

Final Environmental Assessment

**MacArthur Boulevard Roadway Elevation
Martin County, Florida**

**FEMA-HMGP-4283-0064-R
January 2022**



FEMA

**U.S. Department of Homeland Security
Federal Emergency Management Agency Region IV
Atlanta, Georgia**



**Florida Division of Emergency Management
Tallahassee, Florida**

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LIST OF ACRONYMS

ACS	American Community Survey
APE	Area of Potential Affect
BFE	Base Flood Elevation
BMP	Best Management Practices
CCCL	Coastal Construction Control Line
CEQ	Council of Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
EA	Environmental Assessment
EO	Executive Order
ERP	Environmental Resource Permit
ESA	Endangered Species Act
FDEM	Florida Division of Emergency Management
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GHGs	Green House Gases
HMGP	Hazard Mitigation Grant Program
LF	Linear Feet
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollution Discharge Elimination System

NPL	National Priority List
NRCS	National Resources Conservation Services
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
SHPO	State Historic Preservation Office
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
SWPPP	Stormwater Pollution Prevention Plan
The Board	Martin County Board of County Commissioners
USACE	United States Army Corps of Engineers
USC	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Southeast (SE) MacArthur Boulevard is located within a barrier island, adjacent to the beach and beach dune, in Martin County, Florida. Historically, the roadway has experienced flooding, washouts and erosion due to high seas and strong waves from storm surge because its geographical location adjacent to the coast and location within the Coastal High Hazard Area (VE zone). This roadway provides the only vehicular access for 522 residential properties and public facilities within the community of Sailfish Point and provides the main evacuation route out of the community. Presently, the roadway is approximately 2 to 3 feet below the 5-year return period elevation.

In 2004, Hurricane Jeanne washed out portions of SE MacArthur Boulevard, causing residents to rely on a ferry system implemented by Martin County to access their homes. On December 9, 2014, the National Weather Service issued a High Surf Advisory for breaking waves of 6 to 8 feet with possible minor coastal flooding and beach erosion. The duration of the 24-hour event combined with the longest waves period caused significant impacts along SE MacArthur Boulevard and nearby beaches due to antecedent conditions. Martin County reported several washouts where the beach dune had been breached on Hutchinson Island (LaConte, 2015). In addition to these events, the adjacent beach also experienced dune washouts in 2008, 2010, 2012 (Tropical Storm Isaac and Hurricane Sandy), 2013, 2016 (Hurricane Matthew), 2017 (Hurricane Irma), 2019 (Hurricane Dorian), and 2020.

Martin County Board of County Commissioners (the Board), through the Florida Division of Emergency Management (FDEM), applied for Hazard Mitigation Grant Program (HMGP) funds from the Federal Emergency Management Agency (FEMA) under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), Unites States Code (USC) 5121-5207, in order to elevate a portion of SE MacArthur Boulevard above the Base Flood Elevation (BFE) and to reinforce the road through the installation of a sheet pile wall (4283-0064-R). In accordance with the Stafford Act, regulations promulgated pursuant thereto and codified in 44 Code of Federal Regulations (CFR) Part 206 (44 CFR 206), and FDEM Mitigation Bureau Non-Federal Representative Memorandum of Agreement, dated November 14, 2017, FEMA and FDEM are required to analyze the potential environmental impacts of the Proposed Action prior to making an informed decision regarding project funding. Recent changes to the President's Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) (40 CFR Part 1500–1508) became effective on September 14, 2020; 85 Fed. R. 43304-76 (July 16, 2020). As stated in 40 CFR Part 1506.13, the new regulations apply to any NEPA process begun after September 14, 2020. This Environmental Assessment (EA) substantively commenced prior to that date; therefore, this EA conforms to the National Environmental Policy Act (NEPA) that were in place prior to September 14, 2020, the President's Council on Environmental Quality regulations to implement NEPA (40 CFR Parts 1500-1508), and regulations adopted pursuant to Department of Homeland Security Directive 023-01, Rev 01 and FEMA Directive 108-1.

2.0 PURPOSE AND NEED

The purpose of the Proposed Action is to provide the Board the means to adequately provide vehicular access to public facilities and the Sailfish Point community. Repairing SE MacArthur Boulevard allows for public access to Bathtub Reef Beach and allows residents to access homes, businesses, emergency support, and an evacuation route in the event of an emergency. The need for the Proposed Action is to have vehicular access become more resilient to erosion and impacts from future flooding events, reduce the likelihood of future damages and road closures, and reduce the number of repairs needed to the road after storm events. This need has resulted from continued damages to the roadway caused by erosion from past storm events.

The Proposed Action is consistent with the requirements of the HMGP as authorized by Section 404 of the Stafford Act, 42 USC 5170c. When authorized by the President as a result of a major disaster declaration, the program makes funding available in designated areas to provide opportunities to take critical mitigation measures to reduce the risk of loss of life and property from future disasters.

3.0 ALTERNATIVES

Under NEPA, this EA is required to analyze the potential environmental impacts of the Preferred Alternative, No Action Alternative, and reasonable alternatives. Reasonable alternatives are those that meet the underlying purpose of and need for the Proposed Action, are feasible from a technical and economic standpoint, and meet reasonable screening criteria (selection standards) that are suitable to a particular action. Screening criteria may include requirements or constraints associated with operational, technical, environmental, budgetary, and time factors. Alternatives that are determined not reasonable can be eliminated from detailed analysis in this EA.

During project planning and scoping, the Board conducted an alternatives analysis to identify reasonable alternatives for the Proposed Action.

3.1 ALTERNATIVE 1 – ELEVATE A PORTION OF SE MACARTHUR BOULEVARD AND INSTALL A SHEET PILE RETAINING WALL (PREFERRED ALTERNATIVE)

Alternative 1, which is the Preferred Alternative, includes the following activities: elevation of approximately 1,100 feet of SE MacArthur Boulevard to above the BFE, widening a section of SE MacArthur Boulevard by 12 feet to add an additional lane in order to improve traffic safety, installation of 1,038 linear feet (LF) of sheet pile retaining wall along the east side of Bathtub Reef Beach Park with a crest flood elevation above the Zone V BFE, elevation of approximately 460 LF of an existing retaining wall to the west of SE MacArthur Boulevard, and construction of 2 new dry stormwater retention areas located along the east side of SE MacArthur Boulevard. See Table 3.1.1 for Alternative 1 location details. Alternative 1 also includes the removal and replacement of existing driveways and the installation of inlet/stormwater pipes (Appendix A).

