adversely affected, depending on the actions by towns and villages to regulate driving further. Construction/business permittees may be adversely affected by the decreased driving window in May, and the businesses that do not currently remove construction debris by water throughout the year could be adversely affected as they migrate their operations from removing debris by vehicle to doing so by barge. The ferry companies may experience a decrease in demand for their services from the construction/business customers during the driving season because of the increase in permits.

It is speculative to determine how property values may be affected. Increased access could make living on Fire Island more desirable, increasing property values. However, more driving could make homeownership less desirable, decreasing property values. Overall, property values are influenced by many other factors than just driving and vehicular access.

When the incremental impacts of alternative B are added to the impacts of past, present, and reasonably foreseeable future actions, socioeconomic conditions would improve to a small degree from increased access to the residences and a possible increase in access to business services. However, those who prefer fewer vehicles would view the impacts of alternative B as adverse.

ALTERNATIVE C – ALTERNATIVE ACTION

As with alternative B, alternative C would also provide varying degrees of indirect impacts to Fire Island residents and businesses. These impacts would be immediate and would persist as long as the alternative is implemented.

One of the biggest differences with alternative C compared to alternatives A and B is the removal of driving permit caps for the year-round residents and construction/businesses categories. This means that, if the unmet demand for driving permits exceeds the cap that would accompany alternative B, then alternative C would benefit more year-round residents and businesses by providing increased accessibility to Fire Island communities. As with alternative B, increased accessibility for residents may result in time savings from reduced travel time and overall easier access during non-summer months, increasing quality of life for a subset of year-round residents and business owners. An increase in the number of permits available to construction/businesses may further ease operations or provide business opportunities for entities that wish to operate on the Seashore with a vehicle. More construction/business permits would benefit some residents and local businesses that wish to undertake construction or other work on their homes if the increase in permits provides easier access to companies and/or lowers overall costs. The number of residents and businesses that may benefit from more driving permits may be higher than under alternative B, although the precise magnitude is uncertain.

Removing the cap on the number of available driving permits for year-round residents has the potential to entice some seasonal residents to become year-round residents. This would increase the number of residents on the island in the non-summer months, with the potential to generate more business for construction companies and local businesses as well as the need for essential services like propane delivery and municipal waste removal. Because permits would also be uncapped for the construction/business and essential services categories, the increase in demand for services among these residents is unlikely to generate restrictions in service access.

The other major difference with alternative C is how driving would occur during the shoulder seasons. During shoulder season months, year-round residents would have slightly less driving access relative to current conditions (alternative A) and alternative B. The slight reduction in shoulder season driving access among year-round residents has the potential to require some existing permittees to find alternate means of accessing the Seashore in the spring and fall. For construction/businesses that seek to use vehicles to access the island, driving time in the shoulder season would be more restrictive relative to current conditions (alternative A) and marginally less restrictive relative to alternative B. Therefore, construction/businesses with existing permits would be adversely impacted by the decrease in driving time relative to current conditions, especially because May is a desirable month for construction activities.

Table 3-1 demonstrates the net driving effect of the increase in number of available permits and the decrease in the shoulder season driving allowance, finding an overall increase in ORV trips under alternative C relative to current conditions if the towns and villages did not regulate further. This increase in driving on the Seashore and in the communities would adversely affect residents and businesses with a preference for the vehicle-restricted nature of the Seashore. If the increase in driving is also associated with an increase in construction activity, then residents and businesses may be further adversely impacted if they seek less development on the island; however, existing zoning regulations may temper these effects, and the towns and villages could moderate these effects as well. Because of driving restrictions during the summer, these impacts would generally not occur during this peak visitor period.

Various other impacts described for alternative B would also apply to alternative C. The changed definition of year-round resident may require some residents with existing permits to alter their time away from their Fire Island homes in order to maintain year-round resident status. Construction companies with existing construction/business driving permits may need to modify their operations to accommodate new restrictions on removing construction debris from Fire Island, which could potentially increase their costs

in the short term as they identify other means (i.e., by freight barge) of carting debris away in the shoulder seasons and the summer. Finally, if more construction companies used vehicles for transporting to and from the Seashore in the future absent permit caps, then the passenger ferry companies that currently support construction crews in the non-summer months have could be adversely affected because of decreased demand for their services. Decreased ridership could entice these companies to schedule fewer trips in the non-summer months, adversely affecting residents and visitors who relied on the passenger ferries for their Seashore access during this period. As with alternative B, changing ORV management at the Seashore via alternative C could affect property values, although the direction and magnitude of such an effect is uncertain.

Cumulative Impacts

As discussed in Section 3.8.1, longer shoulder seasons and greater acceptance of working from home has resulted in an increased demand for year-round residential driving permits and a higher demand for construction on homes, resulting in a higher demand for construction/business driving permits. Beach erosion caused by sea-level rise and the increasing frequency of storms has meant that beach driving can be unreliable, and there may be temporary closures from beach nourishment actions. The planned Smith Point Bridge replacement will benefit residents and businesses by modernizing vehicle access to the east side of the island.

As discussed above, implementing alternative C would provide varying impacts within the communities, depending in part on how the towns and villages chose to regulate driving further. Year-round Fire Island residents and businesses without driving permits would benefit from increased access if they obtained one of the new permits. Some residents and local businesses could benefit from the increased number of construction/business driving permits by obtaining services in a timelier manner, having access to a greater diversity of qualified businesses, and possibly obtaining services at a reduced rate from current conditions, if the cost of doing business decreased from having increased access. The businesses providing water-based transportation services could benefit from increased service demand when construction/business driving was not allowed.

Others who prefer the current driving restrictions may be adversely affected, depending on the actions by towns and villages to regulate driving further. Construction/business permittees may be adversely affected by the decreased driving window in May, and the businesses that do not currently remove construction debris by water throughout the year could be adversely affected as they migrate their operations from removing debris by vehicle to doing so by barge. The ferry companies may experience a decrease in demand for their services from the construction/business customers during the driving season because of the increase in permits.

It is speculative to determine how property values may be affected. Increased access could make living on Fire Island more desirable, increasing property values. However, more driving could make homeownership less desirable, decreasing property values. Overall, property values are influenced by many other factors than just driving and vehicular access.

When the incremental impacts of alternative C are added to the impacts of past, present, and reasonably foreseeable future actions, socioeconomic conditions would improve to a small degree from increased access to the residences and a possible increase in access to business services. However, those who prefer fewer vehicles would view the impacts of alternative C as adverse.

CHAPTER 4: CONSULTATION AND COORDINATION

This chapter describes the public involvement and agency consultation during the preparation of this EA. A combination of activities, including internal and public scoping, guided the NPS in developing this EA.

4.1 PLANNING

NEPA regulations require an “early and open process to determine the scope of issues for analysis” (40 CFR 1501.9). The internal and external scoping process for the project has been extensive and has included numerous internal interdisciplinary team meetings and reviews. Initial activities started in 1998, when the NPS conducted an internal review of the vehicle use regulations. In 2002, the NPS formed a designated negotiated rulemaking committee that defined the use of nonrecreational vehicles to use in a new rule to supersede the old rule. Twenty-four stakeholder groups served as representatives on this committee, including residents, municipalities, federal agencies, contractors, environmental groups, and others. A Consensus Agreement was finalized in 2003 (NPS 2003) but was not implemented because the required EA was not finalized at that time. In the summer of 2019, the newly appointed superintendent held a series of townhall meetings, gathering information about successes and challenges of the ORV program. In 2021, the NPS initiated a pre-NEPA planning process, which included internal workshops in August 2021 and May 2022.

4.2 CIVIC ENGAGEMENT

The NPS held meetings with the local community and interested stakeholders on May 5, 2022 (virtual) and May 6, 2022 (in-person in Ocean Beach on Fire Island), prior to initiating the NEPA process. The intent of the civic engagement meetings was to connect with and inform the public and stakeholders about preliminary proposed actions to revise the 1987 driving regulations. The NPS published a newsletter that described a preliminary proposal and potential impact topics, and accepted comments from April 18 to May 20, 2022. In addition, the NPS met with representatives from the towns and communities to discuss preliminary plans.

On November 5, 2022, a supplemental engagement meeting was held at the Watch Hill ferry terminal to update the public on the status of the project and answer questions about the NEPA process, project schedule, and intent of the regulatory update. Concurrent with this engagement meeting, the NPS posted frequently asked questions online regarding the ORV regulatory update.

4.3 PUBLIC SCOPING

The NPS held a 35-day public scoping period from October 30 to December 3, 2023, which initiated the NEPA process. Public scoping meetings were held on November 14, 2023 (virtual) and November 15, 2023 (in-person at the Patchogue Ferry Terminal). Public notices of the comment period and meetings were distributed through the following channels:

- A news release posted on the NPS website on October 30, 2023;
- A project newsletter posted to the NPS’s Planning, Environment and Public Comment (PEPC) website: https://parkplanning.nps.gov/FIIS_ORV;
- A news release sent electronically (via email) to various stakeholders, agencies, and media outlets; and
- A post on social media.

The in-person meeting on November 15, 2023 was attended by 47 persons. The content was the same for both the in-person and virtual meetings and included a presentation followed by a “question-and-answer” session. Recordings of the virtual meeting were posted on the project’s PEPC website. The project team

received 403 correspondences during the 35-day scoping period; most were submitted through the NPS PEPC system, and 11 were submitted by mail. The comments received were reviewed by the NPS and considered in developing this EA.

NPS staff also met with the four other permitting authorities, before and during the scoping, to discuss the process, answer clarifying questions, and explore opportunities to collaborate on program management across jurisdictions.

The EA is open to formal public and agency review from May 28 through June 30, 2024 (34 days). It is available on the NPS PEPC website at https://parkplanning.nps.gov/FIIS_ORV.

4.4 AGENCY CONSULTATION

This section details the consultation with relevant agencies initiated by the NPS during the preparation of this EA. Copies of correspondence between the NPS and other agencies, and responses from the agencies, if applicable, will be provided in the decision document.

4.4.1 National Historic Preservation Act Section 106

The NPS contacted the State Historic Preservation Office (SHPO) during the first week of January 2023. The SHPO requested to be informed following NEPA scoping and after a decision regarding the preferred alternative was reached. Accordingly, during public scoping, the NPS contacted the SHPO and Tribal Historic Preservation Officers identifying the NPS preferred alternative and the determination that, because this alternative was administrative in nature, there is no potential to cause effects on National Historic Preservation Act Resources.

4.4.2 Section 7 of the Endangered Species Act

The ESA mandates that all federal agencies consider the potential effects of their actions on species listed as threatened or endangered. If the NPS determines that a proposed action *may affect* or *is likely to adversely affect* any federally listed species, formal consultation with the USFWS or the National Oceanographic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is required. NPS *Management Policies 2006* states that the NPS will survey, protect, and strive to recover all species native to national park system units that are listed under the ESA, and proactively conserve listed species and prevent detrimental effects on these species (NPS 2006b). To comply with NPS policy, the NPS has an EA for Endangered Species Habitat Management (NPS 1998a, 1998b). The seven species included in the EA are: common tern, least tern, northeastern beach tiger beetle, piping plover, roseate tern, seabeach amaranth, and seabeach knotweed. There was no biological opinion that resulted from section 7 consultation on this plan, as formal consultation was not required. In 2018, the NPS developed an addendum to the 1998 EA and completed informal consultation with the USFWS; it specifically addressed limiting impacts to federally listed species by minimizing disturbance by ORVs and imposing seasonal restrictions on federal tracts (NPS 2018b). Currently, the NPS is consulting with the USFWS to prepare an updated addendum to the 1998 EA to address changes in emergency vehicle access. The NPS plans to further update the addendum associated with the 1998 EA in consultation with USFWS to reflect proposed changes associated with the preferred alternative.

ORV use at the Seashore is an existing use that has previously been reviewed by the NPS for impacts to listed species. ORV use at the Seashore has *no effect* on species under the jurisdiction of NOAA NMFS. It has previously been determined that ORV driving at the Seashore *may affect* species under the jurisdiction of USFWS, *but is unlikely to adversely affect* these species because of the management actions in the 1998 EA and subsequent 2018 addendum. These management actions will continue to be reviewed and consulted on with USFWS in order to continue to avoid adverse effects on those species by the ORV program.

The USFWS commented on the preliminary proposed action during the public scoping period, recommending that this EA should consider other potential routes for ORV driving, and evaluate strategies and alternatives to reduce the impacts of the proposed alternatives on the beach environment. The NPS has determined that there are no alternative routes for ORV driving available and making new routes available (such as by creating or expanding interior routes) would cause significant resource damage. The NPS will continue to regularly consult with the USFWS on all impacts of T&E species management at the Seashore, including on ways to reduce the impacts of ORV driving on the beach environment.

4.4.3 Bald and Golden Eagle Protection Act

Bald eagles are state-listed as threatened and are documented to nest in increasing numbers on Long Island. Bald eagles may occur in beach and dune habitats in transit between other more suitable habitats. The NPS would comply with the Bald and Golden Eagle Protection Act by detailing how ORV management would have no potential to “take” bald eagles.

4.4.4 Coastal Zone Management Act

Pursuant to the Federal Coastal Zone Management Act, New York State has defined its coastal zone boundaries and policies to evaluate projects occurring within the designated zones. In 1981, New York State adopted the Waterfront Revitalization and Coastal Resources Act, creating the New York State Coastal Management Program (CMP). The CMP embodies 44 policy statements supportive of the Act’s intent to promote a balance between economic development and coastal resource preservation and optimization (NYSDOS 2017).

Also, the village of Ocean Beach has adopted a Local Waterfront Revitalization Program (NYSDOS 2011). Municipalities in the New York State coastal area, including cities, towns, and villages, may prepare local waterfront revitalization programs; the state allows municipalities to refine statewide coastal policies to apply to the local conditions and establish policies for waterfront planning, preservation, and development projects.

As required by 15 CFR 930.33(a)(1), a negative determination under the Coastal Zone Management Act is based on a review of the potential effects of the proposed action on New York’s coastal uses and resources and the New York Coastal Management Program’s enforceable policies. The NPS determined that the proposed action would have no reasonably foreseeable effects on coastal uses or resources of New York’s coastal zone and will be submitting a description of this determination for review by the New York State Office of Planning, Development, and Community.

4.4.5 State Agencies

NPS *Management Policies 2006* also states that “[the NPS will] manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible” (NPS 2006b, section 4.4.2.3). In addition to the federally listed species, the appropriate state-listed species (least tern, common tern, peregrine falcon, and hidden dropseed) would be included in a biological assessment. To determine whether the proposed ORV management would result in a take of state-listed species, the NPS would consult with the NYSDEC. The NYSDEC would then make its determination as to whether an incidental take permit would be needed, although informal conversations with NYSDEC biologists indicate that this to be unlikely given the species involved and the existing management actions.

4.4.6 Marine Mammal Protection Act

Although harassment of resting seals or stranded marine mammals on the beach could occur from ORV driving or associated visitor activities, changes to the ORV management would include measures to educate permittees about marine mammal protection to address and reduce these potential impacts. The numbers of seals in the area are currently not high enough to enact public use closures for the protection

of marine mammal concentration areas. Nevertheless, the NPS will need to comply with the Marine Mammal Protection Act by submitting a letter to NOAA NMFS requesting its concurrence for the determination that there would be “no significant impacts” to marine mammals under the Marine Mammal Protection Act.

Fire Island National Seashore

Off-Road Vehicle Management Environmental Assessment

LIST OF APPENDICES

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Appendix B – Laws and Policies Applicable to ORV Management on Fire Island

Appendix C – Issues, Impact Topics, and Alternatives Considered but Dismissed from Further Analysis

Appendix D – ORV Driving Patterns (based on Driving Data Analysis) and Natural Limitations to Driving on the Seashore

Appendix E – Impact Methodologies

Appendix F – Planning Team and Consultation List

APPENDIX A

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APPENDIX B

LAWS AND POLICIES APPLICABLE TO ORV MANAGEMENT ON FIRE ISLAND

LAWS AND POLICIES APPLICABLE TO ORV MANAGEMENT ON FIRE ISLAND

Fire Island National Seashore Enabling Legislation (Public Law 88-587, 1964). The Seashore's enabling legislation recognized the importance of protecting and preserving the resources of Fire Island for future generations. The enabling legislation sought to preserve "certain relatively unspoiled and undeveloped beaches, dunes, and other natural features," stating that no roads should be constructed, except for necessary maintenance activities, and access to the communities would be ferries and footpaths only. The Sunken Forest would be preserved as near as possible to the existing conditions in 1964 without unnecessary roads and trails to protect the natural resources located there. The enabling legislation specifically stated that hunting and fishing should be permitted at the Seashore.

Fire Island National Seashore General Management Plan (GMP), 2016 (NPS 2015a, 2016). The Seashore's 2016 GMP reflects the requirements of the enabling legislation. The GMP recognizes the importance of the communities on Fire Island and their role as stewards for the island. The GMP acknowledges the roadless character of Fire Island, which is the result of the grass-roots efforts to establish and protect the Seashore. The GMP states that the roadless character of Fire Island should be preserved; water-based transportation should be the primary form of access to Fire Island "whenever and wherever feasible;" the NPS should collaborate with others to support a roadless environment on Fire Island where driving is kept to a minimum; the driving regulations for vehicle access on Fire Island should continue, and the NPS should collaborate with others to ensure that water-based transportation remains the primary form of access to Fire Island. Overall, the GMP acts as a guide for this process of reviewing and possibly updating the existing ORV driving regulations.

Fire Island National Seashore – Operation of Motor Vehicles (36 Code of Federal Regulations [CFR] 7.20(a)). These are the special regulations promulgated to guide off-road motor vehicle use at the Seashore. These regulations were first promulgated in 1977 and were most recently amended in 1987. These regulations identify where motor vehicles can operate, when, who is eligible for a permit, and what kind of vehicles can be used off road. The purpose of the NEPA process (including this EA) is to determine whether these regulations should be updated.

Travel on Park Roads and Designated Routes (36 CFR 4.10). This section regulates travel within units of the national park system, stating that motor vehicle operation "is prohibited except on park roads, in parking areas and on routes and areas designated for off-road motor vehicle use." These regulations also stipulate that routes and areas for off-road motor vehicle use can only be designated through a special regulation and must comply with section 36 CFR 1.5 and Executive Order 11644.

Designation of Otis Pike Fire Island High Dune Wilderness (Public Law 96 -585), 1980. The Otis Pike Fire Island High Dune Wilderness was congressionally designated in December 1980, encompassing 1,363 acres. The Fire Island Wilderness extends from the western boundary of the Smith Point County Park in the east to the easternmost edge of the Watch Hill campground and nature trail in the west. Bellport Beach, an ocean-to-bay parcel of nonfederally managed land, separates the Fire Island Wilderness into eastern and western segments. The Fire Island Wilderness encompasses the area from Great South Bay at mean high water on the north to the toe of the primary dune on the south; it does not include Great South Beach between the toe of the primary dune and the Atlantic Ocean.

APPENDIX C

ISSUES, IMPACT TOPICS, AND ALTERNATIVES DISMISSED FROM DETAILED ANALYSIS

1. ISSUES AND IMPACT TOPICS DISMISSED FROM DETAILED ANALYSIS

Several issues and impact topics were considered during the development of the environmental assessment (EA) but were dismissed from detailed analysis for one or both of the following reasons:

- Potential environmental impacts associated with the issue are not central to the proposal or of critical importance; or
- A detailed analysis of environmental impacts related to the issue is not necessary to make a reasoned choice between alternatives.

More details about the dismissal for these issues and impact topics are provided below. Note that literature citations for appendix C are included in appendix A (“References”) of the EA.

Beach Erosion from ORV Driving

The southern coastline of Long Island is a long, diverse area shaped by the forces of the Atlantic Ocean. Longshore currents with a net westerly sediment transport direction have shaped barrier islands such as Fire Island. The upper sediments in the coastal waters consist mostly of sand and are in constant motion from tides, currents, and waves. Storms and seasonal variability in the coastal current dynamics and sediment transport patterns cause constant changes to the shape of the beach and can lead to occasional extreme conditions, ranging from localized erosion of the beach to a breach of the barrier island (such as during Superstorm Sandy in 2012).

The beach also sustains adjacent dunes as sand from the beach is blown onto the dunes by strong winds. Therefore, a wider beach provides a better source of sand for the dunes than one that is narrow or eroded. A beach that has narrowed from erosion will eventually lead to erosion of the adjacent dune. Recent erosion in the aftermath of Superstorm Sandy was mitigated through extensive nourishment of the beach areas within the communities, Robert Moses State Park, and Smith Point County Park by the US Army Corps of Engineers (USACE), with cyclical proactive beach renourishment in the same areas planned for the 50-year-long Fire Island Inlet to Montauk Point project. Beach nourishment is expensive and requires substantial time for mobilization. The public commented that beach driving could cause a loss of sand and erosion of the beach.

Ruts on the beach constitute sand displaced by ORVs. Waves and wind eventually remobilize the displaced sand, in essence transporting it for a short distance up and/or down the beach and smoothing the beach again. However, this process and the determination of potential sediment loss from the beach to the dune zone or to longshore sediment transport is complex. Coates and Visco (1976) studied the effect of ruts on sloped beaches (which included the foreshore, i.e., the intertidal zone) on Fire Island by making multiple passes with a vehicle. The authors concluded that sand displaced along sloped beach sections from ruts is on balance preferentially shifted downslope toward the ocean, resulting in removal by swash and backwash.

Anders and Leatherman (1987a, 1987b) conducted a three-year study to measure the direct sand displacement from vehicles along the beach. The authors found that slope, sand compaction, and the number of vehicle passes in the same track were the principal factors controlling the net seaward displacement of sand. The study concluded that while there is seaward displacement of sand, it was uncertain if this activity increases the amount of erosion (i.e., the net loss to the beach face). Similarly, Psuty and Silveira (2008) concluded that it is uncertain whether the roughened surface accelerates or reduces the flows of wave runoff and backwash to change the capacity of alongshore sand transport. Houser et al. (2013) studied the Assateague Island and Padre Island National Seashores. The authors found that beach driving affects the beach and dune morphology but suggested that it does not lead to a net seaward loss of sediment from the beach-dune system.

In concept, considering that longshore transport along the coast of Long Island with a net westerly transport direction occurs every time a sand particle is resuspended (even briefly) into the water column, the net movement over time would be in the same direction as longshore transport. Therefore, it is reasonable to assume that the continuous smoothing of beach ruts by waves would also, over time, lead to some shift of sediment toward the west. However, given the total quantity of sand in constant motion along a beach, rates are expected to be low. Some or much of the sand eroded from the foreshore (intertidal zone) to the ocean may move back onto the beach over time; this is a complex process with varying time scales. This conclusion is consistent with findings of a study of ORV driving on the Padre Island National Seashore and Assateague Island National Seashore where Houser et al. (2013) suggested that driving on the beach does not lead to a net loss of sediment from the beach-dune system.

For these reasons, the net effect on erosion of the beach from driving in the ORV corridor is considered small. The far more dominant force affecting the morphology and erosion of the beach and dune are tides and storms. Therefore, this topic was dismissed from detailed analysis.

Sea Turtles

Sea turtles regularly use Great South Bay, including juvenile Kemp's ridley sea turtles, juvenile loggerhead turtles, and juvenile and adult green sea turtles. In the Atlantic Ocean along the Seashore, loggerhead sea turtles occur in nearshore waters and leatherback sea turtles occur offshore. While none of these sea turtle species currently nest on the Seashore, projected increases in sea surface temperature could result in an expansion of potentially suitable sea turtle habitat in the northwest Atlantic (Patel et al. 2021), and warmer water temperatures could cause sea turtles to remain in the area longer than usual.

Potential effects of ORV driving on sea turtles are considered insignificant or discountable because they do not currently nest on the Seashore and the NPS could implement effective protective measures around sea turtle nests, if needed in the future. Therefore, this topic was dismissed from detailed analysis.

Bats

Mammals on the Seashore include bats. The endangered northern long-eared bat (*Myotis septentrionalis*) has recently been documented breeding on the William Floyd Estate, a separate unit of the Seashore located on Long Island. The tricolored bat (*Perimyotis subflavus*), which is proposed for listing as endangered under the ESA, is also found on the Seashore (NPS 2019b). There are no breeding colonies of either species on the Seashore. Both species and other hibernating bats have experienced precipitous population declines because of a non-native fungal infection that causes white-nose syndrome (NPS 2022f).

ORV driving does not impact bats at the Seashore. Therefore, this topic was dismissed from detailed analysis.

OVERNIGHT VISITORS

Most visitors come to the Seashore for the day, although approximately 10% of all visitors stay overnight. Approximately 85% of overnight visitors are boaters at the marinas or other anchor locations in Seashore waters, and some are visitors to beach house vacation rentals at Watch Hill and Sailors Haven. The marinas are located more than 600 feet from the beach (i.e., away from vehicles traveling on the beach); the beach houses are located more than 400 feet from the beach. Approximately 10% of overnight visitors camp at the Watch Hill Family Campground, operated by a concessioner. The campground is located behind the primary dune more than 150 feet from the beach and is accessible by passenger ferry or private boat. Camping requires a permit.

The remaining 5% of overnight visitors are backcountry campers in the Fire Island Wilderness and the Great South Beach to the south. Backcountry camping requires a permit and occurs in two zones between Old Inlet and Watch Hill. In the western zone (Long Cove to Bellport Beach), camping is restricted to no more than 24 people, with a maximum group size of eight campers per site (NPS 2023e). In the eastern zone (Bellport Beach to Old Inlet), camping is restricted to no more than 12 people at a time, with a maximum group size of four campers per site. From March 15 to Labor Day, backcountry campsites may be selected on Great South Beach to the south of either zone, in areas where there are no restrictions or seasonal closures for resource protection.

The total number of overnight visitors has gradually declined from approximately 70,000 in the 1980s to 20,000 in 2019. Most overnight stays occur in the summer.

Overnight visitors are unaffected by ORV driving because they arrive by boat or ferry, and the recreational facilities are located away from the beach (where driving occurs) behind the primary dune. Therefore, this topic was dismissed from detailed analysis.

Wilderness

The Seashore includes 1,363 acres of federally designated wilderness named the Otis Pike Fire Island High Dune Wilderness (“Fire Island Wilderness”), designated by an act of Congress in 1980. The area extends from the Wilderness Visitor Center in the east to Watch Hill in the west. By 1980, the natural high dune habitat had become threatened by the development occurring elsewhere on Fire Island and on other barrier islands. Great South Beach directly to the south of the toe of the dunes is not included in the Fire Island Wilderness.