The implementation of Alternative 1 would provide protection against a 100-year storm event. Alternative 1 is anticipated to minimize loss of vehicular access to and from public facilities and the residential neighborhood of Sailfish Point for approximately 522 residents.

3.1.1 Alternative 1 Project Location Table

Project Locations	GPS Coordinates	
Road Elevation	Start	27.188181, -80.160623
	End	27.185111, -80.160839
Road Widening	Start	27.1867667, -80.160839
	End	27.1855317, -80.1608023
Sheet Pile Retaining Wall Installation	Start	27.187829, -80.1608332
	End	27.1851285, -80.1604447
Sheet Pile Wall Elevation	Start	27.1867667, -80.1608909
	End	27.1855317, -80.1608023
North Retention Area	N	27.1876897, -80.1608646
	E	27.1873122, -80.1607882
	S	27.1869300, -80.1608107
	W	27.1872117, -80.1608315
South Retention Area	NE	27.1859559, -80.1606701
	NW	27.1859492, -80.1607318
	SE	27.1858195, -80.1606453

3.2 ALTERNATIVE 2 – ELEVATE A PORTION OF SE MACARTHUR BOULEVARD

Under Alternative 2, approximately 1,100 feet of SE MacArthur Boulevard would be elevated to above the BFE and a section of SE MacArthur Boulevard would be widened by 12 feet to add an additional lane in order to improve traffic safety. See Table 3.2.1 for Alternative 2 location details.

3.2.1 Alternative 2 Project Location Table

Project Locations	GPS Coordinates	
Road Elevation	Start	27.188181, -80.160623
	End	27.185111, -80.160839
Road Widening	Start	27.1867667, -80.160839
	End	27.1855317, -80.1608023

3.3 ALTERNATIVE 3 – NO ACTION ALTERNATIVE

Under Alternative 3, the Proposed Action would not be implemented. The existing conditions along SE MacArthur Boulevard would not change. Alternative 3 would not involve the road elevation, sheet pile wall installation, retaining wall elevation, or the retention area construction. SE MacArthur Boulevard would likely continue to experience flooding and washout issues during storm events.

3.4 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

During the project planning and scoping, the Board investigated other alternatives to provide vehicular access to the community. This process eliminated two alternatives from detailed analysis. The first alternative eliminated was the implementation of a ferry system in place of the existing roadway access for residents in the Sailfish Point community. This alternative was dismissed because it does not meet the purpose and need of vehicular access and is not economically feasible in the long term. The second alternative eliminated from detailed analysis was the construction of a bridge directly to the Sailfish Point community. This alternative was eliminated due to substantial costs and environmental constraints.

4.0 AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

This section addresses the affected environment (existing conditions) and environmental consequences (potential impacts) of the Proposed Action. The following terms are used to describe the magnitude of impacts in this EA:

- **No Effect:** The action would not cause a detectable change.
- **Negligible:** The impact would be at the lowest level of detection; the impact would not be significant.
- **Minor:** The impact would be slight but detectable; the impact would not be significant.
- **Moderate:** The impact would be readily apparent; the impact would not be significant.
- **Major:** The impact would be clearly adverse or positive; the impact has the potential to be significant. The significance of adverse and positive impacts is subject to interpretation and

should be determined based on the final proposal. In cases of adverse impacts, the impact may be reduced to less than significant by mitigations, design features, and other measures that may be taken.

Table 4.0: Environmental Consequences and Environmental Protection Measures and Required Permits by Environmental Resource

Resource	Environmental Consequences	Environmental Protection Measures and Required Permits
Air Quality	<p>Alternative 1: <i>Negligible Impact – Not Significant</i></p> <p>Alternative 2: <i>Negligible Impact – Not Significant</i></p> <p>No Action Alternative: <i>No Effect</i></p>	Generated fugitive dust would be controlled using standard construction best management practices (BMPs), including watering of exposed surfaces and enclosing or covering stockpiled material.
Noise	<p>Alternative 1: <i>Minor Impact – Not Significant</i></p> <p>Alternative 2: <i>Minor Impact – Not Significant</i></p> <p>No Action Alternative: <i>Negligible Impact – Not Significant</i></p>	All construction activities would comply with local noise ordinances.
Geology and Soils	<p>Alternative 1: <i>Minor Impact – Not Significant</i></p> <p>Alternative 2: <i>Minor Impact – Not Significant</i></p> <p>No Action Alternative: <i>No Effect</i></p>	Prior to construction, an appropriate Stormwater Pollution Prevention Plan (SWPPP), Erosion Control Plan, and National Pollution Discharge Elimination System (NPDES) permit would be obtained for Alternative 1 and 2.

Resource	Environmental Consequences	Environmental Protection Measures and Required Permits
Surface Water and Wetlands	<p>Alternative 1: <i>Minor Impact – Not Significant</i></p> <p>Alternative 2: <i>Minor Impact – Not Significant</i></p> <p>No Action Alternative: <i>Minor Impact – Not Significant</i></p>	<p>Martin County has obtained Coastal Construction Control Line (CCCL) permit number MI-584 AR (Corrected) for activities pertaining to the sheet wall installation in Alternative 1. An additional CCCL permit would be required for other activities pertaining to Alternative 1 and all activities under Alternative 2.</p> <p>Martin County has obtained notification that no permit is required by the US Army Corps of Engineers (USACE) under application number SAJ-2020-00373 (NPR-LCK) for activities related to the sheet pile wall installation. Additional consultation would be required for activities related to the road work and retention areas for Alternative 1 and 2.</p> <p>A SWPPP would be required for Alternative 1 and 2. Alternative 1 would require an Environmental Resource Permit (ERP) from the Florida Department of Environmental Protection (FDEP).</p>
Floodplains	<p>Alternative 1: <i>Moderate Impact – Not Significant</i></p> <p>Alternative 2: <i>Minor Impact – Not Significant</i></p> <p>No Action Alternative: <i>Minor Impact – Not Significant</i></p>	Not Applicable.
Groundwater	<p>Alternative 1: <i>Negligible Impact – Not Significant</i></p> <p>Alternative 2: <i>Negligible Impact – Not Significant</i></p> <p>No Action Alternative: <i>No Effect</i></p>	If necessary, appropriate dewatering permits would be obtained prior to dewatering activities.