Driving on Great South Beach already occurred at the time when the Fire Island Wilderness was designated. Prior to the 2012 breach at Old Inlet, ORV traffic on this beach consisted of permitted nonrecreational vehicles accessing the eastern communities and permitted recreational vehicles driving in the fall associated with sportfishing and hunting.

Also, prior to the breach at Old Inlet, a visitor could be in the Fire Island Wilderness and not see vehicles driving on the beach because the height of the dune blocked the view of the beach. Superstorm Sandy flattened the dune, making vehicles on the beach more visible to visitors in the Fire Island Wilderness and affecting the wilderness character. Further, driving adjacent to the Fire Island Wilderness is currently only available from the Wilderness Visitor Center to the east of the breach area. The length of the currently accessible section of the beach is approximately 1.7 miles, compared to approximately 7 miles prior to the breach.

There are some visual and acoustic impacts to wilderness character from vehicles driving along the beach outside the wilderness boundary. Impact to wilderness would occur if vehicles drove in restricted areas, such as within the dunes or too close to the toe of the dunes, eroding it or impacting rhizomes.

Since the breach at Old Inlet, the western section of the Fire Island Wilderness (west of the breach) has much less activity because no authorized driving, except for NPS vehicles and local emergency responders, is allowed. However, now that the area of the breach has closed, driving will eventually be allowed again for the 7-mile long stretch along Great South Beach (unless it is restricted for natural resources reasons, or for cultural resource reasons such as the *Bessie While* shipwreck [see section “Cultural and Historic Resources” below in this appendix]).

None of the alternatives considered by the NPS would change where driving is currently allowed, and none of the alternatives would allow driving in wilderness. Allowing driving on the beach does not conflict with the wilderness designation, and unpermitted driving in restricted wilderness areas is an enforcement issue. Therefore, this topic was dismissed from detailed analysis.

Acoustic Environment

Increasing the amount of driving allowed could increase noise along designated routes and areas. However, the current density of vehicles on the beach and on NPS-managed lands is low, and the amount of noise generated is limited. In addition, the soundscape on the beach is dominated by the sound of ocean waves. The action alternatives B and C would have little or no potential to adversely affect the soundscape of the Seashore over the long term.

Noise is not a concern on the interior road (Burma Road) to the east of Point O'Woods because of access restrictions and the minimal number of vehicles that are permitted to use this road. Noise could be a concern if more vehicles are allowed on the interior roads of the communities if the towns and villages did not regulate driving further in the areas where they have jurisdiction, including the number of vehicles that can travel the interior road and connecting side streets as well as parking.

In summary, any potential increases in vehicle noise in the Seashore associated with implementing either of the action alternatives would be minimal. Therefore, this topic was dismissed from detailed analysis.

Cultural and Historic Resources

Each of the proposed action alternatives includes permitting some amount of driving in areas where driving occurred since before the Seashore was established—either in areas where driving is currently permitted or in areas where it was permitted prior to Superstorm Sandy. Several cultural and historic resources are present on the Seashore in areas where ORV driving occurs:

- **Fire Island Lighthouse and associated cultural landscape:** Vehicles are restricted to driving on the hard-packed road connecting the Field 5 parking lot with the western-most community of Kismet.
- **Point O'Woods:** This community was nominated for listing or related actions in the National Register of Historic Places in June 2021 (NPS 2022g). This nominated district encompasses more than 150 acres of a former Chautauqua resort founded in 1894 with support from Methodist church ministers. The western end of Point O'Woods has a gate that limits vehicles from entering the community. It is noted that archeological resources in Point O'Woods are not under NPS's administration.
- **Carrington tract:** The Carrington tract consists of an approximately 0.3-mile-long stretch of land between Cherry Grove and Fire Island Pines. The property was placed on the National Registry of Historic Places in 2016. The NPS allows driving on the interior road for PSEG and SCWA (i.e., the road serves as a right-of-way for utilities). Vehicles of other permit categories (i.e., residents, construction/businesses, essential services) are not permitted to drive on the interior road.
- **Bessie White shipwreck:** This shipwreck was still buried under a dune when driving on the adjacent beach was possible (i.e., prior to Superstorm Sandy). Erosion during the storm has exposed this shipwreck on the beach. The beach at the wreck site remains dynamic. Over time, the wreck may become more exposed (and eventually be submerged by the ocean with advanced erosion), or accretion of the beach (i.e., seaward shift of the shoreline) may cover the wreck again with sand. Depending on the degree of erosion, vehicles might be able to drive between the shipwreck and the dune in the future. Other nearby wreck pieces are partially exposed; they are potentially from the *Bessie White*.
- **Other archeological resources:** Aside from the *Bessie White*, occasionally beach erosion or utility work reveals cultural artifacts that had been buried in the sand of the barrier island.

Shipwrecks, elements of structures long gone, and other archeological materials are protected and analyzed as they are reported.

Changes in the regulations would change the number of trips and seasonal driving, particularly during the shoulder seasons. Under all alternatives, the NPS would retain the ability to restrict or temporarily prohibit driving on any portion of NPS-managed lands to protect visitors and resources, including in the beach section of the *Bessie White* shipwreck. Other resources (Lighthouse tract, Carrington tract, and Point O' Woods) have additional restrictions, described above. Based on these factors, the NPS has determined there would be no potential to affect cultural and historic resources within the boundaries of the Seashore under any of the proposed action alternatives.

Because no effects on cultural resources are anticipated under any action alternative, this topic was dismissed from detailed analysis.

2. ALTERNATIVES CONSIDERED BUT DISMISSED FROM DETAILED ANALYSIS

The project team considered several additional alternatives prior to the NEPA analysis that were identified during internal and public scoping but did not meet the purpose and need for the action, or they were not feasible. Therefore, they were dismissed from detailed analysis.

Strict Adherence to the 1987 Regulations

The Seashore's existing regulations are almost 40 years old, dating back to 1987 when conditions on the island were much different than today. Over the decades, there have been changes in the need for vehicular access (because of the dynamic nature of the barrier island such as the breach at Old Inlet at the Fire Island Wilderness caused by Superstorm Sandy in 2012) beyond what the regulations currently permit. There have also been changes in the population and demographics of the island, and residents have expressed concern that there are not enough permits available under the existing regulation for the year-round residents that now live on the island. Strictly adhering to the existing regulations without allowing some driving exceptions that are part of the current practice would not allow the NPS to exceed permit caps for essential access, such as allowing those on the waiting list to drive when the Great South Bay is frozen. Strict adherence would also prevent the NPS from allowing limited residential driving through the Sunken Forest or driving for hardships. Furthermore, there would be more scrutiny of residential driving when alternative transportation was available (as defined by the existing regulations) and of driving on the NPS-managed interstitial lands.

The 1987 regulations as they stand do not meet the purpose and need because they fail to address changes in development, access, technology, and use on the Seashore, and also do not address geographic changes resulting from the dynamic nature of the barrier island (e.g., the breach at Old Inlet). The 1987 regulations further do not allow future flexibility as conditions continue to change, nor do they clarify the process for obtaining driving permits. Therefore, strictly adhering to the 1987 regulations, without allowing for current practices and certain driving exceptions, was dismissed from further consideration.

Phase-out Alternative

This alternative considered phasing out permits for all types of nonessential permit categories (i.e., residents, construction/business, recreational). After some time (years to multiple decades), there would no longer be any nonessential driving permitted on Fire Island. Residents and construction/business owners should prepare for the unpredictable nature of island-living during periods of suspension of ferry service. Temporary permits would be issued at the superintendent's discretion for emergency and unusual weather-related situations during the driving season (i.e., seasons would be maintained even after phase-out).

Elements of the phase-out alternative included the following for the different permit categories:

- **Residents and construction/business:** This alternative would phase out the issuance of new permits. Residents and construction/business (including construction debris carting) would be grandfathered in for current permittees, but permits would expire when the permittee no longer met the criteria. Specifically, for a construction/business permittee, a permit would be phased out when the individual permittee (not a business that could change hands) gave up or lost the permit (e.g., because work dried up). Permits to a business such as a hotel, restaurant, or shop would expire when the business closed or the permit was not renewed. If a year-round resident were to move off the island, lost the permit, and then moved back, this resident would not receive the permit back.

Over the medium and long term, climate change and associated sea-level rise could impede the ability to safely drive on Fire Island and a prioritization of access for certain categories, as beaches are affected, and low-lying areas become inundated. This alternative would allow people who had grown accustomed to driving to prepare for a future that relied solely on waterborne transportation to access the island.

- **Essential services and public utilities:** Driving for these categories would remain largely unchanged from current conditions, although elements for these categories proposed under alternative B would apply (including the split into two separate categories). As construction/business driving was phased out, there would be some expansion of business that qualified as essential to the continued use of residences on the island, which would be identified through coordination with the communities. With the goal of phasing out nonessential driving under this alternative, the driving window for alternative C would apply for this category.
- **Municipal employees:** This category would be maintained, with adjustments proposed under alternative B and the same driving window proposed under alternative C. The category would remain capped at five permits per community for demonstrated need.
- **Recreational driving:** Recreational driving would stop at the effective date of the regulations. It is noted that the enabling legislation does not entitle anyone to drive for recreational purposes; it just allows for hunting, fishing, and shellfishing.
- **Official use (nonemergency):** There would be no change from current conditions.
- **Emergency services:** As with alternative B, this would be a new category that applied to police, firefighting, and ambulance vehicles during emergency conditions.
- **Temporary:** This would become a new category. There would be no cap; the number of exceptions would be under the superintendent's discretion. This category would include emergency conditions (particularly for utility and infrastructure-related service needs).

This alternative was dismissed because driving is a longstanding use that provides essential access to year-round residents and those that provide services that support life on the island when water-based transportation is not available. This alternative could be considered for future updates of the regulations depending on how climate change will affect Fire Island over time.

Commercial Category Alternative

This alternative considered combining the categories for construction and business with essential services (and also perhaps with utilities) for purposes of streamlining.

Streamlining would be achieved if the various distinguishing elements (primarily qualifications and requirements, permit processing, seasonal driving windows) were to become identical for the combined

categories. If those elements were not identical, the benefit of combining the categories would mostly be lost, which justifies maintaining the current categories as in the case under alternatives A to C.

Currently, driving windows for the different categories vary. For example, essential services and public utility vehicles are permitted to drive during the summer because of extenuating circumstances; construction/businesses are not permitted to drive. These categories also have different driving windows in the shoulder seasons. Identical driving windows would not be consistent with the long-term sustainability of Seashore's natural and cultural resources, while providing essential access to communities. In addition, depending on the approach taken for synchronizing the elements, this alternative could incentivize asking for exceptions, thereby increasing the administrative burden. For these reasons, this alternative was dismissed from further consideration.

Minimally Restricted Alternative

This alternative would remove caps for both year-round and seasonal residents. Seasonal residents could obtain permits after demonstrating qualifications (e.g., proof of home ownership).

This alternative would open driving for theoretically up to 4,200 households (the approximate number of structures in the communities), depending on the specific qualifications to be developed under such an alternative. Allowing widespread driving is not the intent of the original regulations and contradicts the assertion that driving should be secondary to waterborne transportation. Seasonal homeowners have a primary residence off the island, which implies that access to their house on the island is not essential for their daily life. Therefore, this alternative would not be consistent with the goal of long-term sustainability of Seashore's natural and cultural resources, while providing essential access to communities. For these reasons, this alternative was dismissed from further consideration.

3. ALTERNATIVE ELEMENTS CONSIDERED BUT DISMISSED FROM DETAILED ANALYSIS

A number of alternative elements did not fit well into a separate alternative but were considered individually to determine whether they could be included in an alternative, either as an added element or as a replacement of an element. After consideration by the ORV project team, these alternative elements were dismissed.

Allow Banking of Trips for Residents

Currently, residents are allowed two round trips per day per household. Trip banking would allow for a certain number of trips for a longer period, such as for 14 trips per week or 60 days per month.

Banking of trips could result in a higher number of total trips taken over the course of a year because currently a trip not taken during a day is a trip "lost." Banking could also change the density of trips during specific days of the week, such as around holiday weekends, weekends in general, or other times requiring high levels of access (e.g., storms). Higher trip density during certain days of the week could impact visitor experience on the beach, and indirectly affect traffic on Burma Road in the communities on such days. Higher density around weekends, and especially holiday weekends, would be particularly less desirable for visitor experience and Burma Road during the busier shoulder seasons.

In addition, under alternative C, the total number of trips per week in the shoulder season (when only weekday travel was permitted) would be lower than during the offseason. For example, instead of the 14 trips per week in the offseason, residents would only have 10 trips per week during most of the shoulder seasons, or 8 trips per week in the week after Memorial Day or after Labor Day. This variability in trips could lead to additional administrative burden and enforcement challenges.

For these reasons, this alternative element was dismissed from further consideration.

Include Construction Debris as part of Essential Vehicles

Under alternatives B and C, construction debris removal is proposed to be covered under the construction/business category. This aligns the carting of debris with the driving period for the construction/business category that generates most of the construction debris (although construction may also be allowed in the shoulder seasons and the summer in communities). Construction, and the carting of construction debris, has the largest adverse effect (noise, visual aesthetics) on visitor experience in the summer and in the shoulder seasons, when most visitors and seasonal residents visit or reside on the island.

Alternatively, construction debris carting could be included under essential services to streamline waste removal, which would continue to result in trips across NPS jurisdictional areas by these drivers during the summer and shoulder seasons.

Enforcement of separating municipal waste and construction debris into two categories is challenging because contents of disposal trucks might have to be inspected to confirm it is construction debris. In addition, there is a certain amount of self-regulation through ordinances.

The NPS has long treated removal of municipal waste as an essential service, but not removal of construction debris. This philosophy aligned construction-related debris removal with all other construction-related permits, which were associated with the construction and business category. During the island-wide recovery from Superstorm Sandy, there was an emergency-related spike in the need for removal of construction debris. In response, the NPS determined that the removal of this construction debris was essential. This change was intended to be temporary, and construction related to Superstorm Sandy has long ceased to be an issue on Fire Island.

The NPS considers businesses that focus on the removal of construction debris as ineligible for a fleet permit because this service is not essential. However, businesses that focus on the removal of construction debris are eligible for a construction/business permit. In addition, an individual construction/business owner may be eligible for several permits under multiple categories: year-round resident, construction/business, and/or essential services; this allows for some flexibility for construction/businesses owners to provide multiple services.

Similar to all transportation on the Seashore, what can go by water should go by water. The NPS acknowledges that the transportation system is complex, and there are some communities where materials may be brought to the dock but then the community infrastructure does not support the movement of the materials within the community. This may include construction debris. The NPS would be flexible and consider the unique nature of each community when determining whether permits should be issued/conditioned for all types of carting activities. In addition, if a situation were to arise where there were public health concerns, the superintendent can issue permits to drive.

For these reasons, this alternative element was dismissed from further consideration.

Include Electricians and Plumbers with the Essential Services Category

During emergencies, particularly after storms, plumbers and electricians may be needed to provide emergency services for homes and businesses. Under alternatives B and C, these occupations would be part of the construction/business category, with various driving windows in the shoulder seasons, and no driving during the summer. Under this alternative element, electricians and plumbers would become part of essential services under alternatives B and C.

Services provided by electricians and plumbers during an emergency (e.g., broken water main, damaged electric lines not covered by utilities) are important services but are generally not part of the

immediate response to an emergency service such as police, firefighting, or ambulance. As part of any response to emergencies, the NPS generally grants access for required services with proper notification, and this practice will continue. However, the frequency for such emergency services by plumbers and electricians is low. Regular, nonemergency work by plumbers and electricians falls under work characteristic for the construction/business category; therefore, electricians and plumbers should remain in the construction/business category.

For these reasons, including electrician and plumbers with the essential services permit category was considered but dismissed as an alternative element for alternatives B and C.

APPENDIX D

ORV DRIVING PATTERNS (BASED ON DRIVING DATA ANALYSIS) AND NATURAL LIMITATIONS TO DRIVING ON THE SEASHORE

ORV DRIVING PATTERNS (BASED ON DRIVING DATA ANALYSIS) AND NATURAL LIMITATIONS TO DRIVING ON THE SEASHORE

This appendix analyzes the existing driving conditions on the Seashore. It includes data and information relevant for the understanding driving patterns as well as natural limitations for driving (erosion, plover closures, climate change).

1. GATES

There are gates on both ends of the Seashore (west and east gates). Currently, communities can only be accessed through the west gate because of the conditions caused by the breach at Old Inlet created by Superstorm Sandy in 2012. While the area of the breach is expected to soon be stable again for driving, future breaches or severe erosion are likely during major storms. Therefore, any revised driving regulations need to be applicable to conditions both with and without safe driving conditions through both gates.

2. BURMA ROAD

The current regulations do not allow for most driving on Burma Road on NPS lands, only for “limited travel by public utility and law enforcement vehicles and firefighting apparatus” and at “posted dune crossings from the beach to the ‘Burma Road’ or to pathways within the island communities” (36 CFR 7.20(2)). The deed for the Sunken Forest Preserve states that the road is for administrative use only (not to be built on or used by the public). A summary of ORV use of the interior road on the various NPS tracts is provided in section 1.4.1 in the main EA above.

Vehicles from NPS and emergency vehicles (police/firefighting/ambulance) have access to all tracts. Access by permitted vehicles of other categories is as follows:

- **Lighthouse tract and four federal tracts within western communities** (these four tracts are also referred to as interstitial lands): Vehicles of all categories (except recreational).
- **Sunken Forest/Sailors Haven tract:** Public utilities and essential services are permitted driving access when the beach is closed. Residents, municipal employees, and official vehicles are only permitted access to Burma Road in the Sunken Forest when ferries are suspended and the beach is closed. This applies to current conditions with the area of the breach at Old Inlet still closed to driving. Access to eastern communities will be shifted to the east gate again after the breach area is reopened to driving.
- **Carrington tract:** Right-of-way only for public utilities between Fire Island Pines and Cherry Grove.
- **Talisman/Barrett Beach tract:** The interior road section west of the NPS boat dock road serves only as a right-of-way for public utilities to maintain utility lines. Barrett Beach (i.e., the section directly south and east of the dock in the center of this tract) does not have an interior road.
- **Blue Point Beach tract:** Driving on Burma Road along the western section of this tract from the Blue Point dune cut is limited to accessing houses on Blue Point Beach. Driving on the interior road along the eastern section of this tract from the Blue Point dune cut is permitted to access the western end of Davis Park (when the beach is open to allow the use of this dune cut).
- **Watch Hill tract:** Since Superstorm Sandy breached Fire Island at Old Inlet, residents (and other permit categories) have not been permitted to drive east of Davis Park.

- **Tract with Fire Island Wilderness:** ORV driving is only allowed on Great South Beach (south of the Fire Island Wilderness) for permitted recreational vehicles (aside from NPS and emergency service vehicles) on the section east of the breach at Old Inlet. Once nonrecreational driving is allowed again through the east gate (now that the breach area has closed), other permit categories will be allowed to access the eastern communities again via the east gate (if the Great South Beach is not closed because of piping plover nesting or erosion).

3. PERMIT CATEGORIES AND CAPS

Analyzing effects of the action alternatives B and C requires an understanding of driving patterns by all permit categories, including categories that require permits and categories that do not. The categories are summarized in table D-1; see section 1.5 in the main EA above for a description of the categories. Category letters (A–F) are the letters used to define the permit categories in the 1987 ORV regulations (36 CFR 7.20(a)).

TABLE D-1. CATEGORIES PERMITTED TO DRIVE ON THE FIRE ISLAND NATIONAL SEASHORE

Category	Notes	Current Cap	Permits Issued *
Categories with Permit Caps			
Year-round residents (A)	In the winter of 2022/2023, the Seashore had 422 year-round residents living in 22 households within the 17 communities (NPS 2023a).	145	145; there were 35 applicants on the waiting list in 2022, and 37 in 2023
Part-time residents (B)	Based on requirements by the existing regulations, this permit category will eventually become phased out.	100	42 in 2022; 36 in 2023
Public utility (part of D)	Public utilities provide water, electricity, and telecommunication services. Fleet permits were issued in 2022 to the Suffolk County Water Authority (SCWA), Verizon, and PSEG. A single permit was issued to the Seaview Water Plant.	30 (together with essential services)	2 fleet permits and 1 single permit (2022; 2023)
Essential services (part of D)	Essential services provide bottled gas, municipal waste, disposal, and septic system pumping. Fleet permits issued in 2021 consisted of four for 2 vehicles, seven for 3 vehicles, and two for 4 vehicles.	30 (together with public utility)	12 fleet permits and 7 single permits (2022; 2023)
Construction/business vehicles (E)	This category includes construction services such as new construction, remodeling, maintenance, repair, and landscaping, and permits to business owners in the communities (restaurants, shops, etc.).	80	80; there were 41 applicants on the waiting list in 2022, 50 in 2023

Category	Notes	Current Cap	Permits Issued *
Municipal employees (F)	This category was set up for year-round residents who are full-time employees of one of the 17 communities. Each community is eligible for up to 5 municipal employee permits.	85 total (5 per community)	9 to three communities (Saltaire, Ocean Beach, and Point O' Woods) (2022; 2023)
Recreational vehicles (G)	Recreational driving is allowed between the Wilderness Visitor Center at Smith Point and Long Cove; however, the breach created by Superstorm Sandy has temporarily reduced the recreational driving distance from approximately 6 miles to 1.7 miles.	Limit of 5,000 trips; count start in September	482 permits in 2021. (There were between 2,100 and 4,000 trips annually between 2019 and 2023.
Other Categories			
Official use	This category pertains to nonemergency vehicles from federal and state agencies, Suffolk County, and towns and villages (i.e., organizations who have some jurisdiction on the island). This category is not capped but the NPS issues permits to track numbers.	None	82 in 2022
Emergency services (police, firefighting, ambulance)	These vehicles have jurisdiction to drive as needed. An ambulance is stationed within the Seashore, and emergency medical technicians are local residents of Fire Island. Vehicles under this category do not require a permit from the NPS.	None	None required
School bus	During the school year (September through June), several school buses transport younger students to the Nathaniel Woodhull Elementary School in Corneille Estates and older students from Fire Island to schools on the mainland. School buses do not require a permit from the NPS.	None	None required

* Note: The driving analysis (conducted in mid-2023) used 2021 and 2022 data in this column. The numbers for 2023 were similar and are added in this table for completeness.

4. DRIVING SEGMENTS AND DUNE CUTS

The Seashore extends for approximately 20 miles between the west gate and east gate. This stretch of the Seashore contains multiple segments alternating between NPS-managed lands and communities (figure 1-1 in the main EA). Details of the transportation network are provided in Volpe (2011). Table D-2 summarizes these segments as relevant for discussing driving patterns.

Vehicles access this 20-mile stretch of the Seashore at the west gate within the Lighthouse tract and the east gate at the Wilderness Visitor Center. Access to and from the beach to communities and NPS-managed lands occurs across 15 dune cuts across the length of the Seashore (table D-2). Dune cuts on NPS-managed lands are under the jurisdiction of the NPS. Dune cuts in the communities are the jurisdiction of the New York State Department of Environmental Conservation (NYSDEC) and are maintained by the towns (Islip and Brookhaven).

Information in table D-2 (and subsequent tables in this appendix) is divided into western and eastern communities, separated geographically by the Sunken Forest/Sailors Haven tract. Before the breach, the eastern communities were typically accessed by residents and other categories from the east gate. For the analysis of the driving data, the western communities were subdivided further into communities west and east of the Atlantique cut (i.e., western communities – west [section A], and western communities – east [section B]). The Atlantique cut is the first cut east of the Kismet cut. To exit via the west gate, residential traffic in section A is confined to Burma Road only, while vehicles accessing communities in section B and eastern communities are expected to use the beach most of the way (assuming no beach closures).

5. COMMUNITIES

The Seashore has two incorporated villages (Saltaire, Ocean Beach) and 15 hamlets; these are summarily referred to as “17 communities” in this EA, unless specified otherwise. In addition, there are two enclaves, Oakleyville and Blue Point Beach; NPS (2015) states that these developed areas are not considered part of the Community Development District defined by the Fire Island National Seashore zoning standards (36 CFR Part 28).

There are a total of approximately 4,200 structures within the 17 communities and 2 enclaves. Table D-3 lists NPS counts of structures for 1984, 2010, and 2020 based on aerial images (NPS 2021; Volpe 2011). Most of the structures are privately-owned single family homes. Although counts between 1984 and 2020 reflect an increase of structures by 5.7%, the counts are considered an estimate. Considering that the communities are nearly fully developed, it is possible that this percentage increase is in part a function of the approach used for counting structures and the types of structures included and excluded in the two different counts (e.g., homes, multiple structures on a property, businesses). This is also reflected in the slightly lower number of houses or homes in the 2010 NPS count (provided in Volpe 2011) and in Fire Island Association (2023). Low et al. (2006) refers to approximately 4,100 structures.

The small enclave of Oakleyville is located on the western end of the Sunken Forest/Sailors Haven tract. The enclave was included with the western communities for the driving data analysis because it could still be accessed via Burma Road through the community of Point O’Woods (if permitted by this community) when the beach and the remainder of Burma Road in the Sunken Forest/Sailors Haven tract are closed.

TABLE D-2. DRIVING SEGMENTS AND DUNE CUTS TO PROVIDE BEACH ACCESS FOR VEHICLES (FROM WEST TO EAST)

Community Groups	Segment	Distance from Gates (miles)		NPS-managed Lands	Community	Community Number (1)	Communities, and NPS-managed Lands and NPS Facilities (from west to east)	Burma Road				Dune Cuts	NPS-managed Dune Cuts	Distance from ... (miles)	
		from West Gate (to western border of segment)	from East Gate (to eastern border of segment)					Accessible	Limited Access (2)	Partial Road	No Road			from West Gate	from East Gate
	Lighthouse tract	0.0	19.1	●			Field 5 to Kismet	●				1 Kismet cut	●	0.5	19.2
Western Communities	Western Communities - west (Section A)	0.6	17.4	●	●	1-5	Kismet to Lonelyville (includes communities of Kismet, Saltaire (village), Fair Harbor, Dunewood, and Lonelyville, and the two western NPS tracts of interstitial lands)	●				2 Saltaire - Public Works (not public)		1.2	18.5
	Western Communities - east (Section B)	2.3	19.7	●	●	6-13	Atlantique – Point O'Woods (incl. communities of Atlantique, Robbins Rest, FI Summer Club, Corneille Estates, Ocean Beach (village), Seaview, Ocean Bay Park, and Point O'Woods, and the two eastern NPS tracts of interstitial lands)	●				3 Atlantique cut		2.3	17.4
												4 Robbins Rest cut	●	2.9	16.8
												5 Ocean Bay Park cut		4.4	15.3
	Sunken Forest/Sailors Haven tract	4.4	19.7	●		E	Enclave of Oakleyville; Sailors Haven marina		●			6 Oakleyville cut	●	5.4	14.3
												7 Sailors Haven cut	●	6.4	13.3
												8 Cherry Grove cut	●	6.7	13.0
Eastern Communities	Cherry Grove	6.8	12.4		●	14	Community of Cherry Grove				●	--			
	Carrington tract	7.3	12.0	●			Carrington House		●			--			
	Fire Island Pines	7.7	10.8		●	15	Community of Fire Island Pines	●				9 Fire Island Pines cut (west)		7.9	11.8
	Talisman/Barrett Beach tract	8.9	19.7	●			Talisman dock			●		10 Fire Island Pines cut (east)(3)	●	8.9	10.8
												11 Talisman cut	●	9.8	9.9
	Water Island	10.2	9.3		●	16	Community of Water Island				●	(a few cuts to private properties)		~10.4	~9.3
	Blue Point Beach tract	10.4	8.1	●		E	Enclave of Blue Point Beach			●		12 Blue Point cut	●	11.2	8.5
	Davis Park	11.6	7.3		●	17	Community of Davis Park	●				13 Davis Park cut (4)		12.1	7.6
	Watch Hill tract	12.4	6.8	●			Watch Hill Visitor Center	●				14 Watch Hill cut	●	12.7	7.0
	Fire Island Wilderness	12.9	0.0	●			Wilderness Visitor Center (East gate)				●	15 Smith Point	●	19.7	0.0

(1) The 17 communities are numbered from west to east (see table D-3 for their names).

(2) Access only if beach is closed for select driving categories at the discretion of the NPS (not including residents, construction/business, municipal employees).

(3) Also referred to as "Pines Helipad cut"

(4) Also referred to as "The Casino cut"

E = Enclave

TABLE D-3. NUMBER OF STRUCTURES, PERMITS, AND TRIPS FOR RESIDENTS AND MUNICIPAL EMPLOYEES – BY COMMUNITY

				Structures 1984 – 2020 (1)				Resident and Municipal Permits in 2021				Waiting List 2022	Year-round Resident Census Winter 2022/23		Resident and Municipal Trips in 2021 (3)								Structures/Permits, 2021				Trips per Permit, 2021								
Town		Community		1984	2010	2020	Percent of total Structures per Community in 2020	Year-round Residents	Part-time Residents	Municipal Employees	All Residents and Municipals	Year-round Residents	Part-time Residents	Municipal Employees	Totals	Year-round Residents	Households	Residents	Persons per Household	Number of Trips				Percent of Trips				for 2010 count		for 2020 count		Year-round Residents	Part-time Residents	All Residents and Municipals	
Islip	Brookhaven																			Number of Trips		Percent of Trips		Percent		Percent									
Western Communities																												2021 data							
●		1	Kismet	208	210	224	5.4	30	8		38	21.0	16.3		18.3	9	41	75	1.8	7,542	938		8,480	33.7	22.7		30.1	14.3	18.1	13.4	17.0	251	117	223	
●		2	Saltaire	391	390	442	0.1	11	2	4	17	7.7	4.1	25.0	8.2	4	24	60	2.5	2,672	514	973	4,159	11.9	12.4	58.1	14.8	2.8	4.4	2.5	3.8	243	257	245	
●		3	Fair Harbor (2)	565	369	597	14.3	13	2		15	9.1	4.1		7.2		19	39	2.1	2,262	56		2,318	10.1	1.4		8.2	3.5	4.1	3.5	3.9	174	28	155	
●		4	Dunewood (2)		95			2			2	1.4			1.0		2	4	2.0	470			470	2.1			2.1	2.1	235				235		
●		5	Lonelyville (2)		88			6			6	4.2			2.9	1	9	19	2.1	661			661	3.0			6.8	6.8	110				110		
Western Communities - West				1,164	1152	1,263	30.2	62	12	4	78	43.4	24.5	25.0	37.5	14	95	197	2.1	13,607	1,508	973	16,088	60.8	36.5	58.1	57.1	5.4	6.8	4.9	6.2	219	126	206	
●		6	Atlantique	50	51	57	1.4	5	1		6	3.5	2.0		2.9	1	6	9	1.5	758	240		998	3.4	5.8		3.5	9.8	11.8	8.8	10.5	152	240	166	
●		7	Robbins Rest	37	38	36	0.9	1			1	0.7			0.5	1	4	8	2.0	197			197	0.9			0.7	2.6	2.6	2.8	2.8	197		197	
●		8	Fire Island Summer Club (2)	100	67	119	2.8	1			1	0.7			0.5	1	3	10	3.3	120			120	0.5			0.4	1.5	1.5	5.0	5.9	120		120	
●		9	Corneille Estates (2)		48			5	1		6	3.5	2.0		2.9		10	25	2.5	661	90		751	3.0	2.2		2.7	10.4	12.5			132	90	125	
●		10	Ocean Beach	563	562	594	14.2	40	11	5	56	28.0	22.4	31.3	26.9	9	50	105	2.1	5,092	1,308	395	6,795	22.8	31.7	23.6	24.1	7.1	10.0	6.7	9.4	127	119	121	
●		11	Seaview	359	373	393	9.4	8	1	2	11	5.6	2.0	12.5	5.3	3	9	17	1.9	630	120	117	867	2.8	2.9	7.0	3.1	2.1	2.9	2.0	2.8	79	120	79	
	●	12	Ocean Bay Park	305	301	293	7.0	11	9		20	7.7	18.4		9.6	4	14	23	1.6	514	700		1,214	2.3	17.0		4.3	3.7	6.6	3.8	6.8	47	78	61	
	●	13	Point O'Woods	134	153	158	3.8	2	1	5	8	1.4	2.0	31.3	3.8		8	14	1.8	521	13	190	724	2.3	0.3	11.3	2.6	1.3	5.2	1.3	5.1	261	13	91	
	●	E	Oakleyville	10	10	13	0.3		1		1		2.0		0.5						6			6		0.1		0.0		10.0		7.7		6	6
Western Communities - East				1,558	1,603	1,663	39.8	73	25	12	110	51.0	51.0	75.0	52.9	19	104	211	2.0	8,493	2,477	702	11,672	38.0	60.0	41.9	41.4	4.6	6.9	4.4	6.6	116	99	106	
Western Communities				2,722	2,755	2,926	70.1	135	37	16	188	94.4	75.5	100.0	90.4	33	199	408	2.1	22,100	3,985	1,675	27,760	98.8	96.5	100.0	98.5	4.9	6.8	4.6	6.4	164	108	148	
Eastern Communities																																			
	●	14	Cherry Grove	288	261	284	6.8	6			6	4.2			2.9		3	5	1.7	203			203	0.9			0.7	2.3	2.3	2.1	2.1	34		34	
	●	15	Fire Island Pines	584	542	622	14.9	2	4		6	1.4	8.2		2.9	2	20	20	1.0	65	36		101	0.3	0.9		0.4	0.4	1.1	0.3	1.0	33	9	17	
	●	16	Water Island	55	36	60	1.4		1		1		2.0		0.5												1.7								
	●	E	Blue Point Beach	13	10	12	0.3		1		1		2.0		0.5												8.3								
	●	17	Davis Park	290	274	273	6.5		6		6		12.2		2.9												2.2		2.2			18	18		
Eastern Communities				1,230	1,123	1,251	29.9	8	12		20	5.6	24.5		9.6	2	23	25	1.1	268	144		412	1.2	3.5		1.5	0.7	1.8	0.6	1.6	34	12	21	
TOTAL				3,952	3,878	4,177	100.0	143	49	16	208	100.0	100.0	100.0	100.0	35	222	433	2.0	22,368	4,129	1,675	28,172	100.0	100.0	100.0	100.0	3.7	5.4	3.4	5.0	156	84	135	

E = Enclave

(1) Sources of data: 1984 and 2020 – NPS (2021); 2010 – Volpe (2011)

(2) Fire Island Association (2023) lists the following number of houses for combined communities: Fair Harbor - 360, Dunewood - 99, Lonelyville - 82, Fire Island Summer Club - 42, Corneille Estates - 65.

(3) In addition, there were 451 resident and municipal trips that could not be assigned to a category. Thus, the total number of resident/municipal trips in 2021 was 28,623.

Note: Some of the values discussed in the text are highlighted in this table in light blue.

(3)

6. PERMITTING OF ORV USE

There are two general types of driving permits – recreational and nonrecreational.

Recreational Permits

As stated above, recreational driving is allowed between the Wilderness Visitor Center at Smith Point and Long Cove; however, the breach created by Superstorm Sandy has temporarily reduced the recreational driving area from approximately 6 miles to 1.7 miles. Recreational permits can be obtained from the Wilderness Visitor Center with appropriate documentation, including a vehicle registration, a driver's license, and a marine fishing registry or hunting license.

There is no limit to the number of recreational permits issued per year. The number of recreational trips through the east gate is currently capped at 5,000 under the present regulations. Between 1996 and 2021, the average number of permits issued was 272 per year, ranging widely between 49 permits in 2009 and 655 permits in 2000.

Nonrecreational Permit

A nonrecreational driving permit is required to drive on all NPS lands, including the four narrow tracts of interstitial land within the western communities. Nonrecreational permit categories are currently limited (except the official use category) and typically have a waiting list; it can take a year or more to obtain a NPS permit after filing an application. In pre-Covid year 2019, 534 permits were issued, which included temporary permits for ice-over conditions and various other exceptions.

The towns of Islip and Brookhaven and the villages of Saltaire and Ocean Beach also require driving permits. These permits are issued separately from the NPS permit. Drivers must have both permits (NPS, town) to drive on Fire Island. The two towns have separate processes for issuing driving permits.

Resident Permits

Table D-3 lists the total number of resident and municipal permits issued in 2021 in each community. Most drivers in section A of the western communities (Kismet to Lonelyville) stay on Burma Road, and go to their houses, although drivers to Lonelyville may access their houses also by using the Atlantique cut (and perhaps also some drivers to Dunewood). Drivers east of Lonelyville are expected to drive mostly on the beach, go in and out of cuts as needed, and go to their respective community located farther east (currently as far as Davis Park).

Most of the drivers that come through the west gate only go to western communities; 94% of the year-round residential permits were issued in 2021 to residents in western communities, even though only 70% of all structures in the 17 communities and 2 enclaves are in the western communities. No year-round resident permits were issued for Water Island, Blue Point Beach, and Davis Park.

The highest number of year-round resident permits were issued in 2021 to residents living in Ocean Beach (40 permits), followed by Kismet (30 permits) (table D-3; figure D-1). However, on a per structure basis, there were more structures with a driving permit in Kismet than for any other community. Specifically, 14% of the structures in Kismet had a year-round resident driving permit (table D-3; figure D-2). In Ocean Beach, 7% of the structures had a year-round resident driving permit. Overall, 5% of the structures in the western communities had a year-round resident driving permit, compared to only 0.7% in the eastern communities. Including also part-time residents and municipal permits, the percentages of permits per structure were 18% for Kismet, 10% for Ocean Beach, 7% overall for the western communities, and 1.8% overall for the eastern communities.

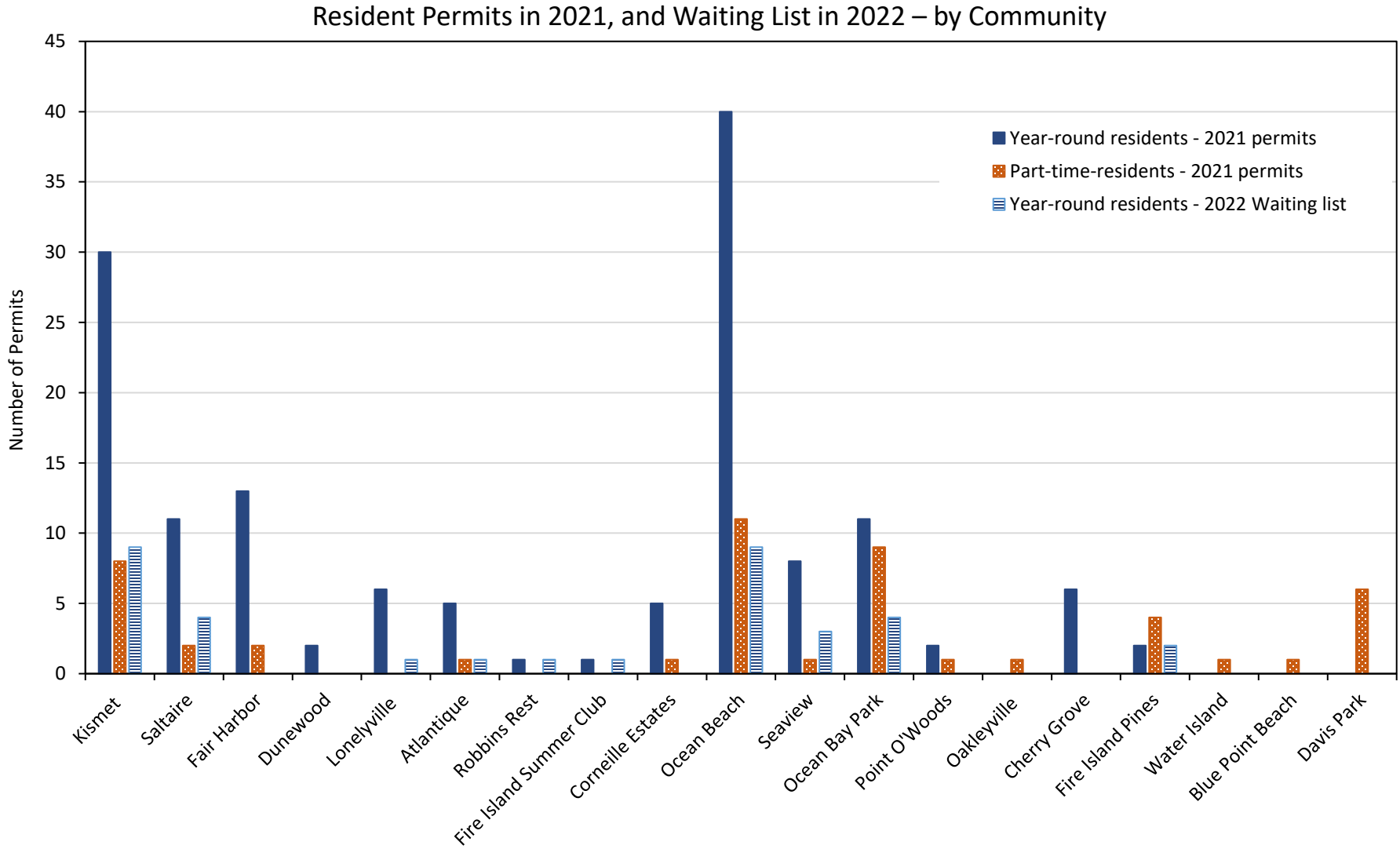


FIGURE D-1. NUMBER OF YEAR-ROUND AND PART-TIME RESIDENT PERMITS IN 2021, AND WAITING LIST FOR A YEAR-ROUND RESIDENT PERMIT IN 2022

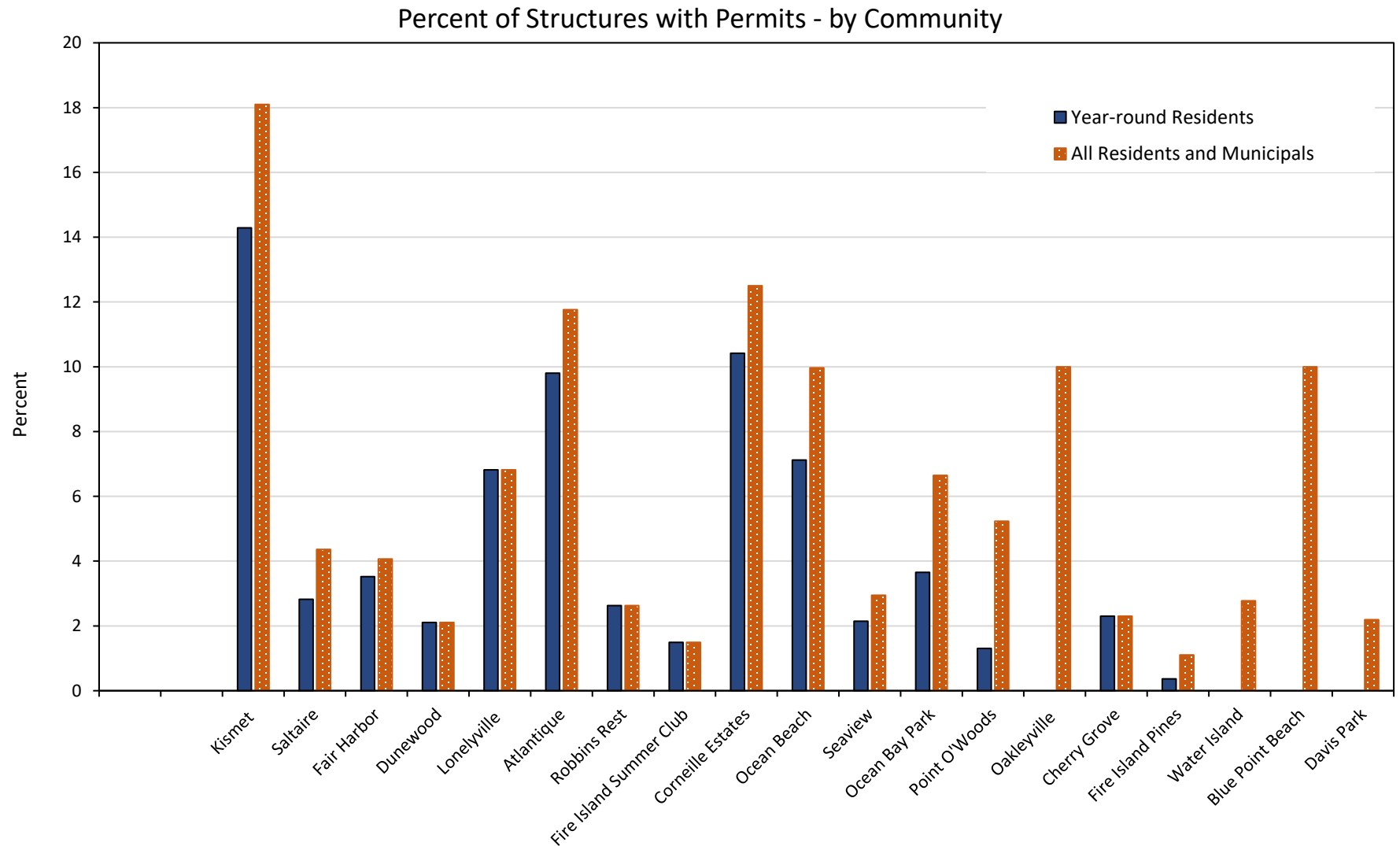


FIGURE D-2. PERCENT DISTRIBUTION OF THE NUMBER OF STRUCTURES FOR RESIDENTS AND MUNICIPAL EMPLOYEES WITH PERMITS IN 2021 (BASED ON THE 2010 STRUCTURE COUNT)

In 2022, 35 applicants for a year-round resident permit were placed on a waiting list. Most (33, or 94%) applications for a permits were for western communities; only 2 applications (6%) were for eastern communities (for Fire Island Pines). The highest number of applications were for Kismet and Ocean Beach with 9 applications each.

Construction and Business Permits

Construction and business permits issued in 2021 more closely reflected the distribution of structures in the Fire Island communities. Specifically, 70% of the construction/business permittees were permitted to travel up to the eastern end of the western communities (i.e., as far as Oakleyville) (table D-4); this percentage is identical to the percentage of all structures in the western communities. The remaining 30% of construction/business permittees were permitted to also access the eastern communities, with half of them permitted to drive as far east as Davis Park.

Staged Driving between Communities

Aside from vehicles traveling regularly through the west gate, inter-island vehicle trips were not captured in this driving analysis as they do not cross (and are thus not counted at) the west gate. Specifically, some permittees use their vehicles for inter-island transport, and there may be vehicles staged within communities that do not have permits but may contribute to overall traffic within those communities. Vehicles are staged, for example, in Fire Island Pines and in Davis Park by construction/business owners, public utilities, and essential services.

There are contractors in Fire Island Pines that own boats; they may have approximately 10 to 20 staff working for them. It is easier for them to take their personal boat rather than paying for ferry tickets or fuel, or to have multiple permits with the NPS. They come out of Fire Island Pines and can travel to communities to the east or west, as long as there are no closures. Some of those Fire Island Pines drivers may go to Ocean Beach because there is only a limited number of projects in each community. Although the data collected at the west gate do not account for the staged, inter-island trips within the Seashore, the number of such trips is considered to be relatively small.

The Suffolk Police Department also stages vehicles on the Seashore but only during the piping plover (*Charadrius melodus*) nesting season.

TABLE D-4. COMPARISON OF NUMBER OF STRUCTURES WITH 2021 PERMITS AND TRIPS FOR CONSTRUCTION/BUSINESS (C/B) BY COMMUNITY

				Structures 1984 – 2020 (1)				2021 C/B Permits		2021 C/B Trips	
Islip	Brookhaven	Community		1984	2010	2020	Percent of total Structures per Community in 2020	Number	Percent of all C/B Permits	Number	Percent of all C/B Trips
Western Communities											
●		1	Kismet	208	210	224	5.4	1	1.2	166	1.5
●		2	Saltaire	391	390	442	0.1	2	2.5	627	5.5
●		3	Fair Harbor (2)	565	369	597	14.3	1	1.2	87	0.8
●		4	Dunewood (2)		95						
●		5	Lonelyville (2)		88			3	3.7	473	4.2
Western Communities - West				1,164	1152	1,263	30.2	7	8.6	1,353	11.9
●		6	Atlantique	50	51	57	1.4	5	6.2	1,068	9.4
●		7	Robbins Rest	37	38	36	0.9				
●		8	Fire Island Summer Club (2)	100	67	119	2.8				
●		9	Corneille Estates (2)		48						
●		10	Ocean Beach	563	562	594	14.2	14	17.3	2,275	20.0
●		11	Seaview	359	373	393	9.4	5	6.2	822	7.2
	●	12	Ocean Bay Park	305	301	293	7.0	11	13.6	1,600	14.1
	●	13	Point O'Woods	134	153	158	3.8	13	16.0	2,298	20.2
	●	E	Oakleyville	10	10	13	0.3	2	2.5	273	2.4
Western Communities - East				1,558	1,603	1,663	39.8	50	61.7	8,336	73.3
Western Communities				2,722	2,755	2,926	70.1	57	70.4	9,689	85.2
Eastern Communities											
	●	14	Cherry Grove	288	261	284	6.8	1	1.2	7	0.1
	●	15	Fire Island Pines	584	542	622	14.9	8	9.9	783	6.9
	●	16	Water Island	55	36	60	1.4	3	3.7	217	1.9
	●	E	Blue Point Beach	13	10	12	0.3				
	●	17	Davis Park	290	274	273	6.5	9	11.1	671	5.9
Eastern Communities				1,230	1,123	1,251	29.9	21	25.9	1,678	14.8
All communities (for construction/business category)								3	3.7		
TOTAL				3,952	3,878	4,177	100.0	81	100.0	11,367	100.0

E = Enclave

(1) Sources of data: 1984 and 2020 – NPS (2021); 2010 – Volpe (2011)

(2) Fire Island Association (2023) lists the following number of houses for combined communities:

Fairhaven - 360, Dunewood - 99, Lonelyville - 82, Fire Island Summer Club - 42, Corneille Estates - 65.

Note: Some of the values discussed in the text are highlighted in this table in light blue.

7. ANNUAL DRIVING PATTERNS

Drivers use a fob or code when they enter the Seashore through the west gate (but not when they leave), and the NPS staff log this use in a driving database. The gate captures most nonrecreational driving on the Seashore. The exception is driving with vehicles that are staged within some of the communities (for public utilities); these vehicles may travel between communities without going through the gate (see “Staged Driving between Communities” in section 6 of this appendix).

Data were available for analysis for the period 2010 to 2021 (table D-5). Available data varied for different years:

- **2010 and 2011, Pre-Sandy years:** Available were monthly totals for nonrecreational permit categories through the west gate. Nonrecreational trips through the east gate (to access eastern communities) were not available because the east gate does not have an automated data collection system.
- **2012 and 2013:** Monthly total trips were available for January–September 2012 and February–December 2013. These two years were not included in the statistical analysis because driving on the Seashore following Superstorm Sandy was affected by driving associated with activities such as clean-up and repairs. In addition, data are missing for October 2012 and the four months following the storm (marked in red font in table D-5).
- **2014 through 2019, Post-Sandy and Pre-Covid years:** Available were complete fob data for the period June 22, 2013, to April 11, 2019, and for December 2 to 31, 2019. Complete data for the period April 12 to December 1 were not available because of a hard drive storage issue. However, from a prior data analysis, the NPS provided sorted raw data for the three main permit categories: residents, construction/business, and essential services for this period in 2019.

Toward the end of 2018, the NPS changed the computer used to log trips through the west gate, resulting in some data loss between November 2018 and February 2019. Specifically, compared to months of other pre-Covid years (2014–2019), counts during these four months in 2018/2019 were on average 45% lower. To allow for statistical analyses, these four values were replaced with mean values for respective months of the other pre-Covid years (2014–2019); replaced values are marked in red font in table D-5 and other data summary tables below.

- **2020 and 2021, Covid-years:** Available for these years were complete fob data sorted into all permit categories:
 - Residents and municipal employees
 - Construction/business
 - Essential services
 - NPS, Lighthouse access
 - Official use (nonemergency)
 - Emergency (police, firefighting) (ambulances were not included in the 2021 data)
 - School bus
 - Public utilities
 - Temporary

The data were analyzed to understand seasonal and geographic variability of driving patterns, the effect of Superstorm Sandy and Covid on driving patterns, and the potential effects of revised regulations on these patterns. As stated, the data summaries pertain only to nonrecreational trips through the west gate.