Resource	Environmental Consequences	Environmental Protection Measures and Required Permits
Vegetation	<p>Alternative 1: <i>Minor Impact – Not Significant</i></p> <p>Alternative 2: <i>Minor Impact – Not Significant</i></p> <p>No Action Alternative: <i>No Effect</i></p>	<p>Martin County has obtained CCCL permit number MI-584 AR (Corrected) for activities related to the installation of the sheet pile wall described in Alternative 1. Martin County must comply with all terms and conditions prescribed by the permit, including those regarding vegetation.</p>
Fish and Wildlife	<p>Alternative 1: <i>Minor Impact – Not Significant</i></p> <p>Alternative 2: <i>Minor Impact – Not Significant</i></p> <p>No Action Alternative: <i>No Effect</i></p>	<p>Not Applicable.</p>
Threatened and Endangered Species	<p>Alternative 1: <i>Minor Impact – Not Significant</i></p> <p>Alternative 2: <i>Minor Impact – Not Significant</i></p> <p>No Action Alternative: <i>No Effect</i></p>	<p>An informal consultation was conducted with the United States Fish and Wildlife Service (USFWS) on October 26, 2020, with the following conditions:</p> <p>Piping Plover and Red Knot:</p> <ol style="list-style-type: none"> a. Prior to construction, a survey for optimal non-breeding piping plover habitat shall be conducted in the project area. Optimal piping plover habitat whether existing or newly created by storm events shall be avoided to the maximum extent practicable. Surveys shall be performed by personnel having knowledge and experience in identification of piping plovers and knowledge of their roosting and feeding habits and requirements. b. Surveys for non-breeding piping plover shall be conducted daily starting two weeks prior to project initiation for the duration of the project between July 15 and May 15 if optimal non-breeding piping plover habitat is documented in the project area. If the project does not

Resource	Environmental Consequences	Environmental Protection Measures and Required Permits
		<p>begin until after Jul 15, then surveys must start on July 15 and continue throughout the project construction period until May 15, whichever comes first. Locations of observed piping plovers shall be documented and reported. Surveys shall be conducted by trained personnel and must be conducted in accordance with monitoring guidelines supplied by USFWS (except daily versus twice monthly surveys are required). Data sheets must be completed for each daily survey, including negative reports. Locations of observed piping plovers must be recorded using latitude and longitude (GPS points preferred) and reported to USFWS following project completion.</p> <ul style="list-style-type: none"> c. Piping plover surveys shall be required following construction if piping plovers were documented prior to or during construction. These surveys shall be conducted daily for two weeks following completion of the entire project. Survey shall be conducted in accordance with survey guidelines. d. The results of the daily piping plover survey shall be submitted to USFWS with maps documenting the locations of piping plovers (with GPS coordinates or latitude and longitude coordinates) if seen during the survey period. e. When piping plovers are observed “Disturbance-Free Zones” will be posted and roped off at least 300 feet away from the construction areas where potential bird nesting and feeding are occurring.

Resource	Environmental Consequences	Environmental Protection Measures and Required Permits
		<p>f. No boardwalks shall be reconstructed or repaired that funnel pedestrians to a wash over area or other optimal piping plover habitat.</p> <p>Sea Turtles:</p> <p>a. Repair or replacement of structures shall occur in the same location or footprint of the previously permitted structure unless it has been determined to be environmentally better to relocate the structure.</p> <p>b. All activity shall be confined to daylight hours and shall not occur prior to 9:00 a.m. following the completion of all necessary sea turtle surveys and conservation activities. No construction related lights shall be used during the nesting season.</p> <p>c. During the early and late periods of the sea turtle nesting season (March 1 to April 30 and November 1 to November 30) but, outside the peak period, surveys for early and late nesting turtles must be conducted. If nests are reported in the area of construction, the nest must be marked and avoided with a 10-foot buffer.</p> <p>d. During the sea turtle nesting season (May 1 through October 31) work shall be allowed, except as noted, provided the following measures are implemented.</p> <p>e. Repair and restoration work shall only be conducted from a position landward of the dune vegetation with no physical intrusion onto the beach or dunes.</p> <p>f. Fence shall be installed to designate the construction work areas off the beach and all equipment and activities shall be kept inside these areas.</p>

Resource	Environmental Consequences	Environmental Protection Measures and Required Permits
Cultural Resources	<p>Alternative 1: Negligible Impact – Not Significant; No Historic Properties Affected</p> <p>Alternative 2: Negligible Impact – Not Significant; No Historic Properties Affected</p> <p>No Action Alternative: Negligible Impact – Not Significant; No Historic Properties Affected</p>	<p>Consultation letters were sent to SHPO (State Historic Preservation Office), Alabama-Quassarte Tribal Town, Miccosukee Tribe of Indians of Florida, Muscogee (Creek) Nation, Poarch Band of Creek Indians, Seminole Nation of Oklahoma, and Seminole Tribe of Florida on September 17, 2020 with the following conditions:</p> <ol style="list-style-type: none"> a. If human remains or intact archaeological deposits are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The applicant will ensure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The applicant’s contractor will provide immediate notice of such discoveries to the applicant. The applicant shall contact the Florida Division of Historic Resources and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with SHPO, Tribes, and other consulting parties as necessary. In the event that unmarked human remains are encountered during permitted activities; all work shall stop immediately, and the proper authorities notified in accordance with Florida Statutes, Section 872.05.