TABLE D-5. TOTAL TRIPS FROM 2010 TO 2021 (WEST GATE)

Month	Year												Mean (for various years)						Change in Covid years compared to 2014-2019		
	2010	2011	2012*	2013*	2014	2015	2016	2017	2018**	2019**	2020	2021	Mean (2010-2011)	Mean (2014-2019)	Mean (2020-2021)	Mean (2014-2021)	Mean (2010-2011, 2014-2019)	Mean (2010-2011, 2014-2021)	2020	2021	Mean of 2020 and 2021
<i>Number of Trips</i>																			<i>Percent</i>		
January	8,432	7,120	7,477	Sandy	7,014	7,462	7,505	6,651	8,058	7,338	7,274	6,753	7,776	7,338	7,014	7,257	7,448	7,361	-0.9%	-8.0%	-4.4%
February	6,438	6,487	7,103	2,831	6,285	6,937	6,837	6,056	7,473	6,718	7,022	6,085	6,463	6,718	6,554	6,677	6,654	6,634	4.5%	-9.4%	-2.4%
March	7,203	8,668	8,795	11,923	9,336	8,015	5,719	6,703	7,849	8,219	6,831	7,883	7,936	7,640	7,357	7,569	7,714	7,643	-10.6%	3.2%	-3.7%
April	9,989	9,153	8,729	9,345	9,590	8,383	8,720	8,587	8,997	9,087	4,378	8,394	9,571	8,894	6,386	8,267	9,063	8,528	-50.8%	-5.6%	-28.2%
May	7,519	8,308	7,272	8,733	8,216	6,437	8,005	8,138	8,282	8,107	5,096	7,227	7,914	7,864	6,162	7,439	7,877	7,534	-35.2%	-8.1%	-21.7%
June	5,094	4,753	4,097	5,814	4,757	4,139	4,552	4,228	4,353	4,153	4,119	3,904	4,924	4,364	4,012	4,276	4,504	4,405	-5.6%	-10.5%	-8.1%
July	2,686	2,418	2,305	2,893	2,348	2,298	2,404	2,301	2,573	2,424	1,917	1,996	2,552	2,391	1,957	2,283	2,432	2,337	-19.8%	-16.5%	-18.2%
August	2,597	2,229	2,305	2,111	1,497	1,996	2,334	2,272	2,515	2,286	1,827	1,923	2,413	2,150	1,875	2,081	2,216	2,148	-15.0%	-10.6%	-12.8%
September	4,961	4,820	5,334	5,151	4,916	4,565	5,011	4,928	4,939	4,670	4,217	4,088	4,891	4,838	4,153	4,667	4,851	4,712	-12.8%	-15.5%	-14.2%
October	7,193	6,759	Sandy	7,718	7,656	6,896	7,376	7,272	6,488	7,277	5,547	5,983	6,976	7,161	5,765	6,812	7,115	6,845	-22.5%	-16.4%	-19.5%
November	7,915	7,679	Sandy	8,266	7,502	7,600	8,082	7,622	7,647	7,429	5,369	7,081	7,797	7,647	6,225	7,292	7,685	7,393	-29.8%	-7.4%	-18.6%
December	7,914	7,534	Sandy	7,918	7,500	7,758	7,770	7,468	7,627	7,349	6,738	5,428	7,724	7,579	6,083	7,205	7,615	7,309	-11.1%	-28.4%	-19.7%
Total	77,941	75,928			76,617	72,486	74,315	72,226	76,801	75,057	60,335	66,745	76,935	74,584	63,540	71,823	75,171	72,845	-19.1%	-10.5%	-14.8%
<i>Percent</i>																					
January	11%	9%			9%	10%	10%	9%	10%	10%	12%	10%	10.1%	9.8%	11.0%	10.1%	9.9%	10.1%			
February	8%	9%			8%	10%	9%	8%	10%	9%	12%	9%	8.4%	9.0%	10.3%	9.3%	8.9%	9.1%			
March	9%	11%			12%	11%	8%	9%	10%	11%	11%	12%	10.3%	10.2%	11.6%	10.5%	10.3%	10.5%			
April	13%	12%			13%	12%	12%	12%	12%	12%	7%	13%	12.4%	11.9%	10.1%	11.5%	12.1%	11.7%			
May	10%	11%			11%	9%	11%	11%	11%	11%	8%	11%	10.3%	10.5%	9.7%	10.4%	10.5%	10.3%			
June	7%	6%			6%	6%	6%	6%	6%	6%	7%	6%	6.4%	5.9%	6.3%	6.0%	6.0%	6.0%			
July	3%	3%			3%	3%	3%	3%	3%	3%	3%	3%	3.3%	3.2%	3.1%	3.2%	3.2%	3.2%			
August	3%	3%			2%	3%	3%	3%	3%	3%	3%	3%	3.1%	2.9%	3.0%	2.9%	2.9%	2.9%			
September	6%	6%			6%	6%	7%	7%	6%	6%	7%	6%	6.4%	6.5%	6.5%	6.5%	6.5%	6.5%			
October	9%	9%			10%	10%	10%	10%	8%	10%	9%	9%	9.1%	9.6%	9.1%	9.5%	9.5%	9.4%			
November	10%	10%			10%	10%	11%	11%	10%	10%	9%	11%	10.1%	10.3%	9.8%	10.2%	10.2%	10.1%			
December	10%	10%			10%	11%	10%	10%	10%	10%	11%	8%	10.0%	10.2%	9.6%	10.0%	10.1%	10.0%			
Total	100%	100%			100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			

* Driving data were affected by Hurricane Sandy in 2012 (flagged in red font). Years 2012 and 2013 were therefore not used for multi-year averages.

** There was a switch in the NPS' driving computer at the end of 2018 and some data were lost (flagged in red font). These counts were adjusted. Original (but incomplete) counts in 2018/2019 were as follows: November 2018 - 4,940; December 2018 - 3,529; January 2019 - 4,340; February 2019 - 3,326.

Total Number of Trips

Total Annual Trips

The average numbers of trips per year for various periods were as follows (table D-5):

- | | | |
|--|--------|------------------------------|
| ▪ Pre-Sandy years 2010 and 2011: | 76,935 | (2010: 77,941; 2011: 75,928) |
| ▪ Post-Sandy, Pre-Covid years 2014–2019 (6 years): | 74,584 | (range: 68,667 to 76,617) |
| ▪ Covid years 2020 and 2021: | 63,540 | (2020: 60,335; 2021: 66,745) |

Monthly Variability

Throughout the year, most of the driving through the west gate occurs between October and May (figure D-3). On average, for years 2010–2011 and 2014–2019 (i.e., not considering years 2012 and 2013 where trips were affected by Superstorm Sandy), trips from October through May (offseason) accounted for approximately 10% of the total annual trips in each month, although this percentage was slightly higher in April and May (figure D-4). The number of trips in the shoulder season months June and September was approximately one third lower than in the offseason. The number of trips during the summer months July and August was approximately two-thirds lower than in the offseason.

In pre-Covid years (2014–2019), the highest number of trips occurred in April; the lowest number occurred in the summer. Specifically, the number of trips in summer months July and August accounted for 3% each of the total annual trips, followed by the shoulder season months June and September (6% and 7%, respectively). During the remaining months of the year, trips accounted for 8% to 12% (per month) of the total annual trips.

Effect of Superstorm Sandy

The breach at Old Inlet caused by Superstorm Sandy in 2012 has shifted access to eastern communities (Davis Park, Water Island, Fire Island Pines, Cherry Grove) to the west gate. When the NPS determines that the area of the breach has stabilized (now that the area has closed), it will again allow vehicle access to eastern communities via the east gate, returning nonrecreational driving patterns back to pre-breach conditions.

The total number of trips through the west gate was slightly higher prior to Superstorm Sandy than the average of 2014–2019. Considering that the eastern communities were accessed via the east gate (where trips were not recorded) before the storm, the *total* number of nonrecreational trips on the Seashore was even higher. In post-Sandy years 2014–2019, the number of trips through the west gate decreased by 3.1% compared to pre-Sandy years 2010 and 2011; again, considering also trips through the east gate before the storm, the actual percentage reduction of all trips on the Seashore after the storm was larger.

The effect of erosion and destruction by Superstorm Sandy on the number of trips in the months following the event is not known as data are not available from November 2012 through February 2013 because of storm damages to power systems that also affected the west gate. In March 2013, when data were tracked again, the number of trips was approximately 50% higher than the average number of trips in March in subsequent years, potentially reflecting driving associated with repairs and other damage mitigation efforts in 2013.

Covid

In Covid years 2020 and 2021, the total number of trips was lower by on average 19% in 2020 and 11% in 2021 compared to the average of pre-Covid years 2014–2019. Driving was lower particularly in spring

and fall (figure D-3). The largest monthly decrease occurred in April 2020 (-51%) and May 2020 (-35%) near the beginning of the pandemic in the United States. The number of trips in summer (July and August) 2020 and 2021 was on average 16% lower compared to pre-Covid years.

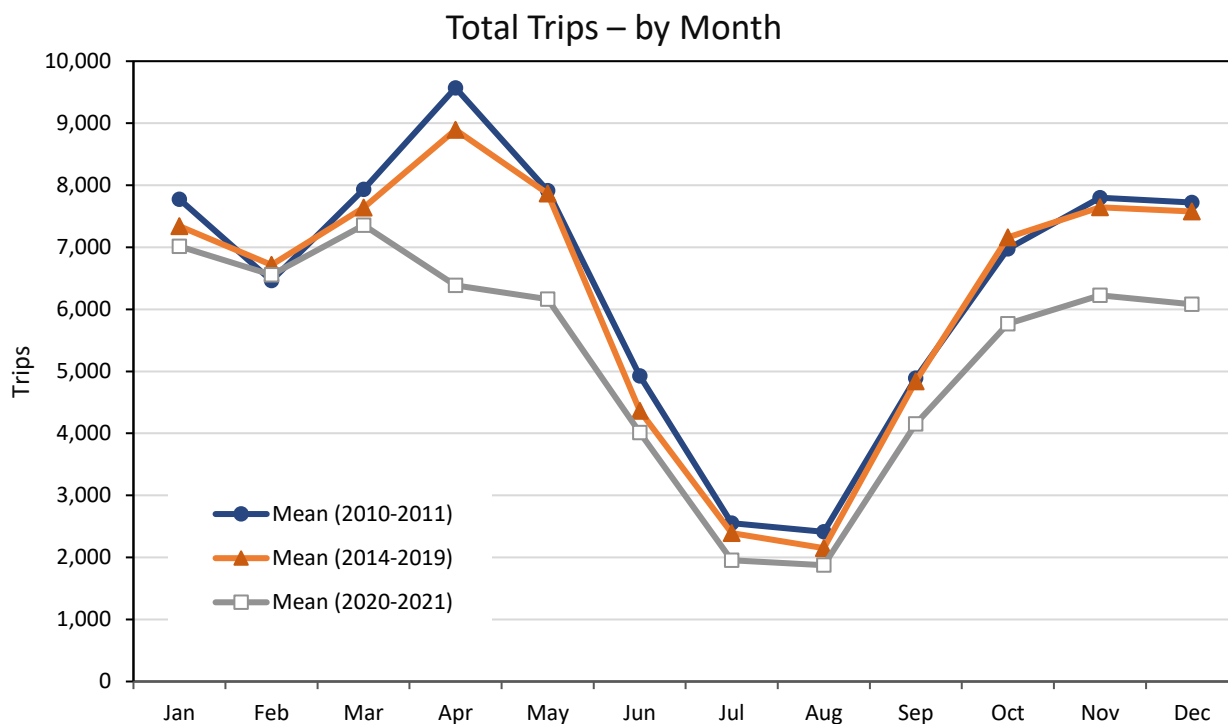


FIGURE D-3. MEANS OF TOTAL MONTHLY TRIPS DURING PRE-SANDY, PRE-COVID, AND COVID YEARS

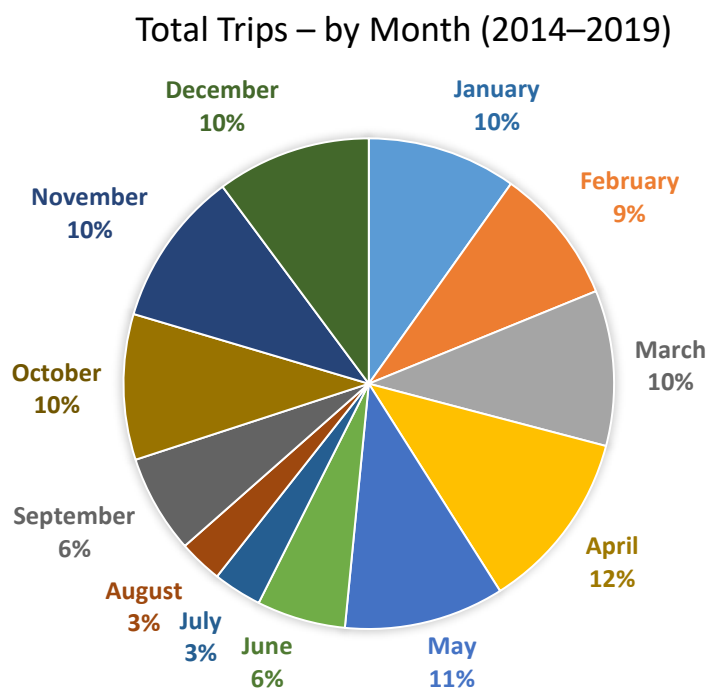


FIGURE D-4. TOTAL MONTHLY TRIPS DURING PRE-COVID YEARS 2014 TO 2019

Trips by Category

All Categories

The highest number of trips per year through the west gate are made by the categories of residents, construction/business, and essential services. Figure D-5 presents a breakdown for all permit categories for the two-year period January 1, 2020, to December 31, 2021. Residents (year-round and part-time) accounted for 41% of the total annual trips, construction/business vehicles for 17%, essential services for 11%, and public utilities (SWCA, PSEG, and Verizon) for 4%. The remaining 27% were trips by municipal employees, NPS, official use, emergency services (police, firefighting), school buses, and temporary trips. Temporary trips (1.2%) were permitted because of medical reasons or lack of ferry service (including during ice-over conditions); it is noted that these trips in 2021 were made by 39 temporary permittees.

The distribution of trips between the main permit categories is similar from year to year (table D-6; figure D-6). Over the 8-year period 2014 to 2021, residents accounted for 41% (range of 38–42%) of the trips, construction/business for 16% (range of 14–17%), and essential services for 10% (range of 8–11%). All other categories accounted for 34.5% (range of 30–39%) of the trips.

Seasonal variability in trips is mostly a function of the resident and construction/business categories (figure D-7).

Driving Density, January 2020 – December 2021

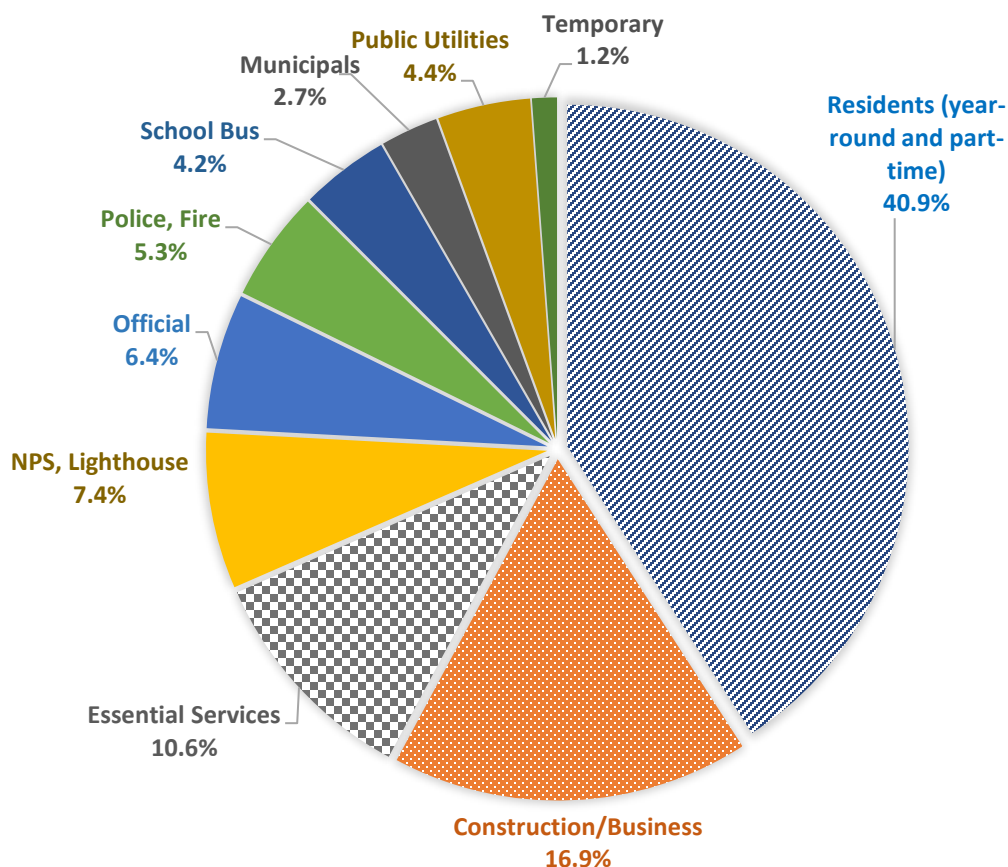
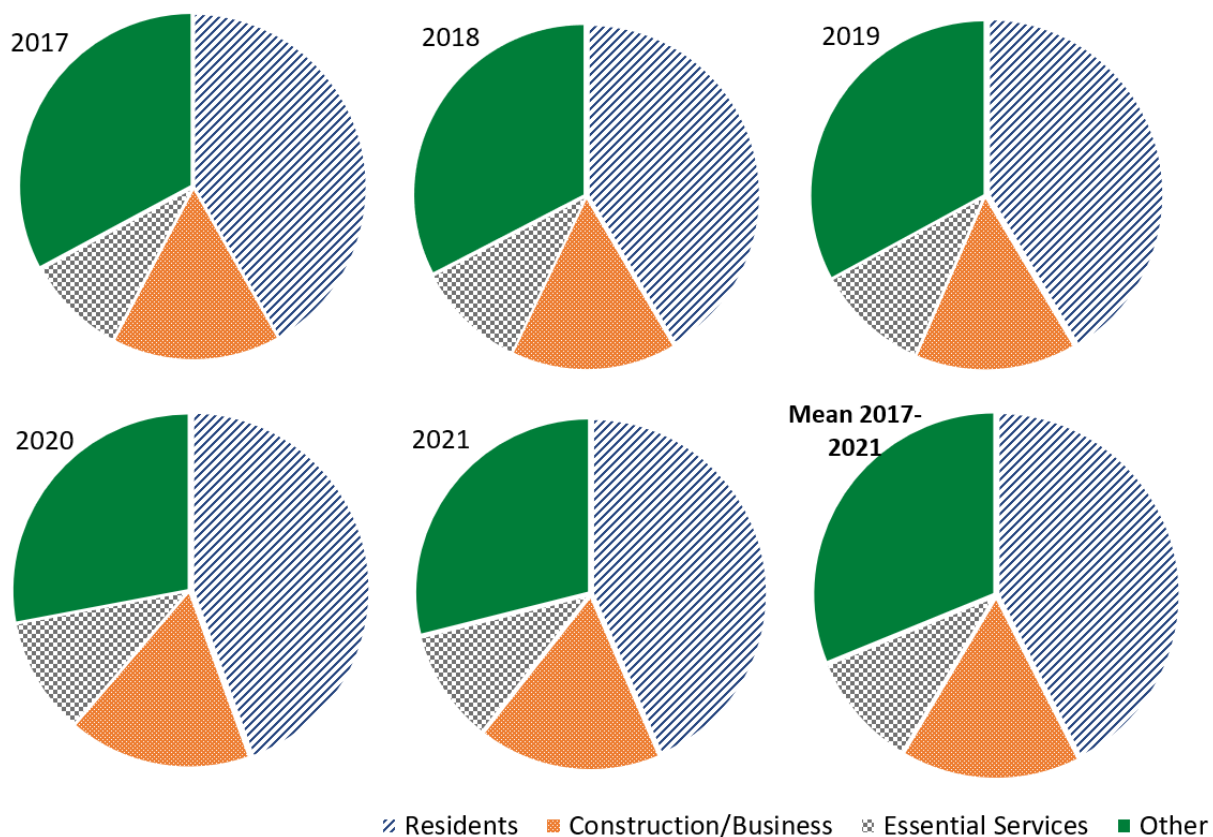


FIGURE D-5. DRIVING DENSITY THROUGH THE WEST GATE FROM JANUARY 1, 2020, TO DECEMBER 31, 2021

TABLE D-6. TRIPS BY MAIN CATEGORY BETWEEN 2014 AND 2021

Main Category	2014	2015	2016	2017	2018	2019	2020	2021	Mean (2014- 2019)	Mean (2020- 2021)	Mean (2014- 2021)
<i>Number of Trips</i>											
Residents	29,252	28,339	28,475	30,207	31,751	30,611	25,101	26,879	29,773	25,990	28,827
Construction/Business	11,020	10,923	11,172	11,454	12,001	11,698	10,138	11,367	11,378	10,753	11,222
Essential Services	6,262	6,492	6,552	6,848	7,604	7,608	6,495	7,013	6,894	6,754	6,859
Other	30,083	26,732	28,116	23,717	25,445	25,139	18,601	21,486	26,539	20,044	24,915
Total	76,617	72,486	74,315	72,226	76,801	75,057	60,335	66,745	74,584	63,540	71,823
<i>Percent</i>											
Residents	38%	39%	38%	42%	41%	41%	42%	40%	40%	41%	40%
Construction/Business	14%	15%	15%	16%	16%	16%	17%	17%	15%	17%	16%
Essential Services	8%	9%	9%	9%	10%	10%	11%	11%	9%	11%	10%
Other	39%	37%	38%	33%	33%	33%	31%	32%	36%	32%	35%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

**FIGURE D-6. TRIPS BY MAIN PERMIT CATEGORY BETWEEN 2017 AND 2021**

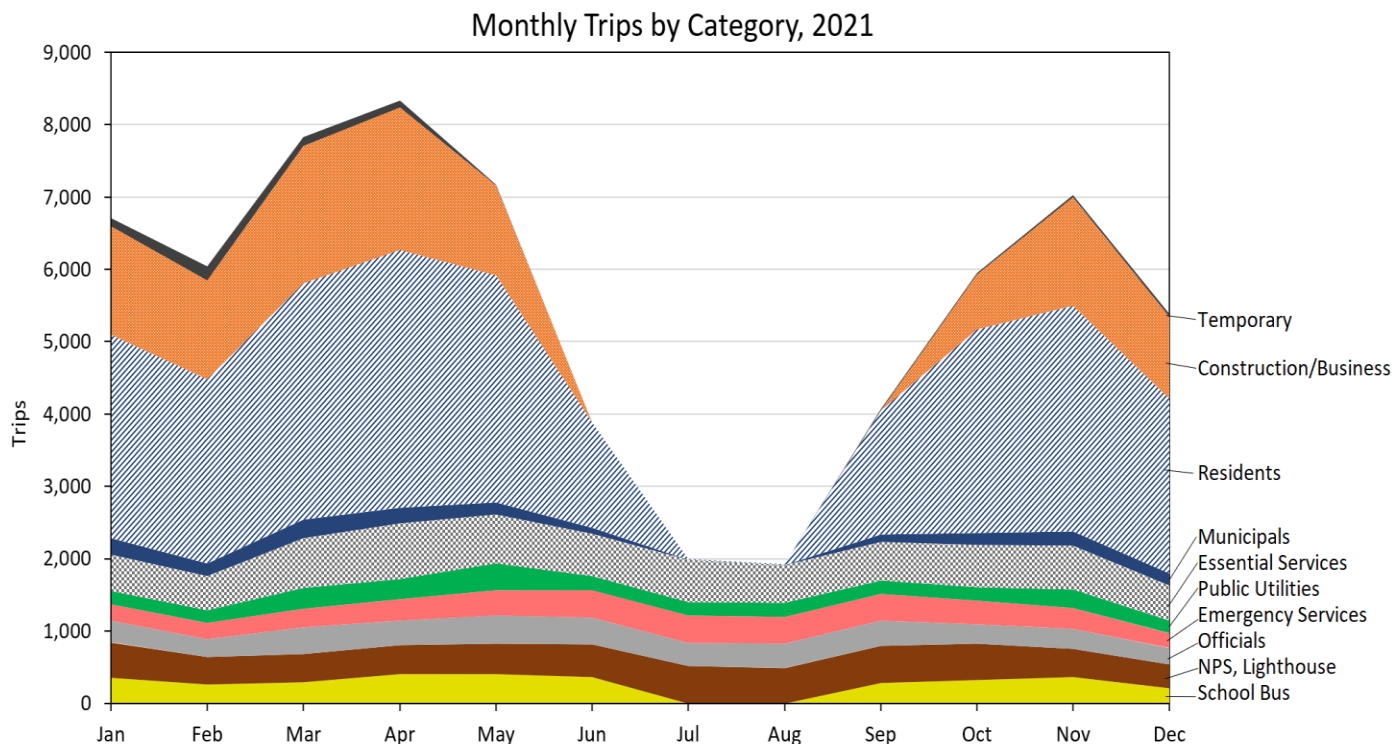


FIGURE D-7. CUMULATIVE MONTHLY TRIPS FOR ALL PERMIT CATEGORIES IN 2021

Residents

Approximately 29,000 residential trips were made annually between 2014 and 2021 (table D-7). In pre-Covid years 2014–2019, monthly trips ranged between approximately 2,700 and 3,700 during the offseason (November through April). Trips in the shoulder months June and September were approximately half of these values (figure D-8).

The monthly data were normalized to account for driving restrictions in the spring and fall shoulder seasons for the calculation of trips per day. Specifically, only days in a month were counted that allowed access at any time of the day, both for the full day (i.e., 24-hour access) and a partial day (i.e., access only during the daytime or during the night). Overall, during days when driving was permitted between October and June, the average number of trips per day in a month was in a fairly narrow range between 87 and 116 (or 0.6 to 0.8 trips per residential permit per day) with the exception of June when driving on available days increased to 141 trips/day (figure D-9).

More than three quarters (78%) of the trips made by year-round or part-time residents through the west gate were single trips in a day; 17% were second trips. Therefore, 95% of the trips were within the permitted limit of 2 trips per day. Five percent of the trips made during a day were third or more trips by residents.