Resource	Environmental Consequences	Environmental Protection Measures and Required Permits
		<ul style="list-style-type: none"> b. Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant’s right-of-way. c. Any changes to the approved scope of work will require submission to, and evaluation and approval by, the State and FEMA, prior to initiation of any work, for compliance with Section 106. d. In the event of inadvertent discoveries of human remains and related Native American Graves Protection and Repatriation Act (NAGPRA) items occur in areas of existing or prior development, work shall cease and the Seminole Nation of Oklahoma, the Muscogee (Creek) Nation, and other appropriate agencies shall be notified immediately. e. If any archaeological, historical, or burial resources are inadvertently discovered during project implementations, the Seminole Tribe of Florida will be contacted immediately
Hazardous Materials/Wastes and Solid Waste	<p>Alternative 1: <i>Negligible Impact – Not Significant</i></p> <p>Alternative 2: <i>Negligible Impact – Not Significant</i></p> <p>No Action Alternative: <i>No Effect</i></p>	Handling, storage, and disposal of hazardous materials and waste during construction activities, including measures to prevent releases, would be conducted in accordance with applicable environmental compliance regulations.

Resource	Environmental Consequences	Environmental Protection Measures and Required Permits
Utilities	<p>Alternative 1: <i>Minor Impact – Not Significant</i></p> <p>Alternative 2: <i>Minor Impact – Not Significant</i></p> <p>No Action Alternative: <i>No Effect</i></p>	Residents will be notified 24 hours in advance of any utility service interruptions. Service interruptions will be limited to a maximum of 4 hours for each residence and public facility. Coordination with Florida Power & Light Company is required for filling over and around existing utility poles and anchors.
Land Use	<p>Alternative 1: <i>Negligible Impact – Not Significant</i></p> <p>Alternative 2: <i>Negligible Impact – Not Significant</i></p> <p>No Action Alternative: <i>No Effect</i></p>	Not Applicable
Transportation and Traffic	<p>Alternative 1: <i>Moderate Positive Impact – Not Significant</i></p> <p>Alternative 2: <i>Minor Impact – Not Significant</i></p> <p>No Action Alternative: <i>Moderate Impact – Not Significant</i></p>	At least one lane of traffic would remain open at all times during construction activities associated with Alternative 1 and 2.
Occupational Health and Safety	<p>Alternative 1: <i>Negligible Impact – Not Significant</i></p> <p>Alternative 2: <i>Negligible Impact – Not Significant</i></p> <p>No Action Alternative: <i>Minor Impact – Not Significant</i></p>	To minimize occupational health and safety risks for Alternative 1 and 2, workers would wear and use appropriate personal protective equipment and follow all applicable Occupational Safety and Health Administration (OSHA) standards and procedures. A health and safety plan would be developed and implemented prior to beginning work. Work areas would be clearly marked with appropriate signage and secured against unauthorized entry. Standard construction traffic control measures would be used to protect workers, residents, and the travelling public.

Resource	Environmental Consequences	Environmental Protection Measures and Required Permits
Socioeconomics	<p>Alternative 1: <i>Minor Positive Impact – Not Significant</i></p> <p>Alternative 2: <i>Minor Positive Impact – Not Significant</i></p> <p>No Action Alternative: <i>Moderate Impact – Not Significant</i></p>	Not Applicable
Environmental Justice and Protection of Children	<p>Alternative 1: <i>No Effect</i></p> <p>Alternative 2: <i>No Effect</i></p> <p>No Action Alternative: <i>No Effect</i></p>	Not Applicable

4.1 AIR QUALITY

4.1.1 Existing Environment

The United States Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Areas that meet the quality standards for the criteria pollutants are designated as being in attainment. Areas that do not meet the air quality standards for one of the criteria pollutants are designated as being in nonattainment for that standard. Martin County is currently classified as being in attainment for all criteria pollutants stipulated under NAAQS.

Greenhouse gases (GHGs) are emitted by both natural processes and human activities, and their accumulation in the atmosphere regulates temperature. GHGs included carbon dioxide, methane, nitrous oxide, and other compounds. There are no established thresholds or standards for GHGs. However, according to current guidance from the CEQ, a quantitative analysis and disclosure of GHG emissions is not warranted unless the proposed action’s direct annual emissions would be greater than 25,000 metric tons of carbon dioxide equivalent.

4.1.2 Environmental Consequences

The threshold level for a significant impact to air quality is defined as a violation of an ambient air quality standard or regulatory threshold.

Alternative 1 - Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas would generate short-term construction equipment exhaust emissions and short-term fugitive dust emissions. These air emissions would vary daily, depending on the level and type of work conducted and would be limited to the project construction period.

Pollutants that would be emitted from the internal combustion engine exhausts of construction vehicles and equipment include certain criteria pollutants, volatile organic compounds (VOCs), and certain GHGs. Annual construction emissions are expected to be less than the federal de minimis thresholds for criteria pollutants and VOCs. Construction-related GHG emissions are expected to be negligible in terms of overall quantity and within the range expected for construction of this type and size.

Fugitive dust would be generated by construction vehicles and equipment operations on dirt surfaces and by wind action on stockpiled materials. Generated fugitive dust would consist primarily of nontoxic particulate matter and would be controlled at the sites using BMPs, including watering of exposed surfaces and enclosing or covering stockpiled material.

Based on the review conducted, Alternative 1 would have a negligible impact on air quality. The impact would not be significant.

Alternative 2 - Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, the elevation and widening of a portion of SE MacArthur Boulevard would generate short-term construction equipment exhaust emissions and short-term fugitive dust emissions. These air emissions would vary daily, depending on the level and type of work conducted and would be limited to the project construction period.

Pollutants that would be emitted from the internal combustion engine exhausts of construction vehicles and equipment include certain criteria pollutants, VOCs, and certain GHGs. Annual construction emissions are expected to be less than the federal de minimis thresholds for criteria pollutants and VOCs. Construction-related GHG emissions are expected to be negligible in terms of overall quantity and within the range expected for construction of this type and size.