It is noted that the resident data were corrected for apparent multiple swipes at the gate for the calculations in table D-8. Specifically, fob entries that occurred twice or more within 30 seconds were removed from the count. On average, multiple swipes occurred 172 times per year (or 0.6% of all counts). Although this percentage is small, it is relevant to the calculations in table D-8.

TABLE D-7. TRIPS BY RESIDENTS FROM 2014 TO 2021

Month	Year								Mean (for various years)			Residents Trips/day* (2014- 2021)
	2014	2015	2016	2017	2018**	2019**	2020	2021***	Mean (2014- 2019)	Mean (2020- 2021)	Mean (2014- 2021)	
<i>By Number of Trips</i>												
January	2,609	3,014	3,062	3,017	3,507	3,042	3,161	2,815	3,042	2,988	3,028	98
February	2,295	2,674	2,759	2,761	3,284	2,755	3,086	2,548	2,755	2,817	2,770	98
March	3,618	3,131	2,238	2,925	3,598	3,563	2,830	3,267	3,179	3,049	3,146	101
April	3,815	3,400	3,523	3,680	3,973	4,004	1,809	3,568	3,733	2,689	3,472	116
May	3,166	2,688	3,280	3,477	3,609	3,496	2,322	3,143	3,286	2,733	3,148	115
June	1,491	1,575	1,451	1,554	1,491	1,447	2,067	1,454	1,502	1,761	1,566	141
July	12	70	6	8	5	0	25	7	17	16	17	1
August	20	19	0	9	1	0	24	11	8	18	11	0
September	2,222	1,838	2,018	2,219	2,268	2,111	1,754	1,717	2,113	1,736	2,018	87
October	3,420	3,207	3,264	3,335	3,193	3,486	2,513	2,818	3,318	2,666	3,155	105
November	3,346	3,308	3,400	3,584	3,395	3,335	2,450	3,113	3,395	2,782	3,241	108
December	3,238	3,415	3,474	3,638	3,428	3,373	3,060	2,418	3,428	2,739	3,255	105
Total	29,252	28,339	28,475	30,207	31,751	30,611	25,101	26,879	29,773	25,990	28,827	
<i>By Percent</i>												
January	9%	11%	11%	10%	11%	10%	13%	10%	10%	11%	11%	
February	8%	9%	10%	9%	10%	9%	12%	9%	9%	11%	10%	
March	12%	11%	8%	10%	11%	12%	11%	12%	11%	12%	11%	
April	13%	12%	12%	12%	13%	13%	7%	13%	13%	10%	12%	
May	11%	9%	12%	12%	11%	11%	9%	12%	11%	11%	11%	
June	5%	6%	5%	5%	5%	5%	8%	5%	5%	7%	5%	
July	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
August	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
September	8%	6%	7%	7%	7%	7%	7%	6%	7%	7%	7%	
October	12%	11%	11%	11%	10%	11%	10%	10%	11%	10%	11%	
November	11%	12%	12%	12%	11%	11%	10%	12%	11%	11%	11%	
December	11%	12%	12%	12%	11%	11%	12%	9%	12%	11%	11%	
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

* Trips/day: Counted any time of day – full day (24 hours) or partial day (just nights or days)

** There was a switch in the NPS' driving computer at the end of 2018 and some data were lost (flagged in red font). These counts were adjusted. Original (but incomplete) counts in 2018/2019 were as follows: November 2018 - 2,365; December 2018 - 1,786; January 2019 - 2,176; February 2019 - 1,465.

*** Three permitholders in the resident data file were shifted to the Temporary category (total of 444 trips), because they were not listed in the resident or municipal database.

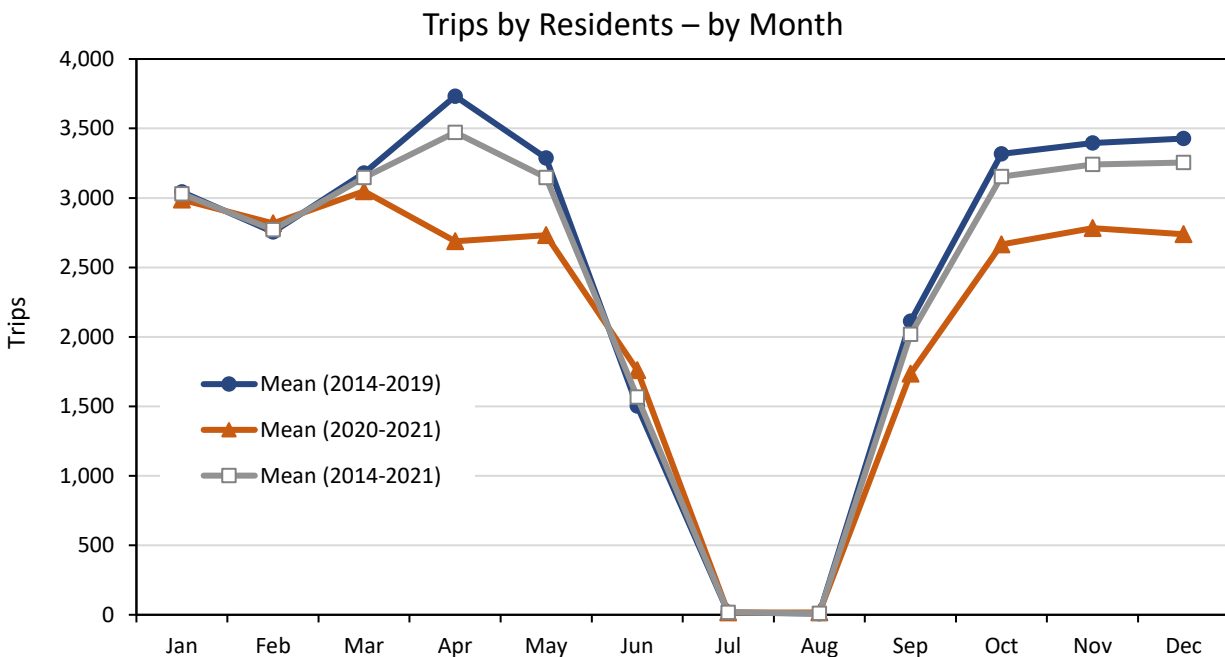


FIGURE D-8. MEANS OF MONTHLY TRIPS BY RESIDENTS DURING PRE-COVID, COVID, AND ALL YEARS BETWEEN 2014 AND 2021

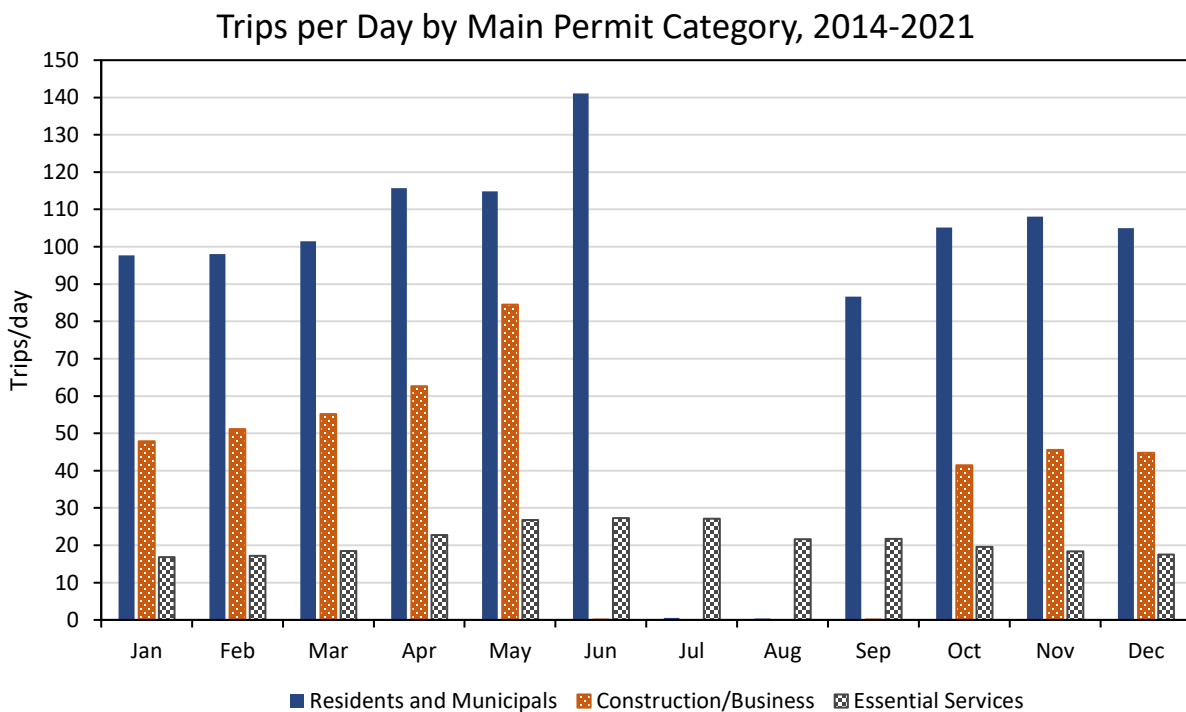


FIGURE D-9. TRIPS PER DAY BY MAIN PERMIT CATEGORIES (RESIDENTS, CONSTRUCTION/BUSINESS, ESSENTIAL SERVICES) BETWEEN 2014 AND 2021

TABLE D-8. MULTIPLE TRIPS BY YEAR-ROUND AND PART-TIME RESIDENTS THROUGH WEST GATE, 2014–2021

Year	Total Resident Trips		Trips per day *												
	Original Data	Corrected ***	Count							Percentage					
			One	Two	Three	Four	Five	>Five	One	Two	Three	Four	Five	>Five	
2014	29,252	28,999	22,131	5,255	1,255	259	69	30	76.3%	18.1%	4.3%	0.9%	0.2%	0.1%	
2015	28,339	28,198	21,754	5,108	1,104	186	38	8	77.1%	18.1%	3.9%	0.7%	0.1%	0.0%	
2016	28,475	28,303	21,657	5,095	1,209	259	54	29	76.5%	18.0%	4.3%	0.9%	0.2%	0.1%	
2017	30,207	30,072	23,132	5,219	1,317	325	69	10	76.9%	17.4%	4.4%	1.1%	0.2%	0.0%	
2018**	29,080	29,000	22,500	5,078	1,091	254	56	21	77.6%	17.5%	3.8%	0.9%	0.2%	0.1%	
2019**	28,476	28,405	22,097	4,869	1,057	267	77	38	77.8%	17.1%	3.7%	0.9%	0.3%	0.1%	
2020	25,101	24,820	19,860	3,874	848	185	41	12	80.0%	15.6%	3.4%	0.7%	0.2%	0.0%	
2021	26,879	26,637	20,920	4,490	994	180	37	16	78.5%	16.9%	3.7%	0.7%	0.1%	0.1%	
Mean	28,226	28,054	21,756	4,874	1,109	239	55	21	77.6%	17.3%	3.9%	0.8%	0.2%	0.1%	
	Balance: -172									94.9%					

* Included both residential and municipal categories

** There was a switch in the Seashore's driving computer at the end of 2018 and some data were lost. The flagged red data reflect actual counts for total resident trips. They are estimated to be undercounted by approximately 2,650 resident trips in 2018 and 2,200 trips in 2019. In this table, adjustments were not made for the undercount.

*** Corrected for multiple swipes within 30 seconds.

Construction/Business

Between 2014 and 2019, the average monthly construction/business trips ranged between approximately 850 (October) and 2,000 (April) (table D-9; figure D-10). The lowest number of trips occurred in the fall, with trips gradually increasing in winter and peaking in April.

Calculated on a normalized basis for daily trips (when driving was permitted), the highest number of trips occurred in May at 85 trips/day for the period 2014–2019 (figure D-9). This value is slightly higher than the permit cap of 80 for construction/business vehicles but it includes multiple trips through the gate (see discussion in the next paragraph). The high rate in May likely reflects increased services as homeowners get ready for the busy summer season.

As for other permit categories, construction/business permittees are allowed one trip to the mainland per day; trips are not based on trips through the gate. Therefore, construction/business permittees often take multiple trips between the Field 5 parking lot (where they may pick up workers) and the Seashore. These multiple trips are reflected in the fob data because the construction/business permittee needs to activate the gate at each passage. During pre-Covid years 2014–2019, on average 29% of the construction/business trips through the west gate were second or more trips on a given day (table D-10). The annual variability over the six pre-Covid years was small (27% to 30%). The percentage of annual trips decreased to on average 24% during Covid years 2020 and 2021. It is noted that for this calculation, the construction/business data were also corrected for multiple swipes at the west gate (using a threshold of 30 seconds).

Multiple trips were analyzed for off-island and on-island construction/business permittees for year 2021. In this year, approximately 65% of all construction/business trips through the west gate were made by off-island permittees, of which 52% were first trips, 10% were second trips, and 3% were third or more trips in a day (figure D-11). On-land construction/business permittees accounted for the remaining 35% of all

construction/business trips through the west gate, of which 22% were first trips in a day, 8% were second trips, and 5% were third or more trips.

TABLE D-9. TRIPS BY CONSTRUCTION BUSINESS VEHICLES FROM 2014 TO 2021

Month	Year								Mean (for various years)			Construction Business Trips/day* (2014-2021)
	2014	2015	2016	2017	2018**	2019**	2020	2021	Mean (2014- 2019)	Mean (2020- 2021)	Mean (2014- 2021)	
By Number of Trips												
January	1,258	1,597	1,473	1,343	1,615	1,457	1,631	1,504	1,457	1,568	1,485	48
February	1,216	1,557	1,488	1,323	1,587	1,434	1,588	1,364	1,434	1,476	1,445	51
March	1,865	1,697	1,281	1,562	1,787	1,880	1,707	1,900	1,679	1,804	1,710	55
April	1,992	1,841	1,981	1,970	2,035	2,087	1,153	1,969	1,984	1,561	1,879	63
May	1,032	753	1,238	1,323	1,216	1,174	979	1,244	1,123	1,112	1,120	85
June	0	0	0	0	0	0	15	0	0	8	2	0
July	0	0	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0	0	0	0
September	1	8	0	0	0	4	3	0	2	2	2	0
October	859	736	883	1,000	929	794	648	750	867	699	825	41
November	1,343	1,330	1,376	1,534	1,402	1,427	1,017	1,504	1,402	1,261	1,367	46
December	1,454	1,404	1,452	1,399	1,430	1,441	1,397	1,132	1,430	1,265	1,389	45
Total	11,020	10,923	11,172	11,454	12,001	11,698	10,138	11,367	11,378	10,753	11,222	
By Percent												
January	11%	15%	13%	12%	13%	12%	16%	13%	13%	15%	13%	
February	11%	14%	13%	12%	13%	12%	16%	12%	13%	14%	13%	
March	17%	16%	11%	14%	15%	16%	17%	17%	15%	17%	15%	
April	18%	17%	18%	17%	17%	18%	11%	17%	17%	15%	17%	
May	9%	7%	11%	12%	10%	10%	10%	11%	10%	10%	10%	
June	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
July	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
August	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
September	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
October	8%	7%	8%	9%	8%	7%	6%	7%	8%	7%	7%	
November	12%	12%	12%	13%	12%	12%	10%	13%	12%	12%	12%	
December	13%	13%	13%	12%	12%	12%	14%	10%	13%	12%	12%	
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

* Trips/day: Counted any time of day – full day (24 hours) or partial day (just nights or days)

** There was a switch in the NPS' driving computer at the end of 2018 and some data were lost (flagged in red font). These counts were adjusted. Original (but incomplete) counts in 2018/2019 were as follows: November 2018 - 1,025; December 2018 - 669; January 2019 - 811; February 2019 - 716.

Essential Services

In pre-Covid years 2014–2019, the average number of trips by essential services throughout the year ranged between approximately 440 (February) and 770 (May), with a mean of 575 trips per month (table D-11; figure D-12). Peaks occurred in the spring (April and May), prior to the busy summer season, and in October, prior to the cold season. The number of essential services trips in the summer was close to the annual mean in July (569) and below the mean in August (458). However, calculated on a normalized basis for daily trips (for days when driving was permitted), the highest number of trips occurred from May through July at 27 trips/day (figure D-9; table D-11).

During Covid years 2020–2021, the average number of trips per month was in a narrow range between approximately 500 and 600 (figure D-12). Overall, the total number of trips in Covid years was almost identical to pre-Covid years.

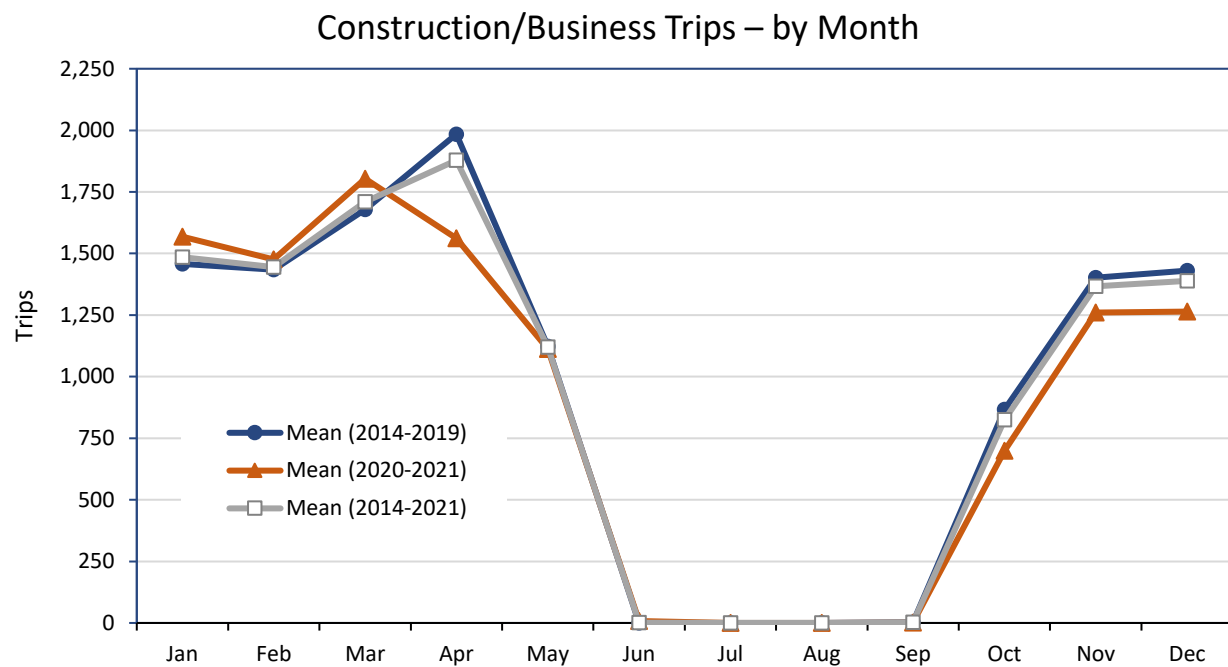
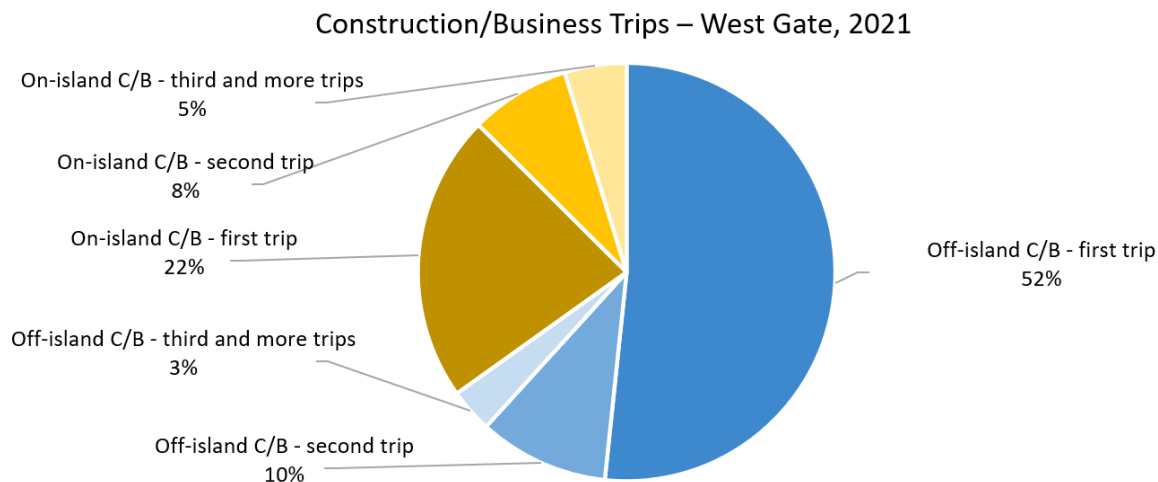


FIGURE D-10. MEANS OF MONTHLY CONSTRUCTION/BUSINESS TRIPS DURING PRE-COVID, COVID, AND ALL YEARS BETWEEN 2014 AND 2021

TABLE D-10. MULTIPLE CONSTRUCTION/BUSINESS TRIPS THROUGH THE WEST GATE, 2014 TO 2021

Year	Total Contractor / Business Trips	Second or more entries on a given Day	Number of likely double swipes	Total Contractor / Business Trips	Second or more entries on a given Day	Percent of total Trips
	Uncorrected			Corrected *		
2014	11,020	3,316	114	10,906	3,202	29.4%
2015	10,923	3,203	106	10,817	3,097	28.6%
2016	11,172	3,426	113	11,059	3,313	30.0%
2017	11,454	3,413	86	11,368	3,327	29.3%
2018**	10,863	3,224	55	10,808	3,169	29.3%
2019**	10,334	2,865	40	10,294	2,825	27.4%
2020	10,138	2,351	159	9,979	2,192	22.0%
2021	11,367	3,004	59	11,308	2,945	26.0%
Mean 2014-2019	10,961	3,241	86	10,875	3,156	29.0%
Mean 2020-2021	10,753	2,678	109	10,644	2,569	24.0%
Mean 2014-2021	10,909	3,100	92	10,817	3,009	27.7%

**FIGURE D-11. DAILY TRIP FREQUENCY BY OFF-ISLAND AND ON-ISLAND CONSTRUCTION/BUSINESSES IN 2021****TABLE D-11. TRIPS BY ESSENTIAL SERVICES FROM 2014 TO 2021**

Month	Year								Mean (for various years)			Essential Services Trips/day* (2014-2021)
	2014	2015	2016	2017	2018**	2019**	2020	2021	Mean (2014-2019)	Mean (2020-2021)	Mean (2014-2021)	
By Number of Trips												
January	381	506	548	446	691	514	582	499	514	541	521	17
February	380	550	491	405	542	474	567	473	474	520	485	17
March	617	566	381	519	556	651	605	691	548	648	573	18
April	688	575	688	743	764	801	439	761	710	600	682	23
May	709	570	737	747	929	926	581	677	770	629	735	27
June	601	459	555	591	640	618	624	587	577	606	584	27
July	617	554	488	535	592	628	579	587	569	583	573	27
August	300	437	466	476	536	533	522	520	458	521	474	22
September	455	569	541	652	595	559	503	536	562	520	551	22
October	583	540	530	674	650	641	490	586	603	538	587	20
November	443	574	556	552	565	699	406	614	565	510	551	18
December	488	592	571	508	545	564	597	482	545	540	543	18
Total	6,262	6,492	6,552	6,848	7,604	7,608	6,495	7,013	6,894	6,754	6,859	
By Percent												
January	6%	8%	8%	7%	9%	7%	9%	7%	7%	8%	8%	
February	6%	8%	7%	6%	7%	6%	9%	7%	7%	8%	7%	
March	10%	9%	6%	8%	7%	9%	9%	10%	8%	10%	8%	
April	11%	9%	11%	11%	10%	11%	7%	11%	10%	9%	10%	
May	11%	9%	11%	11%	12%	12%	9%	10%	11%	9%	11%	
June	10%	7%	8%	9%	8%	8%	10%	8%	8%	9%	9%	
July	10%	9%	7%	8%	8%	8%	9%	8%	8%	9%	8%	
August	5%	7%	7%	7%	7%	7%	8%	7%	7%	8%	7%	
September	7%	9%	8%	10%	8%	7%	8%	8%	8%	8%	8%	
October	9%	8%	8%	10%	9%	8%	8%	8%	9%	8%	9%	
November	7%	9%	8%	8%	7%	9%	6%	9%	8%	8%	8%	
December	8%	9%	9%	7%	7%	7%	9%	7%	8%	8%	8%	
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

* Trips/day: Counted any time of day – full day (24 hours) or partial day (just nights or days)

** There was a switch in the NPS' driving computer at the end of 2018 and some data were lost (flagged in red font). These counts were adjusted. Original (but incomplete) counts in 2018/2019 were as follows: November 2018 - 419; December 2018 - 323; January 2019 - 362; February 2019 - 266.

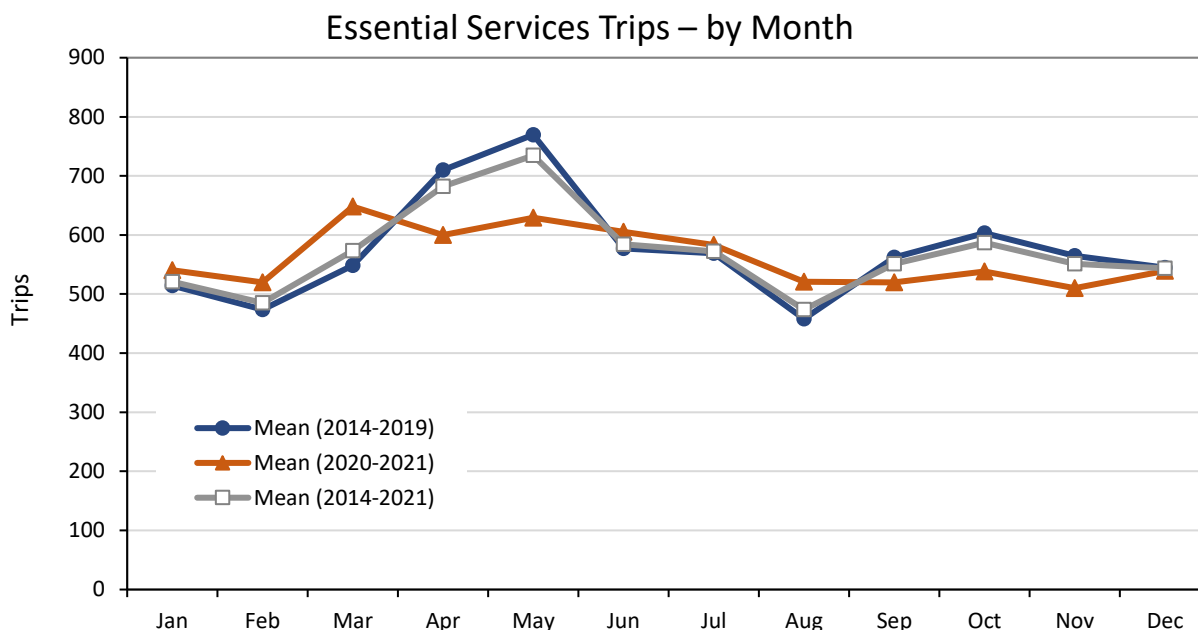


FIGURE D-12. MEANS OF MONTHLY ESSENTIAL SERVICES TRIPS DURING PRE-COVID, COVID, AND ALL YEARS BETWEEN 2014 AND 2021

Public Utilities

Public utilities accounted for approximately 4% of total annual trips. Trips by public utilities were consistently around 200 during most months, with trips reaching approximately 350 in the spring (table D-12; figure D-13), possibly to address damage that occurred during the winter.

Municipal Employees

School buses accounted for approximately 3% of total annual trips. The number of trips was highest in the winter months, reaching 239 in March (table D-12; figure D-13).

School Bus

School buses accounted for approximately 4% of total annual trips. Trips ranged between approximately 225 and 375 in most months except July and August when schools are closed (table D-12; figure D-13).

Temporary Trips

Temporary trips accounted for approximately 1% of total annual trips. The mean number of temporary trips in 2020 and 2021 was 524. Most trips occurred in winter and early spring when ferry service is limited (table D-12; figure D-13).

NPS (Seashore and Lighthouse staff)

NPS accounted for approximately 7% of total annual trips. Trips ranged between approximately 250 and 550 in 2020 and 2021 (table D-12; figure D-14). The highest number of trips occurred during the fall of 2020. Considering that these data are from Covid years, some of the seasonal data may have been influenced by activities associated with the pandemic. For example, Covid may be the reason for the low number of trips in April 2020 (60). Also, some of the trips by Lighthouse and other NPS staff go only to the ranger station at the west gate, and do not result in driving on the beach or in the communities.

TABLE D-12. TRIPS BY THE PUBLIC UTILITY, MUNICIPAL EMPLOYEES, SCHOOL BUS, TEMPORARY, NPS, OFFICIAL USE, AND POLICE/FIREFIGHTING CATEGORIES IN 2020 AND 2021

Public Utilities				Municipal Employees			School Bus			Temporary			NPS (Seashore; Lighthouse)			Official Use			Police/Firefighting		
Month	2020	2021	Mean (2020-2021)	2020	2021	Mean (2020-2021)	2020	2021	Mean (2020-2021)	2020	2021*	Mean (2020-2021)	2020	2021	Mean (2020-2021)	2020	2021	Mean (2020-2021)	2020	2021	Mean (2020-2021)
<i>By Number of Trips</i>																					
January	239	190	215	239	224	232	300	350	325	98	152	125	363	492	428	415	298	357	246	229	238
February	206	178	192	232	175	204	236	264	250	132	237	185	400	373	387	353	246	300	222	227	225
March	289	287	288	224	253	239	171	288	230	78	177	128	270	396	333	405	362	384	252	262	257
April	238	286	262	122	217	170	37	402	220	35	156	96	60	399	230	322	347	335	163	289	226
May	268	379	324	141	159	150	53	405	229	13	65	39	105	423	264	393	391	392	241	341	291
June	210	189	200	107	85	96	70	359	215	2	21	12	241	457	349	443	364	404	340	388	364
July	232	184	208	2	0	1	0	0	0	0	0	0	376	513	445	344	323	334	359	382	371
August	259	199	229	3	0	2	0	0	0	0	0	0	373	486	430	357	344	351	289	363	326
September	238	188	213	115	102	109	331	282	307	1	34	18	599	514	557	416	343	380	257	372	315
October	272	190	231	147	163	155	354	323	339	7	59	33	518	507	513	343	265	304	255	322	289
November	246	253	250	171	196	184	242	362	302	19	84	52	416	389	403	222	281	252	180	285	233
December	187	178	183	224	170	197	286	213	250	42	80	61	406	323	365	333	226	280	206	206	206
Total	2,884	2,701	2,793	1,727	1,744	1,736	2,080	3,248	2,664	427	1,065	746	4,127	5,272	4,700	4,346	3,790	4,068	3,010	3,666	3,338
<i>By</i>																					
January	8%	7%	8%	14%	13%	13%	14%	11%	12%	23%	14%	17%	9%	9%	9%	10%	8%	9%	8%	6%	7%
February	7%	7%	7%	13%	10%	12%	11%	8%	9%	31%	22%	25%	10%	7%	8%	8%	6%	7%	7%	6%	7%
March	10%	11%	10%	13%	15%	14%	8%	9%	9%	18%	17%	17%	7%	8%	7%	9%	10%	9%	8%	7%	8%
April	8%	11%	9%	7%	12%	10%	2%	12%	8%	8%	15%	13%	1%	8%	5%	7%	9%	8%	5%	8%	7%
May	9%	14%	12%	8%	9%	9%	3%	12%	9%	3%	6%	5%	3%	8%	6%	9%	10%	10%	8%	9%	9%
June	7%	7%	7%	6%	5%	6%	3%	11%	8%	0%	2%	2%	6%	9%	7%	10%	10%	10%	11%	11%	11%
July	8%	7%	7%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	10%	9%	8%	9%	8%	12%	10%	11%
August	9%	7%	8%	0%	0%	0%	0%	0%	0%	0%	0%	0%	9%	9%	9%	8%	9%	9%	10%	10%	10%
September	8%	7%	8%	7%	6%	6%	16%	9%	12%	0%	3%	2%	15%	10%	12%	10%	9%	9%	9%	10%	9%
October	9%	7%	8%	9%	9%	9%	17%	10%	13%	2%	6%	4%	13%	10%	11%	8%	7%	7%	8%	9%	9%
November	9%	9%	9%	10%	11%	11%	12%	11%	11%	4%	8%	7%	10%	7%	9%	5%	7%	6%	6%	8%	7%
December	6%	7%	7%	13%	10%	11%	14%	7%	9%	10%	8%	8%	10%	6%	8%	8%	6%	7%	7%	6%	6%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

* Three permitholders in the resident data file were shifted to the Temporary category (total of 444 trips), because they were not listed in the resident or municipal database.

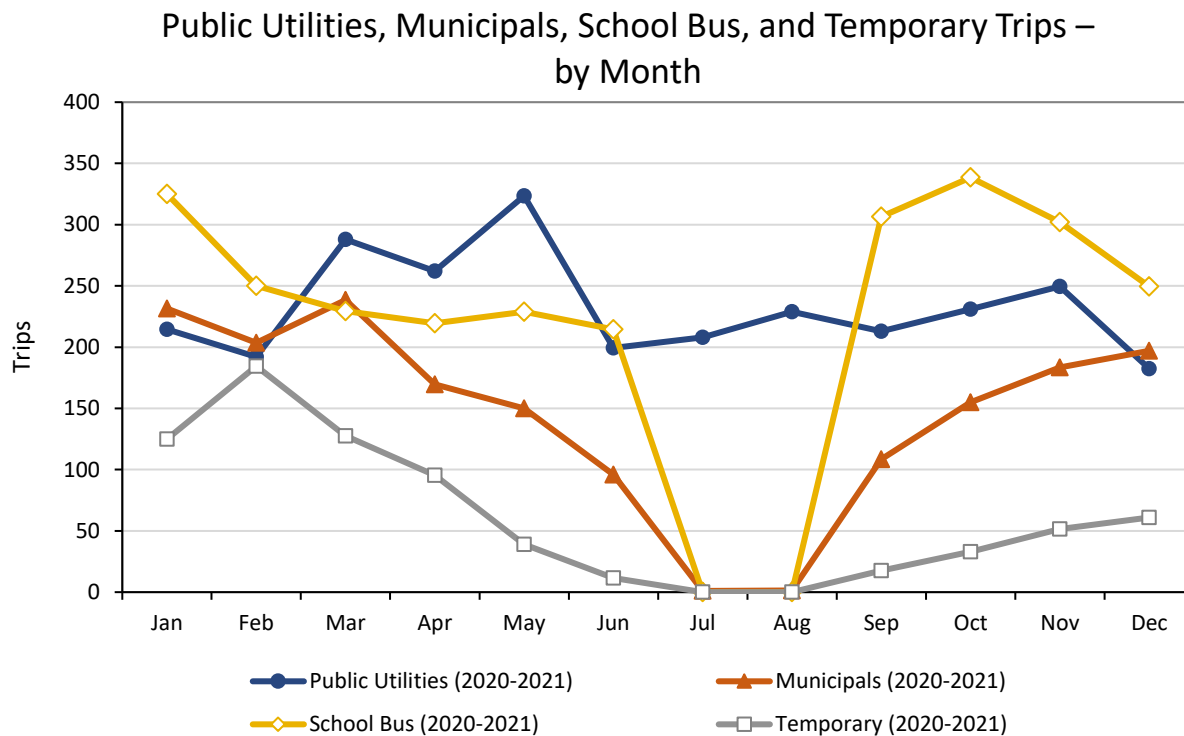


FIGURE D-13. MEANS OF MONTHLY TRIPS BY THE PUBLIC UTILITIES, SCHOOL BUS, AND TEMPORARY CATEGORIES IN 2020 AND 2021

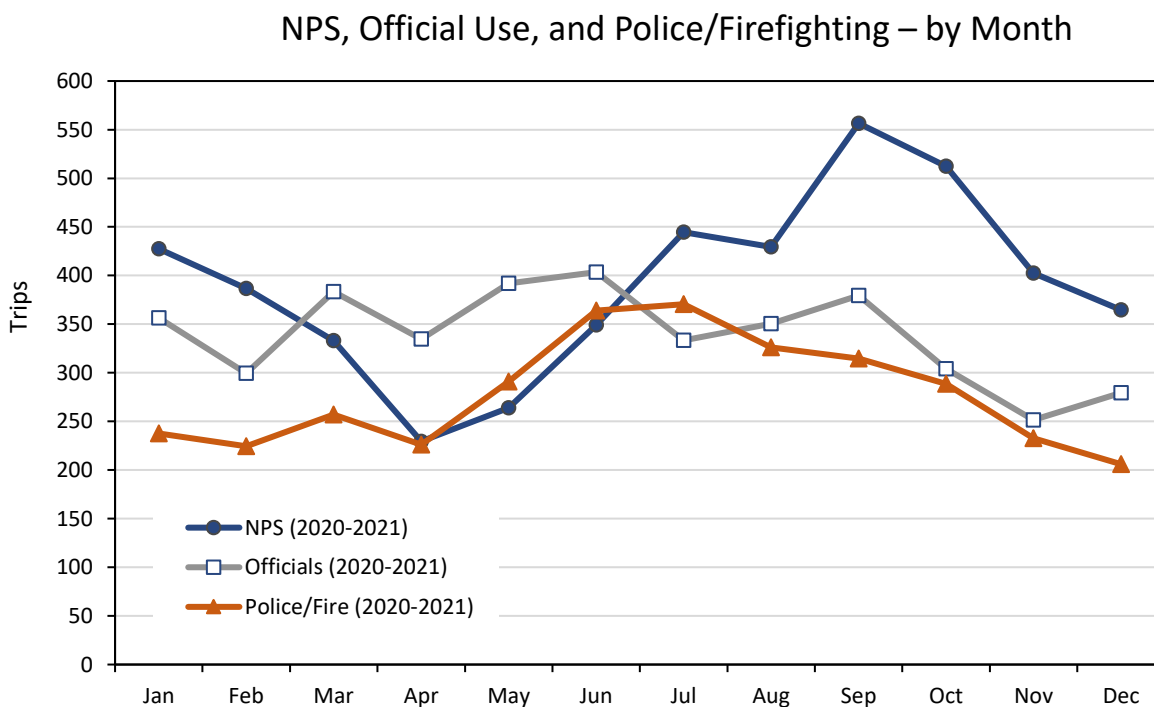


FIGURE D-14. MEANS OF MONTHLY TRIPS BY THE NPS, OFFICIAL USE, AND EMERGENCY (POLICE/FIREFIGHTING) CATEGORIES IN 2020 AND 2021

Official Use

Official use vehicle trips accounted for approximately 6–7% of total annual trips. Trips ranged between approximately 250 and 400 in 2020 and 2021 and were uniformly spread across the year (table D-12; figure D-14).

Emergency (Police/Firefighting)

Police and firefighting vehicle trips accounted for approximately 5% of total annual trips. Trips ranged between approximately 200 and 400 in 2020 and 2021. The monthly distribution reflects the number of visitors with trips almost doubling in the summer compared to offseason months (table D-12; figure D-14).

8. DRIVING TO COMMUNITIES (BASED ON 2021 DATA)

This section analyses the driving patterns by categories based on 2021 driving data and driving restriction. It includes a review of permitted destinations for all categories and a more detailed analysis of the main categories of residents, municipal employees, and construction/business.

Destinations

Permitted destinations vary for each permit category:

- **Residents:** Permitted residents (both year-round and part-time) are allowed to drive to their residence in their community. They are also permitted to drive to the post office in Ocean Beach if they have a post office box there. Currently, permitted residents that use their vehicle to drive between communities are only subject to NPS permits when they cross NPS lands.
- **Municipal:** Municipal permits have similar restrictions and conditions as resident permits.
- **Construction/Business:** Construction/business applicants must provide proof of work for the communities to which they seek access. This community is the farthest they can travel after entering the gate. The NPS enforces this restriction and believes that it is generally followed by construction/business permittees. It is a known practice that some construction/businesses travel between multiple jobs sites per day to supervise jobs, which is not accounted for in the data from the west gate.
- **Essential Services:** Similarly, essential services are only permitted to access the communities for which they have demonstrated need.
- **Official Use:** Official vehicles of the towns of Islip and Brookhaven are permitted to access their respective communities. Other official vehicles (e.g., federal, state, county) can drive to communities of both towns.
- **School Bus:** School buses are currently permitted to go as far east as Cherry Grove (to pick up a student that lives in this community). If there were students who lived farther east, the bus would be allowed to pick them up in those communities as well. However, beach closures during the nesting piping plover season may limit access to communities east of Point O'Woods.
- **Emergency Services (police, firefighting, ambulance):** These types of emergency vehicles can access all parts of the Seashore during emergencies. In nonemergency situations, these vehicles must adhere to applicable driving restrictions and closures for resource protection.

- **NPS:** NPS vehicles can access all parts of the Seashore as part of their management responsibility.
- **Temporary:** Communities that can be accessed are specified in the individual temporary permit, which differs for each permit.
- **Recreational:** Recreational trips are only permitted through the east gate and are limited to the beach south of the Fire Island Wilderness.

Methodology

The driving density was analyzed for the categories of residents, municipal employees, and construction/business for 2021. This analysis consisted of the following steps:

- All fob swipes at the gate were separated into five categories: year-round residents, part-time residents, municipal, temporary, and construction/business.
- Permittees were further separated by community (residents, municipal, temporary) or the farthest distance they were allowed to travel from the west gate (construction/business).
- There were 451 trips by individuals in the resident and municipal database for 2021 that were not listed in the 2021 permittee database. These trips were not considered in the driving density analysis as they could not be assigned to a category.
- For some residents and construction/business permittees, the database listed multiple communities. The analysis used the community farthest to the east from the west gate. Similarly, some construction/business permittees were permitted for all Fire Island communities; in this case, the analysis assigned them to Davis Park, the community farthest to the east from the west gate.
- The 2021 raw database for residents included 3 temporary permittees (444 trips). The database was adjusted by shifting these trips from the file for resident trips to the file for temporary trips.

Driving to Communities – by Category

Year-round Residents

The total number of trips in 2021 for all residents and municipal permittees was 28,623 (table D-7). Year-round residents accounted for 79% of these trips, part-time residents for 15%, and municipal employees for 6%.

Nearly all trips by year-round residents were from western communities (98.8%; table D-3). Most trips were made from Kismet and Ocean Beach (figure D-15). Only 1.2% of the trips made by year-round residents were from eastern communities, with Cherry Grove accounting for 0.9% and Fire Island Pines for 0.3%. There were no year-round resident permits for Water Island and Davis Park in 2021 (and therefore no trips).

Within the western communities, most year-round resident trips (61%) were from the west section (Kismet to Lonelyville), with most trips made from Kismet (34%) (table D-3). The east section of the western communities (Atlantique to Oakleyville) accounted for 38% of all year-round resident trips, with most trips made from Ocean Beach (23%).

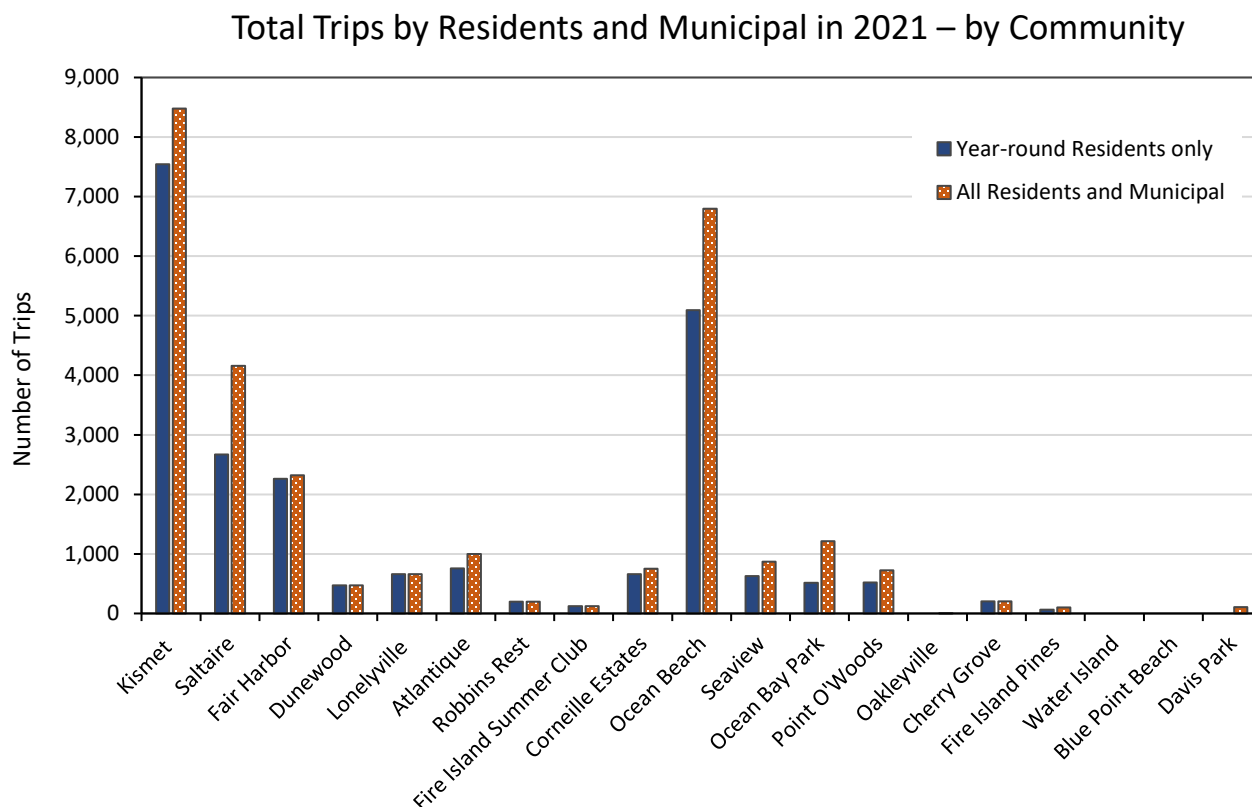
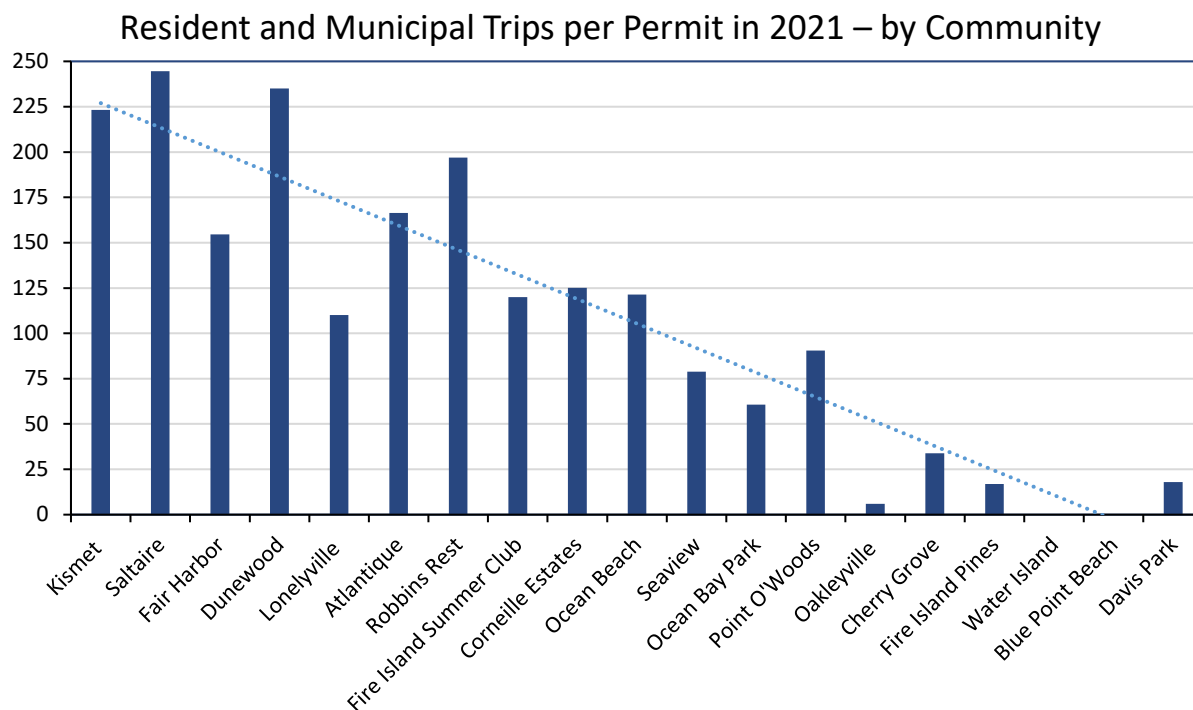


FIGURE D-15. TOTAL TRIPS PER YEAR FOR RESIDENT AND MUNICIPAL CATEGORIES IN 2021, BY COMMUNITY

As discussed in section 6 of this appendix, the number of resident permits per structure was also substantially higher in western communities than in eastern communities. On average, 5% of the structures had a year-round resident permit in the western communities (i.e., there was one year-round resident permit for every 20 structures) compared to 0.7% in the eastern communities (i.e., there was one permit for every 140 structures) (table D-3; figure D-2). In Kismet, the percentage was highest; 14% of the structures had permits (i.e., there was one year-round resident permit for every 7 structures).

The west section of the western communities (Kismet to Lonelyville) also had the highest average number of annual trips per year-round resident and municipal permit (219 trips/permit); this ratio was highest for Kismet (251), Saltaire (243), and Dunewood (235) (table D-3). The average number of trips per permit in the east section of the western communities was 116, approximately half of the value for the west section. The number of trips per permit for Ocean Beach was 127. The average number of trips per permit for all western communities was 164. The average number of trips per permit for all eastern communities was 34, five times lower than for the western communities.

Including also part-time resident and municipals, these values change as follows: The west section of the western communities (Kismet to Lonelyville) had the highest average number of annual trips (206 trips/permit), with the highest ratios for Kismet (223), Saltaire (245), and Dunewood (235) (table D-3; figure D-16). The average number of trips per permit in the east section of the western communities was 106, with higher ratios for Ocean Beach (127). The average number of trips per permit was 148 for all western communities and 21 for all eastern communities (seven times lower than for the western communities).



Note: Calculated for each community as follows: Sum of all resident and municipal trips divided by sum of all resident and municipal permits.

FIGURE D-16. AVERAGE NUMBER OF TRIPS PER YEAR FOR EACH RESIDENT AND MUNICIPAL PERMITTEE IN 2021, BY COMMUNITY

Part-time Residents

There were 4,129 part-time resident trips in 2021 (table D-3). Western communities accounted for 96.5% of these trips, with most trips made from Ocean Beach (32%), Kismet (23%), and Ocean Bay Park (17%). Only 3.5% of the total number of part-time resident trips were made from eastern communities, specifically from Fire Island Pines (0.9%) and Davis Park (2.6%). The average number of trips per part-time resident permit in the western communities was 108, which was one-third lower than for year-round resident permits (table D-3). The average number of trips per part-time resident permit for the eastern communities was 12, which was two thirds lower than for year-round resident permits.

Municipal Employees

There were 1,675 municipal trips in 2021 (table D-3). All trips were made from the four western communities that had municipal permits in 2021. The highest number of residential trips was made from Saltire (973), followed by Ocean Beach (395).

Construction/Business

In 2021, there were 11,367 construction/business trips. Approximately 85% of the trips were made by permittees permitted to access western communities, and 15% of the trips were made by permittees allowed to access eastern communities (table D-4). Most common were trips by construction/business permittees permitted to Point of Woods (20%), Ocean Beach (20%), and Ocean Bay Park (14%). Approximately 7% of construction/business trips were permitted to Fire Island Pines and an additional 6% of construction/business trips were permitted to all communities (i.e., as far east as Davis Park).

The total number of construction/business permittees between western and eastern communities (70% and 30%, respectively) was identical to the percentage of all structures, as stated previously (table D-4). However, the number of trips in 2021 by construction/business permittees was higher to western communities (85%) than to eastern communities (15%).

9. NEAR-TERM CONSIDERATIONS AFFECTING ORV DRIVING

There are several factors affecting access and driving patterns on a regular basis, primarily protection for piping plovers and erosion of the beach.