Fugitive dust would be generated by construction vehicles and equipment operations on dirt surfaces and by wind action on stockpiled materials. Generated fugitive dust would consist primarily of nontoxic particulate matter and would be controlled at the sites using BMPs, including watering of exposed surfaces and enclosing or covering stockpiled material.

Based on the review conducted, Alternative 1 would have a negligible impact on air quality. The impact would not be significant.

Alternative 3 - No Action Alternative

Under the No Action Alternative, SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. Therefore, the No Action Alternative would have no effect on air quality.

4.2 NOISE

4.2.1 Existing Environment

Noise is unwanted sound. Sound levels are measured in decibels (dB). A-weighted sound measures emphasize the frequency range of human hearing and are expressed in terms of A-weighted decibels (dBA). In general, animals and humans are stressed by noisy environments. The effects of noise on humans include annoyance, sleep disturbance, and health impacts. In animals, high noise can interfere with communication, reproduction, identifying food sources, and can induce fear, forcing species to abandon their habitat. The primary source of ambient noise in the project area is vehicular traffic.

Noise originating in the county is regulated by Martin County Noise Control Ordinance (Code 1974, § 12-171; Ord. No. 531, § 1, 10-13-1998). Per this ordinance, construction noise in the county is prohibited between 9:00 p.m. to 7:00 a.m., unless it meets any of the exceptions such as noises associated with public works construction or maintenance projects. Per the ordinance, the construction tools shall be equipped with all sound-reducing features. The maximum permissible sound levels for residential areas is 60 dBA, and 55 dBA for recreational and public conservation areas. Based on the data presented in the USEPA publication, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances* (USEPA, 1971), the main phases of outdoor construction typically generate noise levels that range from 78 dBA to 89 dBA, approximately 50 feet from the construction site. Noise levels are estimated to decrease by approximately 6 dBA with every doubling of distance from a noise source.

4.2.2 Environmental Consequences

The threshold level for a significant noise impact is defined as a permanent increase in noise or prolonged periods of nighttime noise in noise-sensitive areas.

Alternative 1 - Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, a temporary increase in ambient noise levels in and around the construction site would be experienced. The nearest noise-sensitive receptors are houses and aquatic species immediately adjacent to the portion of the SE MacArthur Boulevard. Based on the construction equipment that would be used, such as excavators and cranes, the noise level will be about 85 dBA

at a reference distance of 50 feet from the equipment according to FHWA reports inventory (2006). The nearest residential property is approximately 33 feet northeast from the project area. The project must follow the county ordinances. Noise generated from construction would be intermittent, heard only during the daytime hours of 7:00 a.m. to 7:00 p.m., and only for the duration of the project activities.

Based on the review conducted, Alternative 1 would have minor noise-related impacts. The impact would not be significant.

Alternative 2 - Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, a temporary increase in ambient noise levels in and around the construction site would be similar to those described in Alternative 1. Overall noise impacts under Alternative 1 may be greater due to the additional construction activities and the longer estimated construction period. The project would follow the county ordinances. Noise generated from construction would be intermittent, heard only during daytime, and only for the duration of the project activities.

Based on the review conducted, Alternative 2 would have minor noise-related effects. The impact would not be significant.

Alternative 3 – No Action Alternative

Under the No Action Alternative, SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. Therefore, the No Action Alternative would have no noise-related effects. Noise would continue to be generated by vehicles and equipment operated by county maintenance crews, and generated noise would be required to comply with the restrictions specified in the county's noise ordinance.

Based on the review conducted, the No Action Alternative would have negligible noise-related effects. The impact would not be significant.

4.3 GEOLOGY AND SOILS

4.3.1 Existing Environment

According to the Florida Geological Survey, accessed November 16, 2020, the landform in which the project area is located is considered Atlantic Coastal Ridge, and the Florida Stratigraphic Geology of the project area is from the Pleistocene, within the Quaternary Period. The coastal islands of Martin County north of the Saint Lucie Inlet consist of Qa and Qh sediments and the project area falls within Qa sediments, consisting of Anastasia formation, which is variably lithified coquina of shells and sands and unlithified fossiliferous sand. Per the National Resources Conservation Service (NRCS) Web Soil Survey soil data, soils underlying the project area include: Palm Beach-Beaches with 0% to 8% slope (National Map Unit 1jq7s), described as dunes on

marine terraces; Arents (National Map Unit 1jq8k), described as rises on marine terraces; and Kesson sand, tidal (National Map Unit 1jq9j), described as tidal marshes on marine terraces. These map units are not classified as prime farmland by the NRCS. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is available for these uses.

4.3.2 Environmental Consequences

The threshold for a significant impact to geology and soil is defined as (1) a substantial loss of soil, or (2) a rating of 160 or higher on the Farmland Conservation Impact Rating Form (AD-1006 Form), which would indicate further consideration for protection under the Farmland Protection Policy Act.

Alternative 1- Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas would disturb soils during grading, paving, and sheet wall installation. Approximately 1.64 acres of ground disturbance is anticipated from the proposed project activities. Soils in the area have been previously disturbed during past construction activities for the existing road, beach renourishment projects, and other development in the area. The widening of SE MacArthur Boulevard would result in approximately 0.10 acres of additional paved area. Prior to construction, an appropriate SWPPP, Erosion Control Plan, and NPDES permit would be obtained.

Based on the review conducted, Alternative 1 would have a minor impact on soils. The impact would not be significant.

Alternative 2 - Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, the elevation and widening of a portion of SE MacArthur Boulevard would disturb soils during grading and paving activities. Approximately 1.55 acres of ground disturbance is anticipated from Alternative 2 activities. Soils in the area have been previously disturbed during past construction activities for the existing road, beach renourishment projects, and other development in the area. Approximately 0.10 acres of unpaved area would become paved from the widening of SE MacArthur Boulevard. Prior to construction, an appropriate SWPPP, Erosion Control Plan, and NPDES permit would be obtained.

Based on the review conducted, Alternative 2 would have a minor impact on soils. The impact would not be significant.

Alternative 3 - No Action Alternative

Under the No Action Alternative, SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. Therefore, the No Action Alternative would have no effect on geology or soils.

4.4 SURFACE WATER AND WETLANDS

4.4.1 Existing Environment

Executive Order (EO) 11990, Protection of Wetlands, requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

Section 404 of the Clean Water Act regulates the discharge of dredged or fill material into waters of the U.S., including wetlands. Section 10 of the Rivers and Harbors Act grants the USACE permitting jurisdiction for structures or works in or affecting navigable waters of the U.S.

Florida's ERP program regulates dredging and filling in wetlands and surface waters, and activities in uplands that generate stormwater runoff or otherwise alter surface water flows. In Florida, an NPDES stormwater construction permit is required from the FDEP for any proposed project that would disturb 1 acre or more of land. As part of either permit, the project proponent is required to prepare and implement a SWPPP, which outlines the BMPs and engineering controls to be used to prevent and minimize erosion, sedimentation, and pollution during construction.

In Florida, a CCCL permit is required for any proposed project that would occur seaward of the CCCL, unless the project is exempt or covered under a Joint Coastal Permit, which includes authorization under the CCCL permit and ERP. The boundary of the CCCL is defined in Chapter 62B-26 of the Florida Administrative Code. The CCCL runs along the coast and forms the landward extent of the beach-dune system affected by 100-year coastal storm surge and waves. The CCCL boundary is marked by established permanent points, commonly known as reference monuments. The project area is located seaward of the CCCL established for the area (Appendix B).

The project area is bordered by the North Atlantic Ocean to the east and Jupiter Inlet Aquatic Preserve to the west. According to the USFWS National Wetlands Inventory, accessed June 8, 2021, the project area is not within a designated wetland (Appendix C). According to the FDEP Outstanding Florida Waters Mapper, accessed October 19, 2020, the project area is within Outstanding Florida Waters. There are currently no existing stormwater storage areas along this two-mile stretch of SE MacArthur Boulevard.

4.4.2 Environmental Consequences

The threshold level for significant impact to surface water and wetlands would be a violation of state water quality criteria, a violation of federal or state discharge permits, or an unpermitted dredge or fill within the boundary of a jurisdictional water body.

Alternative 1 – Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas would require an ERP from FDEP. Based on preliminary estimates, the total area of land disturbance under Alternative 1 would be 1.64 acres. Martin County would be required to obtain an NPDES stormwater construction permit from the FDEP and to prepare and implement an associated SWPPP. CCCL permit number MI-584 AR (Corrected) has been obtained for activities relating to the installation of the sheet pile wall. The proposed roadwork and retention area construction activities would also require a CCCL Permit.

The construction of two retention areas would create new areas for surface water storage. These retention areas would prevent untreated stormwater runoff from draining directly into the wetland and river west of the project location. Approximately 3,356 square feet of wetlands would be impacted. Appropriate BMPs and engineering controls would be implemented during construction to prevent and minimize indirect erosion, sedimentation, and pollution impacts to the waters of the Northern Atlantic Ocean and the Jupiter Inlet Aquatic Preserve. These measures would be identified in the ERP and in the SWPPP. The dry stormwater retention areas in Alternative 1 would improve water quality of stormwater runoff from the project location.

The dry stormwater retention areas would provide 0.21 acre-foot of storage, or the equivalent of 2.5 inches of stormwater runoff over the impervious areas within the 1.64-acre site. The dry stormwater retention areas provide water quality treatment for the project basin. The volume of retention storage is equivalent to the rainfall from a 5-year recurrence, 1-hour duration storm, and a 1-year, 2-hour storm (i.e., a fairly common rainfall). In perspective, the greatest rainfall required to be analyzed for permits comes from the 25-year, 3-day storm or 12 inches of rainfall. Therefore, the dry stormwater retention provided under Alternative 1 is equivalent to 20% of the greatest stormwater rainfall volume. This demonstrates that Alternative 1 would provide a positive impact to stormwater storage and water quality to the basin.

The shoreline armoring would result in the removal of approximately 16,000 square feet of vegetation previously planted by Martin County. Approximately 1,500 square feet would be existing shrubs and trees located on both the north and south extents, and the remaining 14,500 square feet would be dune grass, mostly from the back slope of the existing dune. A significant portion of the dune has been subject to erosion, therefore, much of the dune vegetation anticipated to be cleared has likely already been lost. All disturbed vegetated areas would be replanted; dune

plantings would be placed on the dune and grass and landscaping plants would be placed at the extreme ends of the project area. The widening of SE MacArthur Boulevard would require clearing and grubbing of 0.85 acres. There is an existing tidal wetland immediately adjacent to the widening between the last residence to the north and the cul-de-sac to the south, that extends from the road right-of-way to the river. The widening is expected to make a permanent impact of 1,700 square feet to the west edge of this wetland and constructing the east retaining wall would result in a temporary impact of the prior mentioned 3,356 square feet, or approximately 0.08 acres. The tidal wetland is approximately 1.38 acres; therefore, the temporary impact is 5.6% of the total wetland area and the permanent impact is 2.8% of the total wetland area. The clearing would be mostly for grass and ground cover as well as some existing landscaping between the existing parking lot and the roadway. Less than 5% of the total area would be small areas of landscaping along the adjacent residence's frontage. Additionally, both the existing and proposed drainage outfalls west of the roadway would require selective clearing of likely less than 500 square feet of native vegetation.

In a letter dated January 22, 2020, the USACE determined that activities relating to the installation of the sheet pile wall do not require permits in accordance with Section 10 of the Rivers and Harbors Act or with Section 404 of the Clean Water Act (Appendix D). The project was assigned USACE Application Number SAJ-2020-00373 (NPR-LCK). Additional consultation with the USACE for permitting or notification that there is no permit required would be completed for activities related to the road work and retention areas.