Beach Closures from Nesting Piping Plovers

There have been beach closures every year for the past 20 to 30 years to protect nesting piping plovers (as also described in the main EA). In accordance with the USFWS (1996) recovery plan, the NPS closes the beach for 1,000 m (3,300 feet) on either side of a brood when the chicks hatch until they fledge, which means the closure area may be adjusted regularly in response to chick mobility. A dune cut may also be closed if a nest is located near the cut. In addition, the NPS may already close a cut during the egg incubation period to avoid disturbance of nesting piping plovers; closures of the beach during the incubation period are less common and only occur when it appears that driving disturbs the nests.

The NPS protects and monitors the piping plover during its nesting season, which takes place annually roughly from mid-March to mid-September. Closure locations and periods vary from year to year because they depend entirely on where the birds establish nests and where chicks move to. In recent years, approximately half of the piping plover nests were located along the Fire Island Wilderness west of Old Inlet, which has been closed since the breach in 2012. When reopened to driving, that area will be closed to most driving from March 15 to September 15 (figure D-17). Closures may include the entire length of a beach segment between dune cuts or just a portion of the beach segment (partial closure). However, even with partial closure, through-traffic is not possible along that beach segment.

Beach closure implies the following for the two groups of communities:

- **Western communities (and Oakleyville):** If the Kismet dune cut or the beach south of the 13 western communities are closed, these communities are still accessible via Burma Road during permitted driving periods. Unless the NPS closes the Sunken Forest/Sailors Haven tract at the eastern border of Point O'Woods, Oakleyville is also accessible either via Burma Road (if allowed by Point O'Woods) or the Oakleyville dune cut.
- **Eastern communities (and Blue Point Beach):** Access to the four eastern communities during periods of closures of dune cuts and the Atlantic Ocean beach in the Sunken Forest/Sailors Haven tract are only be permitted via Burma Road for certain categories (emergency services, NPS, official use, public utilities, and essential services (case-by-case). Residents, municipal employees, and construction/businesses are only permitted access when ferries are suspended and a breach in the island blocks access to eastern communities through the east gate. Along federal tracts where there is no interior road (i.e., Carrington tract, Talisman/Barrett Beach tract, Blue Point Beach tract); with a fully or partially closed beach, communities east of Cherry Grove (i.e., Fire Island Pines, Water Island, Blue Point Beach, Davis Park) may not be accessible by vehicles coming from the west (except by emergency vehicles services that have permission to drive even in closed beach sections in case of emergencies). Similarly, beach driving by vehicles staged in these communities may not be possible depending on the location of the closed beach section.

Overall, the piping plover population has been increasing (see the "Special-Status Species, including Federally Listed Species" section within section 3.4 of the main EA above). Should this trend continue, the number of beach closures during piping plover season may also increase.

Fire Island National Seashore – Beach closures in 2022

Segments between Dune Cuts		Month	March					April					May					June					July					August					September				
From – To		Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31				
1	Kismet – Atlantique																																				
2	Atlantique – FI Summer Club																																				
3	FI Summer Club – Ocean Bay Park																																				
4	Ocean Bay Park – Oakleyville																																				
5	Oakleyville – Middle																																				
6	Middle – Cherry Grove																																				
7	Cherry Grove – FI Pines																																				
8	FI Pines – East FI Pines																																				
9	East FI Pines – Talisman																																				
10	Talisman – Blue Point																																				
11	Blue Point – Davis Park																																				
12	Davis Park – Watch Hill																																				
13	Wilderness - west of breach																																				
14	Wilderness - east of breach																																				

Notes:




-  Seasonal full closure of segment between dune cuts for various reasons, including piping plovers
-  Full closure of segment between dune cuts because of piping plovers
-  Partial closure of segment between dune cuts because of piping plovers

FIGURE D-17. CLOSURES BETWEEN DUNE CUTS DURING NESTING PIPING PLOVER SEASON IN 2022

Erosion

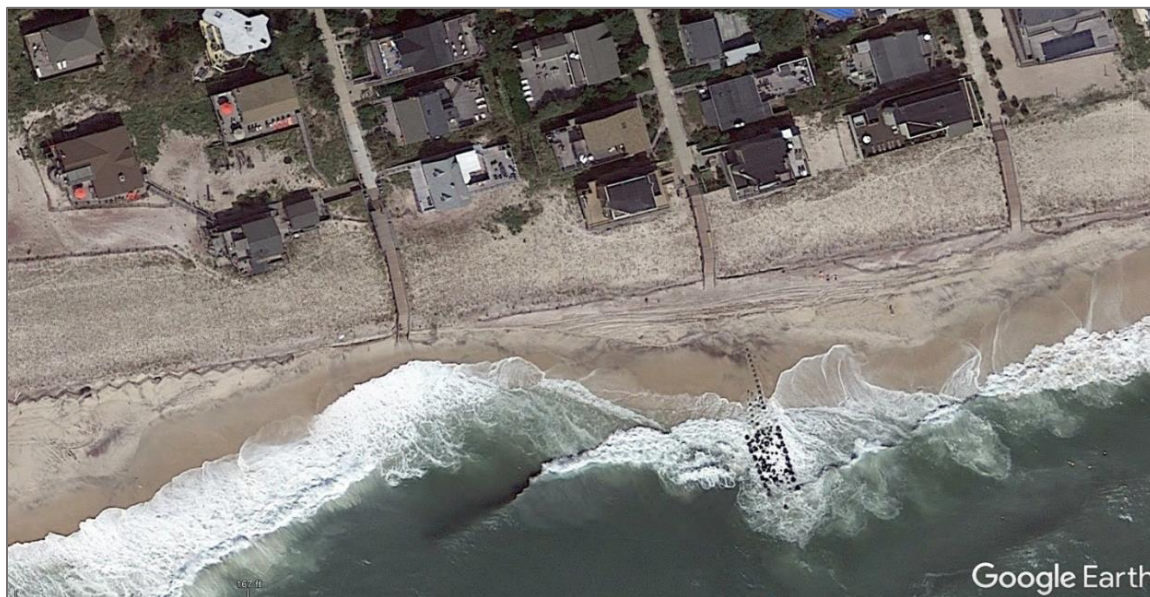
The beach may be impassable as a result of localized or widespread erosion caused by storms or more gradual seasonal sediment transport changes. Storms can significantly cause shoreline changes by mobilizing beach and dune sand and transporting it offshore or along the beach (i.e., longshore transport). Storms are more common in winter than in other seasons, and can be significant (examples of major storms are listed in table D-13). Other factors affecting localized accretion (gain) or erosion (loss) of sand include human-made structures along the shoreline, beach nourishment by the USACE or individual communities, nearshore circulation cells, and variability in the longshore transport pattern along southern Long Island (e.g., figure D-18).

TABLE D-13. EXAMPLES OF MAJOR STORMS IMPACTING FIRE ISLAND

Date	Name of Storm	Effect on Fire Island
1693		Major hurricane in 1693 causing severe damage to Long Island. High winds and strong waves created the Fire Island cut.
September 21, 1938	Great New England Hurricane (also known as “Long Island Express”)	Category 3 hurricane with 17-foot (5-m) waves and wind gusts of 125 miles per hour (mph). It overwashed 1/3 to 1/2 of the island, destroying many houses, including 300 homes in Ocean Beach and 100 homes in Saltaire. Ten new inlets formed from the storm from Fire Island to East Hampton.
September 14, 1944	Hurricane	Category 3 wind strength. Tides reached 6 feet above sea level, approximately 5 feet above predicted tide. Dunes repaired after the 1938 hurricane were severely damaged.
September 21, 1961	Hurricane Esther	Hurricane causing coastal flooding. It had winds gusts of 108 mph.
March 6-8, 1962	Nor’easter (referred to as “Ash Wednesday”)	Resulted in over 50 washovers and destroyed 47 houses and severely damaged 74 other properties on Fire Island.
December 11, 1992	Nor’easter	Storm with wave heights reaching over 30 feet. The storm surge was more than 4.5 feet above normal, allowing waves to reach dunes and bluffs behind the beach. Referred to as “one of the epic storms of all time” by the National Weather Service because of strength and duration.
October 29, 2012	Superstorm Sandy	Waves reached a height of 30 feet and winds averaged 90 mph. Water inundated nearly the entire island, destroying about 200 homes and eroding sand dunes. The barrier island was breached at Old Inlet. Extensive beach erosion caused half of Fire Island’s beaches and sand dunes to be washed away. Only 18% of the sand volume before Superstorm Sandy had returned by the spring. The shipwreck <i>Bessie White</i> was uncovered 4 miles east of Davis Park.
September 15 and 23, 2023	Hurricane Lee and Tropical Storm Ophelia	Caused significant damage on Fire Island, resulting in infrastructure damage and beach erosion.

Sources: FireIsland.com 2017a, 2017b; NWS 2023; Psuty et al. 2005; Tanski 2012; Turner 2005; New York State 2024

The frequency of storms is random, and characteristics vary for each storm (duration, wind strength, and direction). Storms may severely erode the beach, such as during a storm in September 2023 (figure D-19). The NPS restricts driving along severely eroded beaches of NPS tracts. The NPS commonly does not close severely eroded beaches in front of communities because the lack of drivable beach provides its own closure. The dynamic nature and shifts in the shoreline over a 15-year period (2007–2022) was integrated by Psuty et al. (2023); sediment accretion and erosion shifts the shoreline from year to year and is locally variable (figure D-20).



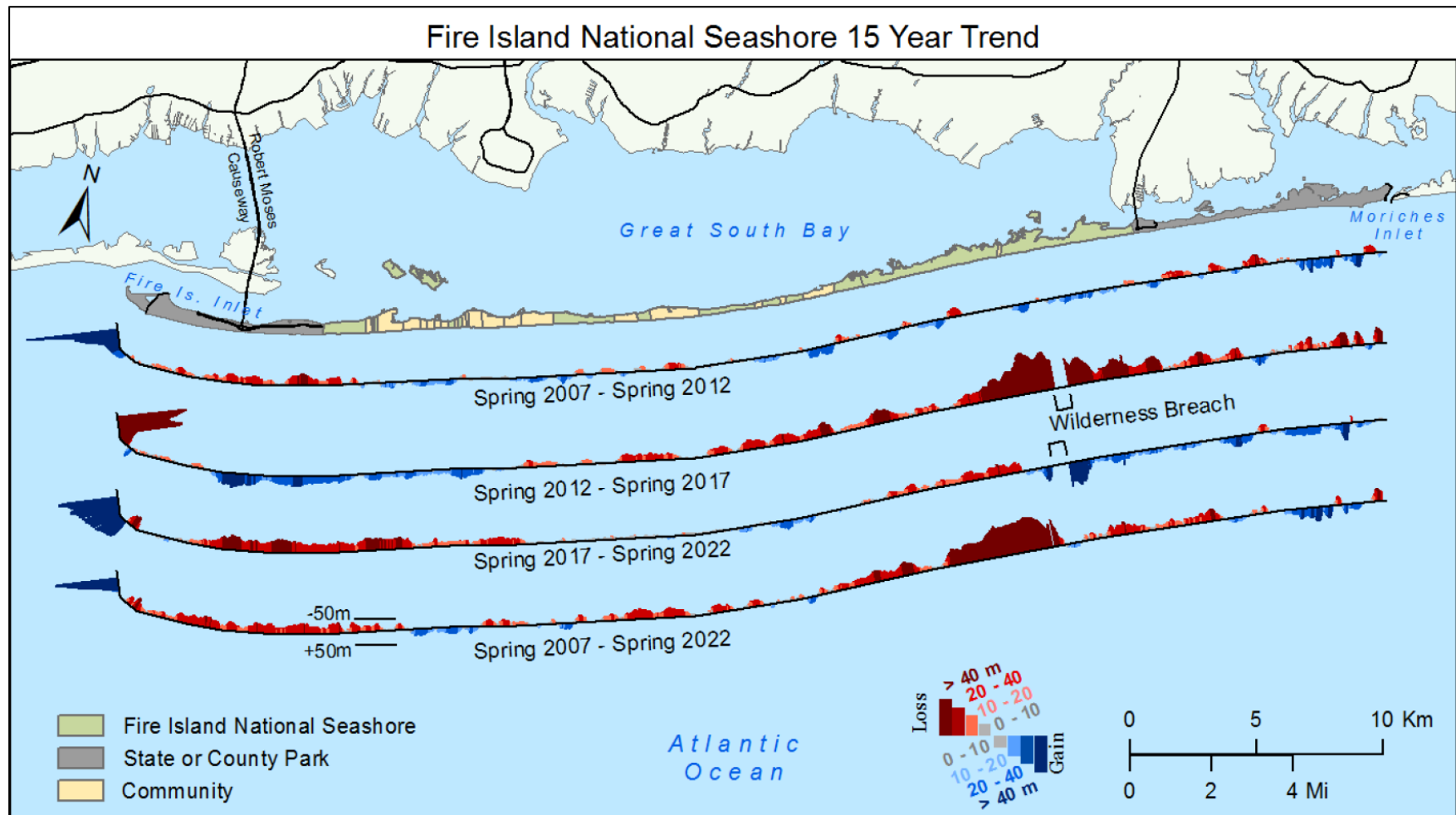
Source: Google Earth. Note the human-made structure on the beach. The oblique angle of the waves indicates a westward longshore transport direction on this day.

FIGURE D-18. EROSION AT CORNEILLE ESTATES, SEPTEMBER 19, 2019



Photo credit: Randy Lauwasser in CBS News (2024)

FIGURE D-19. EROSION ALONG FIRE ISLAND PINES, FALL 2023



Note: The scale for all vectors of change is incorporated on the Spring 2007–Spring 2022 survey comparison.

Source: Psuty et al. (2023)

FIGURE D-20. DISTRIBUTION OF 5-YEAR SHORELINE POSITION CHANGE FROM 2007 TO 2022 ALONG THE ATLANTIC OCEAN

10. LONG-TERM CONSIDERATIONS AFFECTING ORV DRIVING

Long-term considerations to driving are climate change and sea-level rise, and the potential for new breaches in the future.

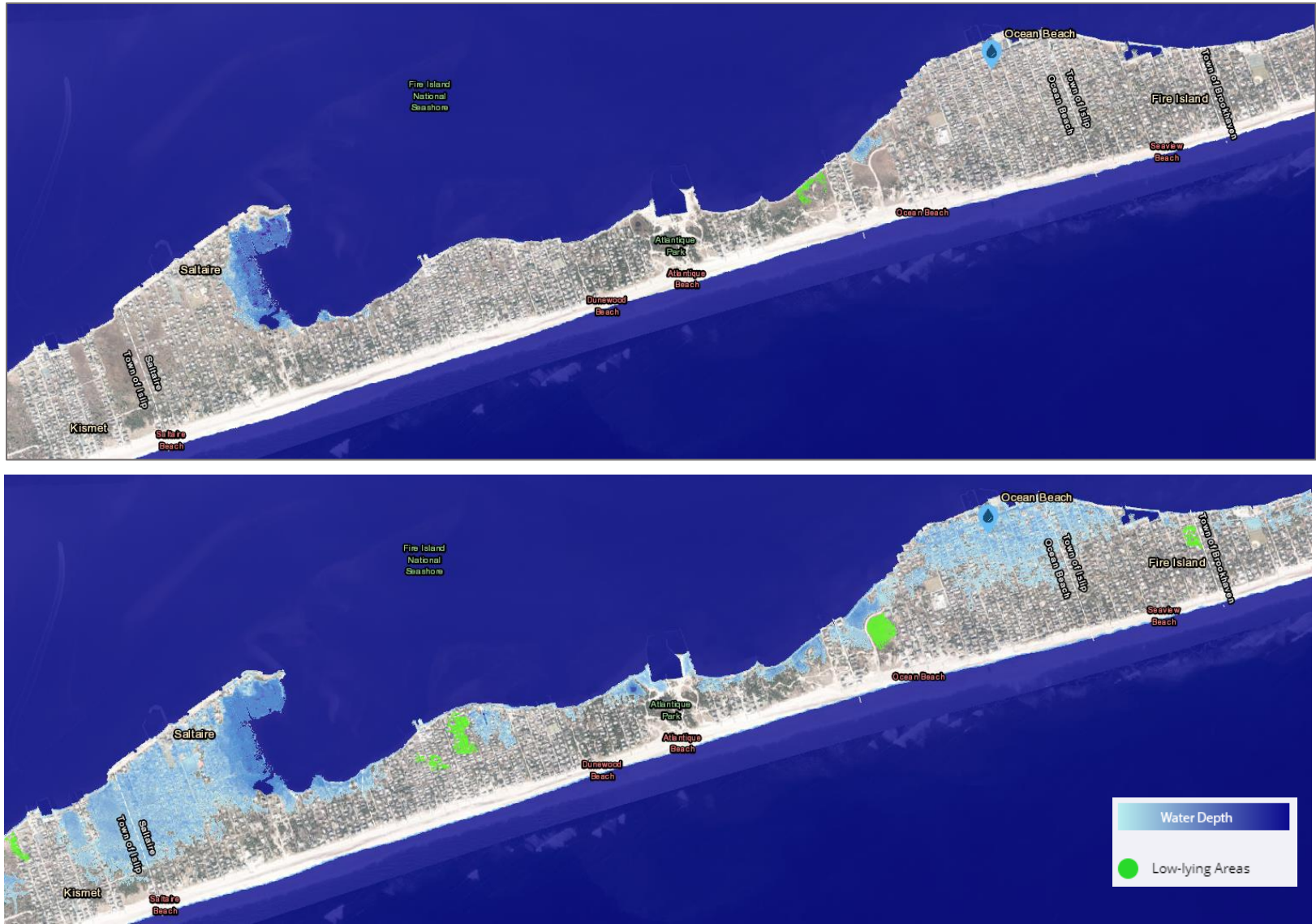
Climate Change and Sea-Level Rise

Fire Island is part of a barrier island system that comprises approximately two-thirds of the south shore of Long Island. With climate change, the frequency and intensity of storms is expected to increase because of warmer ocean water. This change, combined with a rising sea level, adds a degree of unpredictability in future management of the Seashore. Aside from localized erosion (see section 9 in this appendix), sea-level rise has the potential to alter the area available for driving. Impacts from climate change on the island and its resources are related to the rate of the future sea-level rise. Impacts include flooding and permanent inundation of low-lying parts of the Seashore, a rising groundwater table, shoreline erosion, damage of structures and infrastructure from waves during storms, and the potential for another breach during a major storm or hurricane.

Sea-level rise is projected to accelerate over time. Projections vary widely, and actual rates will depend in part on changes in emissions over the next decades, response by ice sheets to warming, and other factors. Ricci et al. (2020) summarized projected rate increases as between 0.15 and 0.54 feet by 2050, and between 1.3 and 7.2 feet by 2100; the authors applied NPS estimates of 0.46 feet by 2030, 0.85 feet by 2050, and 2.51 feet by 2100 for their assessment of the vulnerability of Fire Island (table D-14). Projections developed by the National Oceanographic and Atmospheric Administration (NOAA) in 2022 based on different climate scenarios were similar. Figures D-21 and D-22 present the projected inundation of one and two feet for the western communities and for the Sunken Forest/Sailors Haven tract, respectively.

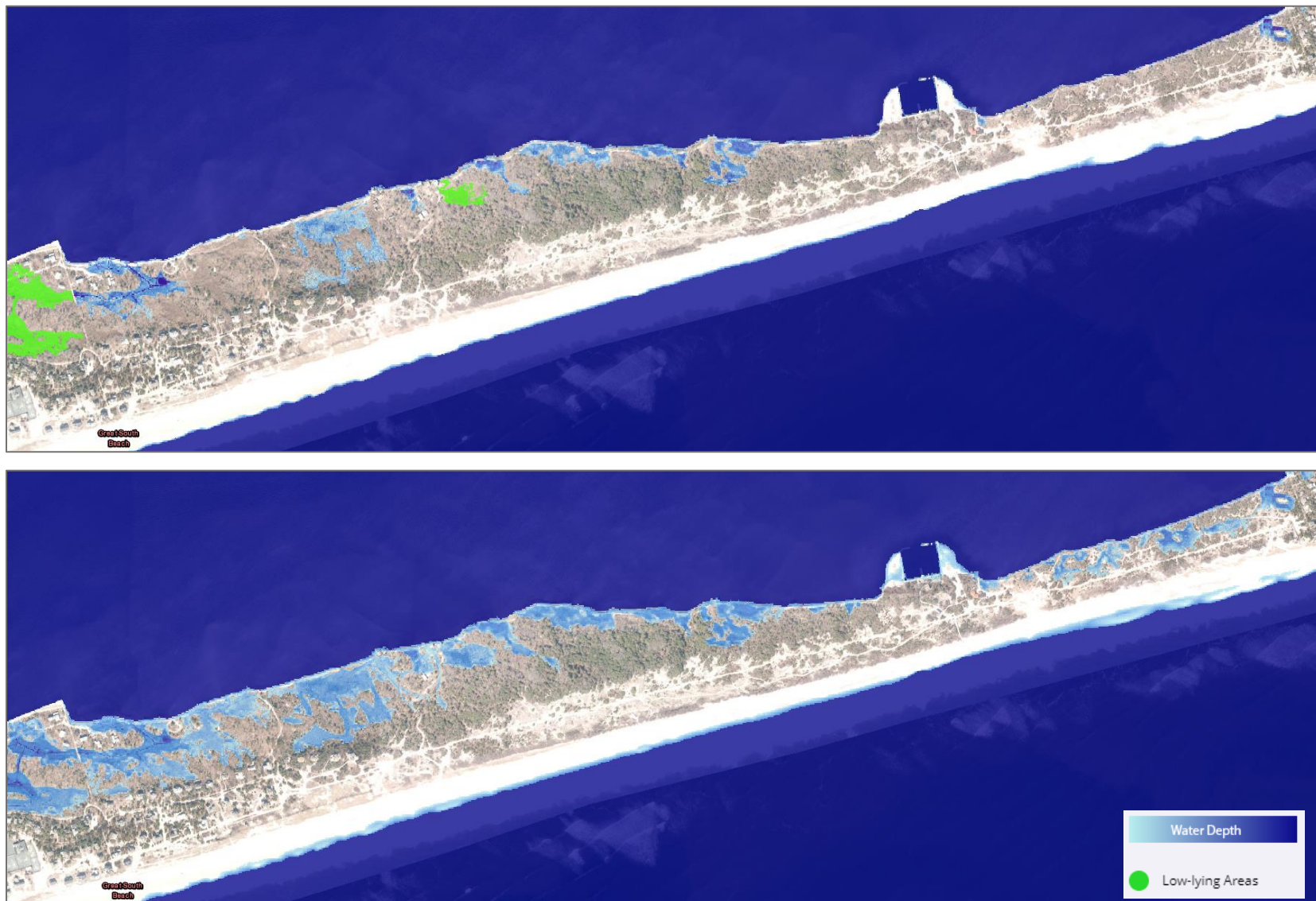
TABLE D-14. PROJECTED SEA-LEVEL RISE AT FIRE ISLAND NATIONAL SEASHORE

Projections	Year 2050	Year 2100
	in feet	
Ricci et al. (2020)		
Range	+0.15 to +0.54	+1.3 to +7.2
Used for vulnerability assessment	+0.85	+2.51
NOAA (as provided in NPS 2022h)		
Intermediate low	+1.05	+2.03
Intermediate	+1.67	+4.30
Intermediate high	+2.33	+6.50



Source: Sea Level Rise Viewer (NOAA 2022)

FIGURE D-21. PROJECTED INUNDATION OF WESTERN COMMUNITIES FROM SEA-LEVEL RISE OF 1 FOOT (TOP) AND 2 FEET (BOTTOM)



Source: Sea Level Rise Viewer (NOAA 2022)

FIGURE D-22. PROJECTED INUNDATION OF THE SUNKEN FOREST /SAILORS HAVEN TRACT FROM SEA-LEVEL RISE OF 1 FOOT (TOP) AND 2 FEET (BOTTOM)

Breach

The breach in the barrier island near Old Inlet was caused by Superstorm Sandy in 2012. A breach existed in this location before; historical records indicate that the inlet was open from 1763 to 1825 (USACE 2004; Tanski et al. 2012). The 2012 breach changed driving on Fire Island. Prior to the formation of the breach, permitted nonrecreational drivers accessed communities east of the Sunken Forest/Sailors Haven tract from the east, passing through the east gate adjacent to the Smith Point County Park. Since the breach occurred, permitted vehicles going to communities east of the Sunken Forest/Sailors Haven tract have been allowed to access the communities via the west gate.

New breaches are expected to form in the future during major storms; this likelihood will increase with the rising sea level. Any revisions to the regulations would need to be designed to allow for managing ORV driving with and without the existence of a breach.

11. SUMMARY

Main findings from the analysis of driving patterns and natural driving limitations consist of the following:

- Most trips are done by residents (44%), followed by construction/business permittees (17%) and essential services (11%).
- The highest number of trips combined for all categories occurs in April and May.
- Most trips per day by construction/businesses occur in May – the last month during which driving is permitted before the summer season.
- During Covid years 2020 and 2021, the total number of trips decreased by 19% and 11%, respectively, compared to the average number of trips during pre-Covid years 2014 to 2019.
- Residential and municipal driving patterns on the Seashore are substantially skewed toward the western communities. The two main reasons likely include (1) the short distance to the gate (and along with it the short time needed to travel off-island), and (2) high certainty of access because of the availability of Burma Road (in case a stretch of the beach is closed for natural resource reasons). Main details include:
 - Almost all residential trips occur from western communities. While 94% of the permitted year-round residents lived in western communities in 2021, nearly all (98.8%) of year-round resident trips were from these communities. Similarly, while 76% of the permitted part-time residents lived in western communities in 2021, nearly all (96.5%) part-time resident trips were from these communities. Adjusted for the number of structures in a community, there are 7 times more year-round resident permits in western communities than in eastern communities.
 - Kismet is the community with the most permits relative to the number of structures and the community with the highest number of trips per day. Kismet alone accounted for 30% of all residential and municipal trips, even though it has only 5% of all structures in the 17 communities.
 - Similarly, resident and municipal trips from the west section of the western communities is high (57%), even though only 30% of all structures occur in these communities. These percentages suggest that the advantage of shorter distances to the west gate results in more trips. Since the first dune cut east of the Kismet cut is the Atlantique cut, most of

these residential trips were made on Burma Road only – without accessing the beach because of the lack of an accessible dune cut (with the possible exception of residents from Lonelyville and even Dunewood, which account for only 2.3% and 1.7%, respectively, of the 57%).