Based on the review conducted, Alternative 1 would have minor effects on wetlands and surface water. The impact would not be significant. These impacts to wetlands were also documented in the eight-step decision-making process, as described in 44 CFR 9 for projects within or that have the potential to impact a floodplain or wetland (Appendix F).

Alternative 2 – Alternative 2 – Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, the elevation and widening of a portion of SE MacArthur Boulevard would require a CCCL permit from FDEP. The widening of SE MacArthur Boulevard would require clearing and grubbing of 0.85 acres. The clearing would be mostly for grass and ground cover with the remainder consisting of various existing landscaping between the existing parking lot and the roadway. Less than 5% of the total area would be small areas of landscaping along the adjacent residence's frontage. Approximately 3,356 square feet of wetlands are anticipated to be impacted. Consultation with the USACE for permitting, or notification that there is no permit required, would be completed before construction.

Alternative 2 does not include the creation of any dry stormwater retention areas; therefore, there would be no improvements to water quality in the area.

Based on the review conducted, Alternative 2 would have a minor impact on wetlands and surface waters. The impact would not be significant.

Alternative 3 – No Action Alternative

Under the No Action Alternative, SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. The existing road would continue to be maintained by the county in its current state. The No Action Alternative would not include the creation of dry stormwater retention areas; therefore, there would be no improvements to water quality in the area and runoff pollution from the roadways would continue to enter the nearby wetlands and waterbodies. Therefore, the No Action Alternative would have a minor impact on wetlands and surface waters. The impact would not be significant.

4.5 FLOODPLAINS

4.5.1 Existing Environment

EO 11988, *Floodplain Management*, as implemented in 44 CFR Part 9, requires federal agencies to “avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.”

The 100-year floodplain is the area covered by water in the event of a 100-year flood, which is a flood that has a 1% annual chance of being equaled or exceeded in magnitude in any given year. The 500-year floodplain is the area covered by water in the event of a 500-year flood, which is a flood that has a 0.2% annual chance of being equaled or exceeded in magnitude in any given year. The 100- and 500-year floodplains are mapped on FEMA Flood Insurance Rate Maps (FIRMs).

Based on the current FEMA FIRM that covers the area of the Proposed Action, the project is located within the 100-year and 500-year floodplain (Appendix E). All sites are identified on the FEMA FIRM as being within Flood Zones VE, AE and X (Shaded), which are defined as moderate to high risk areas and within the floodplain.

4.5.2 Environmental Consequences

The threshold level for a significant impact to floodplains would be an excessive loss of floodplain area with an associated increase in flooding potential.

Alternative 1 – Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas would result in a reduction of flood risk and erosion to this portion of SE MacArthur Boulevard and Bathtub Reef Park and would increase flood storage

capacity in the area. Alternative 1 would provide protection against a 100-year storm event, reducing the risk of road closure for the only access road to the area. The installation of the sheet pile wall would provide protection against storm surge events.

The eight-step decision-making process, as described in 44 CFR 9 for projects within or that have the potential to impact a floodplain, was completed (Appendix F). The widening of a portion of SE MacArthur Boulevard would result in the addition of approximately 0.10 acres of impervious surfaces. The two new dry stormwater retention areas would provide water quality in excess of the amount required for the additional impervious area. In a letter dated February 17, 2020, the local Floodplain Coordinator stated the project complies with the No Adverse Impact principle of floodplain management (Appendix G).

Based on the review conducted, Alternative 2 would have a moderate impact on floodplain. The impact would not be significant.

Alternative 2 – Alternative 2 – Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, the elevation and widening of a portion of SE MacArthur Boulevard would reduce the risk of flood loss and road closure to a portion of the road and provide protection against a 100-year storm event. The road would not be protected against storm surge events.

The eight-step decision-making process, as described in 44 CFR 9 for projects within or that have the potential to impact a floodplain, was completed (Appendix F). The widening of a portion of SE MacArthur Boulevard would result in the addition of approximately 0.10 acres of impervious surfaces. The county would coordinate with the Floodplain Administrator for this alternative prior to construction to ensure the project complies with the No Adverse Impact principle of floodplain management.

Based on the review conducted, Alternative 2 would have a minor impact on the floodplain. The impact would not be significant.

Alternative 3 – No Action Alternative

Under the No Action Alternative, SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. This could result in continued flooding, washouts and erosion of the roadway, possible loss of public property, and loss of the only vehicular access and main evacuation route for the community.

The No Action Alternative would have a minor impact on the floodplain. The impact would not be significant.

4.6 GROUNDWATER

4.6.1 Existing Environment

The depth to the water table in the soils within the project area range from 2.5 feet to 6.5 feet below ground with an estimated average of 4 feet below the ground. The wet season water table is no less than 1 foot below each retention area bottom.

4.6.2 Environmental Consequences

The threshold level for significant impacts to groundwater would be a release of contamination into groundwater that exceeds FDEP standards.

Alternative 1 - Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, any dewatering necessary during construction activities would be conducted using standard methods and would have no effect on groundwater quality or flow. Hazardous materials used and hazardous wastes generated during construction would be managed in accordance with applicable environmental compliance regulations to prevent releases to groundwater.

Based on the review conducted, Alternative 1 would have a negligible impact on groundwater. The impact would not be significant.

Alternative 2 - Alternative 2 – Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, any dewatering necessary during construction activities would be conducted using standard methods and would have no effect on groundwater quality or flow. Hazardous materials used and hazardous wastes generated during construction would be managed in accordance with applicable environmental compliance regulations to prevent releases to groundwater.

Based on the review conducted, Alternative 2 would have a negligible impact on groundwater. The impact would not be significant.

Alternative 3 - No Action Alternative

The No Action Alternative would not involve the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas. Therefore, the No Action Alternative would have no effect on groundwater.

4.7 VEGETATION

4.7.1 Existing Environment

Vegetation within the proposed project area consists of grasses, dune grass, landscaped shrubs, palm trees, and seagrape trees that were originally planted by Martin County in the development of the existing public beach park and some, especially the dune plantings, have been replanted several times following storm damages. Directly west of the proposed project area contains a densely vegetated wetland area consisting of grasses, shrubs, and trees. Dune vegetation to the east of the project location has been subject to erosion, leading to much of the existing dune vegetation being removed through natural erosion and through repeated dune renourishment.