- Year-round residents in Kismet and Saltaire made approximately 250 trips per year on average, compared to 127 for Ocean Beach residents, and 34 and 33 for Cherry Grove and Fire Island Pines residents, respectively. Considering that driving is permitted on average on 273 days (counting night-driving-only days also as full days) within the year, 250 trips correspond to almost one trip per day on average.
- Construction/business trips were also more concentrated to destinations in the western communities but to a lesser extent than for residents and municipal employees. In 2021, 70% of the construction/business permits allowed travel as far as Oakleyville, with an additional 30% permitted to travel as far as Davis Park. Actual trips were 85% to permitted destinations in the western communities, and the remaining 15% to eastern communities.
- Natural constraints limiting access to communities via ORV driving on the beach consist of erosion of the beach during storms, and piping plover nesting which triggers beach closures by the NPS. The number of nests has increased over the last decades.
- Climate change will continue to affect the Seashore. The gradually rising sea level will result in increased erosion and a greater risk for another breach in the future. The rising sea level will also raise the groundwater table and cause more frequent flooding, which will affect the dynamics and needs of the communities in the future, potentially also affecting future ORV driving patterns.

APPENDIX E

IMPACT METHODOLOGIES

IMPACT METHODOLOGIES

1. EFFECT OF ALTERNATIVES ON NUMBER OF TRIPS

Potential effects to natural and socioeconomic resources are related to the number of trips along the Seashore. Therefore, the driving data collected at the west gate (see appendix D) were used to estimate the potential changes in the number of nonrecreational trips (i.e., all trips except trips by recreational vehicles that are entering the Seashore via the east gate) for the three alternatives.

In general, there are multiple variables that affect the driving patterns and the number of trips along the Seashore, which include, but are not limited to, the following:

- Permitted seasonal driving (varies by permit category).
- Need or desire for driving (permitted residents).
- Need for services (permitted construction/business, public utilities, essential services, municipal employees); need to be demonstrated by permit applicants.
- Unusual circumstances (emergencies [law enforcement, fire, health], driving because of storm effects).
- Beach inaccessibility to driving because of beach erosion (see examples in figures D-18 and D-19 in appendix D).
- Beach closures during piping plover nesting season. May vary from year-to-year in terms of area and duration because of changes in nesting behavior.
- Unscheduled closure of beach sections or Burma Road on NPS-managed lands by the superintendent if driving causes unexpected adverse impacts to natural resources, safety, or public health.
- Required permit qualifications by NPS and towns and villages.
- Any additional future restrictions placed by towns and villages.
- Projected long-term effects of climate change (i.e., more frequent storms, sea-level rise).

For each alternative, example scenarios were developed to project the percent change in the total number of trips annually. These illustrative scenarios are meant to serve as a relative guide that include the following assumptions:

- Conditions and driving patterns observed in the 2014–2021 driving data (described in appendix D) remain similar under the three alternatives.
- The frequency of daily and annual trips by individual year-round residents is the same for all permittees (current permittees and new permittees under alternatives B and C); this may be a conservative assumption as residents that do not already have a permit may not require to travel as frequently as current permittees – on average.
- The need for construction/business services by potential service recipients (e.g., home owners, businesses, municipalities) increases along with the increase in the number of construction/business permits; this may also be a conservative assumption.
- Future beach closures reflect the frequency of closures for the base period used for the driving data. As reflected in figure 3-6 in the EA, the piping plover productivity at the Seashore has been increasing over the last two decades, and the number of breeding pairs have more than doubled in the last three years. Further increases in the number of breeding pairs (and thus potentially more frequent beach closures) are not integrated in the projections.

- Higher sea levels from climate change (potentially causing an increase in the frequency and duration of closed beaches) were not considered in the analysis but are expected to affect access over time (e.g., see figures D-21 and D-22 in appendix D).
- All trips go through the west gate. Once access to the eastern communities is again permitted via the east gate, a portion of the current trips to eastern communities will shift to the eastern side of the Seashore and will no longer occur past western communities.
- The analysis assumes that no additional restrictions are placed by towns and villages in the future.

The approach for the calculations of the illustrative scenarios was as follows:

- The base was the average number of trips between 2014 and 2019 for the main categories (year-round and part-time residents, essential services, construction/business, and “other” trips [i.e., trips by all other permit category, which were not separated in the available 2014-2019 data set]). The 2014–2019 period was selected because the number of trips was not affected by COVID-19 (“Covid”).
- The number of trips by other categories for 2014–2019 was extrapolated from their percent contribution to the total number of trips in 2021 for which data separated for all categories were available.
- As for the driving data analysis (appendix D), data were sorted by western and eastern communities. Western communities extend from Kismet to Oakleyville. Eastern communities extend from Cherry Grove to Davis Park; the eastern communities section includes the larger tracts of NPS-managed lands.
- Driving patterns by residents (year-round and part-time) and municipal employees along the western and eastern communities were based on the driving pattern in 2021. Select data from 2022 were also considered such as the number of applicants on waiting lists.
- Destinations for construction/business trips reflect the destinations in construction/business permit applications—with 85% going to western communities and 15% going to eastern communities. These percentages were maintained in the illustrative scenarios for the three alternatives.
- Because the number of trips per individual construction/business permittees would be capped at two trips per day under alternatives B and C, the total number of trips by individual construction/business permittees was reduced by 8%. (It is noted that in 2021, 8% of the trips through the west gate were three or more trips by individual permittees [see figure D-11 in appendix D].)
- For the temporary permit category, the number of trips was assumed to substantially decrease under alternatives B and C because the current practice of temporary ice-over permits would be eliminated. Instead, the need for temporary driving was assumed to be accommodated by changes in the permit caps (i.e., most year-round residents would have or be eligible for a year-round resident permit).
- The analysis considered the different total number of driving days per year for non-essential permit categories (residents, municipal employees, construction/businesses) under each alternative.
- The analysis modified the trips taken by residents, construction/businesses, and essential services. Trips by all other nonrecreational categories (public utilities, municipal employees, school bus, official use, emergency services) were kept at current levels because the need for services provided by these permit categories was assumed to remain largely the same.

- The analysis did not consider trips within the Seashore, such as by vehicles staged by utilities or vehicles of on-island contractors, as data on those trips are not available.
- While the percentages calculated for the illustrative scenarios are averages for the full year, the number of trips during the summer (peak visitor season; season with low travel) would remain similar to current conditions along all communities.

Based on the assumptions and approach described above, illustrative scenarios were calculated to reflect the reflect the following conditions (table 3-1 in the EA):

- **Alternative A:** The “near-term” scenario (i.e., in the first few years after the new regulations, which includes the current number of issued part-time resident permits) represents current conditions. The “long-term” scenario removes all trips by part-time residents as the only change.
- **Alternative B:** Percentages are based on 200 permits issued to year-round residents and 145 permits issued to construction/businesses. Essential services are reduced to 80% of current trips because of the shift of construction debris carting to the construction/business category. Trips by other permit categories are kept at current levels. The near-term scenario includes current part-time resident trips; the long-term scenario does not include any part-time resident trips as the only difference.
- **Alternative C:** The absence of caps for year-round residents and construction/business permits places a greater significance on the other limitations to driving. Those limitations are more difficult to predict and quantify. Therefore, two scenarios for alternative C are prepared as illustrative examples only to allow for specific comparisons to alternative B:
 - Example 1: The sole purpose of this example is to evaluate the difference in seasonal driving (i.e., the total number of available driving days annually) between alternatives B and C for residents, municipal employees, and construction/businesses. All other assumptions are the same as for alternative B (i.e., 200 year-round resident permits, 145 construction/business permits, essential services reduced to 80% of current trips, trips by other categories kept at current levels, and the long-term scenario only removes all part-time resident trips as the only change to the near-term scenario).
 - Example 2: This scenario examines the change in trips as a result of more year-round resident permits and construction/business permits than under alternative B.
 - *Near-term scenario:* This scenario is based on 222 permits issued to year-round residents (which is the current number of year-round resident households), 175 permits issued to construction/businesses, and a level of 80% of current trips for essential services. Trips by all other categories are applied at current levels.
 - *Long-term scenario:* This scenario is based on 300 permits issued to year-round residents, 175 permits issued to construction/businesses, and 100% of current trips for essential services (i.e., same as the current level, but now entirely for services that do not entail construction debris carting because this service shifted to the construction/business category). Trips by other categories are applied at current levels for simplicity; while the need for some of these services may increase slightly, the effect of an increase on the calculated percentages would be minimal because of the overall low number of annual trips by these categories.

2. IMPACTS TOPICS

Dune Systems and Plant Communities (including T&E Plants and Significant Natural Communities)

The analysis of potential impacts on dune vegetation and plant communities was based on a review of existing literature, information by NPS staff, and professional judgment. Literature sources included studies on potential erosion of beaches and foredunes with ORV use, including the two-year study by Anders and Leatherman (1987a, 1987b) along the beach adjacent to the Fire Island Wilderness.

In general, vehicles that drive too close to the face of the primary dune can cause erosion and limit the ability of the dune system to accrete sand, either directly by physically affecting the toe of the dune or indirectly by crushing rhizomes of the American beach grass that stabilizes the dunes. Damage to rhizomes reduces the resilience of dunes and the potential for these systems to sustain and rebound from storm damages. Further, ORV use within the sloped area of the backshore (i.e., dune and beach berm) can steepen its slope; steeper slopes likely dissipate wave energy to a lesser degree and cause increased erosion from wave and storm activity (Anders and Leatherman 1987a, 1987b).

The analysis considered that, under all alternatives, the NPS may choose to manage driving more intensely in sensitive areas, including using symbolic fencing and closing or implementing tide-based restriction in areas where the beach is narrow. The analysis also considered that the dune systems and plant communities are protected by the driving conditions that are outlined in the permits, which require drivers to adhere to the rhizome rule and prevent driving from happening when the beach is too narrow.

Wildlife (including beach invertebrates and threatened and endangered species)

The analysis of potential impacts on wildlife, including beach invertebrates and threatened and endangered (T&E) species, was based on a review of existing literature, data and information from wildlife surveys at the Seashore, and professional judgment. Literature sources included academic studies on the effects of ORV driving on T&E species, beach invertebrates, shorebirds, and other wildlife, including studies at other national seashores. The analysis of wildlife also considered the NPS's Endangered Species Habitat Management Plan (NPS 1998a, 1998b, 2018b). The conditions and mitigation measures outlined in this plan also serve to protect non-T&E species on Fire Island. The NPS maintains ongoing conversations with USFWS to provide for species protection.

Long-term effects considered included climate change, which may affect many of the wildlife species found on the Seashore by shifts in abundance, geographic distribution, and seasonal patterns of nesting and migration. In addition, new species may come to utilize the Seashore.

Sunken Forest and Sunken Forest Preserve

Additional ORV driving would adversely impact the forest if erosion of the dunes were to endanger the two-dune system in this location that is vital for the survival of the forest. Erosion could increase both along the toe of the primary dune along the beach and the toe of the secondary dune adjacent to Burma Road. Therefore, the analysis of impacts on the Sunken Forest examined ecological information on the Sunken Forest and considered the effect of potential driving changes along the beach and Burma Road on the integrity of the vital two-dune system. Impacts described for the alternatives assume implementation of mitigation measures, consisting mostly of control of driving by the superintendent should impacts to the area start to occur.

The analysis of impacts also considered the Seashore's enabling legislation, which states the following:

The Secretary shall administer and protect the Fire Island National Seashore with the primary aim of conserving the natural resources located there. The area known as the Sunken Forest Preserve shall be preserved from bay to ocean in as nearly its present state as possible, without developing roads therein, but continuing the present access by those trails already existing and limiting new access to similar trails limited in number to those necessary to allow visitors to explore and appreciate this section of the Seashore. (Public Law 88-587, Section 7(a); September 11, 1964)

Similarly, the analysis considered the deed for the six parcels making up the Sunken Forest Preserve, which states the following:

The conveyance is expressly made subject to the following two conditions:

1. That all of the premises hereby conveyed shall always be maintained in their natural state and operated solely as a sanctuary and preserve for the maintenance of wild life and its natural habitat, undisturbed by hunting, trapping, fishing, and other activities that might adversely affect the environment or the flora or fauna of its premises; and for scientific and educational purposes incidental to such maintenance and operation.
2. That no public road, highway, turnpike, boulevard, avenue or street shall at any time hereafter be built or used through, upon or over any part of the premises hereby conveyed.

This conveyance is made subject to any rights or easements acquired by the US Coast Guard, Utility Companies or individuals over and across all of the premises conveyed herein. (Sunken Forest Preserve, Inc., Bargain and Sale Deed, Title number S-49000-2600; executed on May 9, 1966, filed for record on May 11, 1966, and recorded in Book 5955 at page 235)

The analysis also considered suggestions by NYNHP (2022b) that disruptions between the open ocean and the maritime dune system should be avoided, which includes traffic on the beach and Burma Road, as this ecological communities are best protected as part of a large beach, dune, and salt marsh system. The dynamic ecological processes (overwash, erosion, and migration) can continue if this system remains unfragmented. Specifically, the shallow offshore communities, upland beaches and dunes, and brackish and freshwater tidal communities should remain connected, not only for nutrient flow and seed dispersal, but also for animals that move between them seasonally. NYNHP (2022b) further suggested that fragmentation of linear dune systems should be avoided because bisecting trails, roads, and developments could allow exotic species to invade, potentially increase “edge species” (such as deer, raccoons, skunks, and foxes), and disrupt physical dune processes.

Visitor Use, Experience, and Safety

The analysis considered data, information, and site observations on the type of visitor uses on the Seashore, the seasonal variability in these uses, and records and information provided by Seashore Law Enforcement on safety issues and violations experienced over the years.

In general, visitors do not wish to see vehicles on beaches or on Burma Road. Visitor use, experience, and safety is less affected by the type of vehicle traveling on the beach or Burma Road, but by how and where vehicles drive. Key parameters that were considered in the analysis were the number of total trips taken by vehicles of all categories under the three alternatives, the seasonal variability of these trips, seasonal closures for visitor and resource protection, and the ability of the towns and villages to impose their own restrictions. No new roads are being constructed as part of the update of the regulations, and driving would only occur in areas where it is currently allowed. While visitors may come to Fire Island because of its roadless character, visitors know that vehicles are allowed and driving is permitted for access to the private communities. The NPS does not independently manage the activities of visitors to Fire Island.

Regulatory oversight for public health and safety is distributed across multiple jurisdictions within the Seashore boundary, including the two incorporated villages (Saltaire and Ocean Beach), two Long Island-based municipalities (the towns of Islip and Brookhaven), Suffolk County, and various New York State agencies.

The analysis also considered goals and themes about visitor experiences described in Seashore-specific documents such as the General Management Plan (NPS 2015a), Visitor Experience Plan (NPS 2017b), and Foundation Document (NPS 2018c). One of the key themes for the NPS (together with Fire Island communities, government agencies, and other partners) is to conserve, preserve, and protect for the use and appreciation of current and future generations Fire Island's larger landscape including its relatively undeveloped beaches, dunes, and other natural features and processes and its marine environment (NPS 2018c).

Definition of Visitor

The existence of federal and nonfederal property on Fire Island and the various types of visitor uses make it difficult to count the number of recreational visitors and all forms of visitor experiences. People who take ferries (through park waters) to the communities are not included in the counts of Seashore visitors, although residents and their guests may become Seashore visitors when they use the beach or NPS lands. Counts of visitors to the Seashore are based on the counting and reporting instructions for NPS form 10-157.

The NPS defines a “*visit*” as “the entry of a person onto lands or waters administered by the NPS” (Ziesler and Spalding 2022, p. 88-90). There are three types of visits to parks: (1) visits that are not reported as visitor use; (2) nonrecreational visits that are reported as visitor use; and (3) recreational visits that are reported as visitor use. Negligible transit is nonreportable. Same-day reentries and entries on the same day are a single visit. Specifics for each of the three types of visit in Ziesler and Spalding (2022) that are applicable to the Seashore are as follows:

- **Nonrecreational Visit:** A reportable nonrecreational visit includes, persons going to and from inholdings across significant portions of NPS-administered land or water; tradespeople with business in the park, and outside research activities (visits and overnights), if independent of NPS legislated interests. This type of visit also includes year-round and part-time residents of the Seashore.
- **Nonreportable Visit:** A nonreportable visit is the entry into a park by NPS employees, their families, concession employees, members of cooperating associations, NPS contractors, and service personnel. Specific situations include the following: NPS employees who are assigned to the park or who are visiting the park in connection with their duty assignment; NPS contractor, concession, and cooperating association employees; and other persons whose presence in the park is to help the NPS fulfill its mission (e.g., volunteers in parks, research activities associated with the NPS mission).
- **Recreational Visit:** A recreational visit is the entry of a person onto lands or waters administered by the NPS except as defined above for nonreportable and nonrecreational visits. Visits originating on surface vehicles (boats) and aircraft may be counted if they stop and disembark passengers on NPS administered territory.

For the purposes of the assessment on ORV management at the Seashore, of primary concern is the visitor use and experience of recreational visitors. Nonrecreational visitors accessing the island include individuals from the nonrecreational ORV permit categories (residents, essential services,

construction/business, etc.) that may also access the island by ferry, private boat, and bicycle or walk-in from Field 5.

NPS's visitor counts are focused on certain facilities and tracts, which is not expected to be an accurate representation of the full range of *all* visitors. Nevertheless, although the absolute *number* of visitors is difficult to count, the *type* of visitor uses and experiences are understood, pertaining primarily to the use of beaches, nature areas, and the Seashore waters. Seasonal patterns observed by visitor counts, experiences, and uses are expected to be similar for visitors to NPS-managed lands and to the communities.

NPS-managed Sections of Burma Road

Burma Road is an administrative resource for the NPS. More driving on the road would increase the risk for impacts, primarily to sandy sections of the road east of Point O'Woods. Specifically, increased impacts from driving, along with a rising water table that increases the formation of puddles, could affect road maintenance requirements by the NPS to protect resources and allow continued access.

The analysis considered information provided by the NPS about the types and locations of current maintenance activities, the use and status of Burma Road, and potential management needs associated with the road. Project staff also walked and/or drove most sections of the road on the Seashore and crossed most dune cuts. The analysis also considered management activities in the General Management Plan (NPS 2015a, 2016).

The analysis also considered the effect of sea-level rise that may increase the frequency of erosion events on the beach, potentially increasing maintenance needs for dune cuts and the use of NPS-managed portions of Burma Road by permitted categories, which could result in more road maintenance. Sea-level rise is also expected to raise the groundwater table and to gradually increase the frequency of puddle formation in low spots on Burma Road, incrementally increasing maintenance needs.

Socioeconomic Resources

The analysis of potential indirect impacts to socioeconomic resources was based on review of publicly available data, communication with NPS staff, and professional judgment. The sources that informed the analysis included data from the US Census Bureau describing the resident Fire Island population, existing surveys of Fire Island residents implemented by NPS and its partners, and available information about the type of businesses operating on Fire Island as well as ridership on private passenger ferries serving Fire Island destinations. The analysis considered beneficial and adverse impacts to residents as well as businesses serving Fire Island communities and visitors. The impacts of the alternatives were assessed with respect to the longer-term trend of residents spending more time in their Fire Island homes given the lengthening shoulder season (because of climate change related warming), the ease and acceptance of working from home following the Covid pandemic, improved internet access, and a recently replaced water main. This trend is reflected in the census data as well as anecdotal evidence from NPS staff.

3. OTHER PROJECTS – COASTAL STORM RISK MANAGEMENT PROJECT

The primary project considered in the cumulative impact analysis is the coastal storm risk management project by the USACE. The project includes an initial project along Fire Island (the Fire Island Inlet to Moriches Inlet, Fire Island Stabilization Project [FIMI]) and the larger Fire Island to Montauk Point (FIMP) project.

Fire Island Inlet to Moriches Inlet, Fire Island Stabilization Project (FIMI)

This purpose of the FIMI project was to provide coastal storm risk management from coastal erosion and tidal inundation through construction of a beach berm and dune along Fire Island (USACE 2014, 2023). The project area extended from Fire Island Inlet to Moriches Inlet, i.e., it stretches from Robert Moses State Park in the west to Smith Point County Park in the east for a total of 19 miles. The project was developed as a consequence of the severe coastal erosion during Superstorm Sandy in 2012, which depleted the dune and berm system along Fire Island and made the island vulnerable to overwash and breaching during future storm events.

The FIMI project was an expedited approach to construct stabilization elements independent of the larger FIMP project. It was a one-time placement of sediment, with a project life of 20 years, in one portion of the larger FIMP project area. The plan included a 90-foot berm and a dune at elevation +15 feet (National Geodetic Vertical Datum of 1929) on the backshore (USACE 2020). The placed dune considered the post-Superstorm Sandy dune alignment, which required the acquisition or relocation of approximately 40 homes. Construction along the section between Robert Moses State Park through Saltaire was completed in 2016; the section between Fair Harbor through Seaview was completed in 2017; the beachfill for the final section from Ocean Bay Park through Davis Park was completed in 2020 (USACE 2023). FIMI was constructed by the USACE in partnership with their two nonfederal sponsors, NYSDEC and Suffolk County.

Fire Island to Montauk Point Project (FIMP)

The Fire Island Inlet to Montauk Point, New York, Combined Beach Erosion Control and Hurricane Protection Project (FIMP) was first authorized by the River and Harbor Act of 14 July 1960 (USACE 2023). The project has been reformulated by the USACE to identify a comprehensive long-term solution to manage the risk of coastal storm damages along the south shore of Long Island in a manner that balances the risks to human life and property while maintaining, enhancing, and restoring ecosystem integrity and coastal biodiversity.

The project includes beach, dune, and berm construction; breach response plans on barrier islands; inlet management; groin modifications; and coastal process features. It also includes potentially increasing elevations and floodproofing of eligible structures located in the 10-year floodplain, as well as mandatory acquisition of a small number of properties. The FIMP project covers 83 miles of Atlantic Ocean shoreline from Fire Island Inlet to Montauk Point, including the Seashore, and over 200 miles of back-bay shoreline along Long Island's south shore. The FIMP project is based on a detailed study to identify storm risk management (USACE 2020). Beach nourishment projects are designed to maintain a minimum beach width and a dune height of approximately 13 to 16 feet. Renourishment is scheduled to occur approximately every four years for up to 30 years after project initiation, i.e., up to year 2050, although the actual cycle may vary. Renourishment would occur only in front of communities and not in front of NPS-managed tracts of land (with the exception of the four narrow tracts within the western communities). The plan further includes various forms of breach response for the entire length of the Seashore. The plan also includes adaptive management so that the volume and placement configuration accomplish the design objectives of offsetting long-term erosion.

APPENDIX F

PLANNING TEAM AND CONSULTATION LIST

PLANNING TEAM AND CONSULTATION LIST

The Fire Island National Seashore would like to express sincere thanks toward all who contributed their time and expertise in the preparation of this Environment Assessment. Below left are the names of the main contributors inside and outside the National Park Service (NPS). Below right are other interests and entities outside the NPS that were contacted to request consultation during the planning process and/or during the 34-day public and agency review:

NPS PLANNING CONTRIBUTIONS

Seashore Planning Team

Alexcy Romero, Superintendent
 Scott McCormick, Deputy Superintendent
 Brendan Newell, Manager of Resource Stewardship Division
 Jason Pristupa, Chief of Administration
 Sonia Taiani, Concessions Management and Permits Specialist
 Raphael Jordan, Park Biologist
 Erik Westpfahl, Chief Ranger
 Claire Formanski, Park Ranger
 Jon Swindle, Supervisory Law Enforcement Ranger, West District
 Bernie Felix, Supervisory Law Enforcement Ranger, East District
 Jimmy Dunphy, Chief of Maintenance
 Elizabeth DeMaria, Cultural Resource Program Manager
 Nick Clemons, Chief of Interpretation, Education, and Volunteers
 Lindsey Kurnath, former Deputy Superintendent (current Superintendent, Upper Delaware Scenic & Recreational River)
 Michael Bilecki, former Chief of Resource Management (retired)
 Kaetlyn Jackson, former Park Planner (current Natural Resources Specialist, Denver Services Center)
 Susan Sarna, former Cultural Resource Program Manager (retired)

Other NPS Expertise

Michelle Carter, Environmental Quality Division (EQD), Project Manager
 Lynn Koontz, EQD, Economist, Social Science Program
 Doug Wetmore, EQD, Deputy Project Manager
 Richard (Joe) Neubauer, EQD, Deputy Project Manager
 Christine Yott, Interior Region 1, Regional Environmental Coordinator
 David Uschold, Regional Section 106 Coordinator, Interior Region 1

Consultants

Dana Otto, WSP, Senior Vice President
 Lori Fox, WSP, Senior Vice President—Federal Programs
 Bernward Hay, WSP, Vice-President, Project Manager
 Rudi Byron, WSP, Vice-President
 Spence Smith, WSP, Lead Environmental Scientist
 Phil Baigas, WSP, Wildlife Biologist
 Margaret Stover, WSP, Environmental Planner
 Nick Funk, WSP, Environmental Scientist
 Susan van Dyke, WSP, Environmental Planner
 Maura Flight, Industrial Economics, Inc. (IEc), Principal
 Megan Sheahan, IEc, Senior Associate
 Suzie Boltz, EA Engineering, Science, and Technology, Inc. PBC (EA) Project Manager
 Anita Struzinski, EA, Technical Task Manager

TRIBES AND EXTERNAL CONSULTATION LIST

Tribal Consultation

Unkechaug Indian Nation
 Montaukett Indian Nation
 Delaware Tribe of Indians
 Shinnecock Indian Nation

Towns, Villages & Fire Island Communities

Suffolk County
 Town of Islip
 Town of Brookhaven
 Village of Ocean Beach
 Village of Saltaire
 Community of Point O' Woods

Advocacy Interests

Fire Island Year-Round Residents Association
 Fire Island Association

Agencies

New York State Department of Environmental Conservation
 New York State Historic Preservation Office (SHPO)
 New York State Department of State
 US Fish and Wildlife Service
 NOAA National Marine Fisheries Service

Elected Officials

US Senator Charles Schumer
 US Senator Kirsten Gillibrand
 US Representative Andrew Garbarino
 Governor Kathy Hochul
 State Senator Alexis Weik
 State Senator Dean Murray
 State Assembly Jarett Gandolfo
 Suffolk County Executive Edward P. Romaine
 Town of Islip Supervisor Angie Carpenter
 Town of Brookhaven Supervisor Dan Panico
 Town of Brookhaven Councilman Neil Foley