4.7.2 Environmental Consequences

The threshold level for a significant impact to vegetation is defined by excessive loss or impairment of unique or sensitive vegetative communities, or the introduction or spread of exotic plant species.

Alternative 1 - Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas would disturb soils during grading, paving, and sheet wall installation which would also result in the removal of the prior planted vegetation on the east side of the project and the existing natural vegetation west of the project area.

The installation of the sheet pile wall would result in approximately 16,000 square feet of total cleared vegetation; 14,500 square feet of the removed vegetation would be dune grass on the landward slope of the dune and 1,500 square feet of shrubs and trees located on the north and south extents of the sheet pile wall area. All disturbed areas resulting from the shoreline armoring would be replanted with dune plantings on the dune and grass and landscaping at the north and south ends. Martin County has obtained CCCL permit number MI-584 AR (Corrected) for activities related to the installation of the sheet pile wall and contains conditions pertaining to the removal and replanting of vegetation.

The roadway work would result in clearing and grubbing 0.85 acres of existing vegetation consisting mostly of grass and ground cover with approximately 5% of the area being landscaped vegetation adjacent to the residential areas. The drainage outfall work would require selective clearing resulting in less than 500 square feet of removed vegetation. The roadway widening would require an additional 3,400 square feet of vegetation removal. After construction, disturbed areas resulting from the roadway work would be stabilized with locally grown Bahia sod and new landscaping would be installed in the area.

Based on the review conducted, Alternative 1 would have a minor impact on vegetation. The impact would not be significant.

Alternative 2 - Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, the elevation and widening of a portion of SE MacArthur Boulevard would result in the removal of approximately 1.25 acres of existing vegetation within the project area. Approximately 0.85 acres would consist of cleared and grubbed grass and ground cover, with about 5% of this area consisting of landscaped vegetation from the adjacent residential areas. The roadway widening would result in the removal of approximately 0.1 acres of grasses, shrubs, and trees occurring on the western side of SE MacArthur Boulevard. After construction, disturbed areas resulting from Alternative 2 would be stabilized with locally grown Bahia sod and new landscaping would be installed in the area.

Based on the review conducted, Alternative 2 would have a minor impact on vegetation. The impact would not be significant.

Alternative 3 - No Action Alternative

The No Action Alternative would not involve the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas. Therefore, the No Action Alternative would have no effect on vegetation.

4.8 FISH AND WILDLIFE

4.8.1 Existing Environment

The proposed action will take place along the existing SE MacArthur Boulevard, including the vegetated side of the road to the west, the vegetated and sandy areas to the east, and along the landward side of the dune located east of SE MacArthur Boulevard. Wildlife within the project area is expected to be limited to common wildlife species adapted to human activity. Various coastal species may occur to the east of the project location on the adjacent beach and dune. This may include shorebirds, wading birds, sea birds, sea turtles during nesting season (further discussed in Section 4.9), and ghost crabs.

4.8.2 Environmental Consequences

The threshold for a significant impact to wildlife is defined by (1) a loss of individuals that negatively affects the regional population of a species or (2) the take of birds in violation of the Migratory Bird Treaty Act.

Alternative 1 - Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas would result in the loss of approximately 0.10 acres of vegetated habitat. Habitat loss would be largely limited to the west of SE MacArthur Boulevard for the proposed road widening. This area is currently vegetated with grasses, shrubs, and trees, and is directly adjacent to the existing road, a public park, and residential properties. This area is not considered to be preferred wildlife habitat.

Noise generated during construction on site may temporarily disturb wildlife not adapted to urban settings, however, any disturbance experienced by wildlife would be limited to the construction period and would be limited to the hours of 7:00 a.m. to 7:00 p.m.

The installation of the sheet pile wall would be conducted on the landward side of the existing dune system along the approximate location of the existing gravity wall. This area currently consists of the park's existing paved parking area and experiences regular foot traffic. Wildlife found in the area would likely leave the area during construction.

Based on the review conducted, Alternative 1 would have minor impacts to fish and wildlife. The impact would not be significant.

Alternative 2 - Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, the elevation and widening of a portion of SE MacArthur Boulevard would result in the loss of approximately 0.10 acres of vegetated habitat. Habitat loss would be largely limited to the west of SE MacArthur Boulevard for the proposed road widening. This area is currently vegetated with grasses, shrubs, and trees, and is directly adjacent to the existing road, a public park, and residential properties. This area is not considered to be preferred wildlife habitat.

Noise generated during construction on site may temporarily disturb wildlife not adapted to urban settings, however, any disturbance experienced by wildlife would be limited to the construction period and would be limited to the hours of 7:00 a.m. to 7:00 p.m.

Based on the review conducted, Alternative 2 would have minor impacts to fish and wildlife. The impact would not be significant.

Alternative 3 - No Action Alternative

The No Action Alternative would not involve the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas. Therefore, the No Action Alternative would have no effect on fish and wildlife.

4.9 THREATENED AND ENDANGERED SPECIES

4.9.1 Existing Environment

In accordance with Section 7 of the Endangered Species Act (ESA) of 1973, the project was evaluated for the potential occurrences of federally listed threatened and endangered species. The ESA requires any federal agency that funds, authorizes or carries out an action to ensure that their action is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of designated critical habitat.

According to the USFWS Information for Planning and Consultation species list, accessed June 23, 2020, the following federally listed species are considered to have the potential to occur in or near the project area: the federally endangered Florida panther (*Puma concolor coryi*) the federally threatened West Indian manatee (*Trichechus manatus*), the federally endangered ivory-billed woodpecker (*Campephilus principalis*), the federally threatened Florida scrub-jay (*Aphelocoma coerlescens*), the federally endangered hawksbill sea turtle (*Eretmochelys imbricata*), the federally threatened eastern indigo snake (*Drymarcon corais couperi*), and the federally threatened wood stork (*Mycteria americana*), the federally threatened red knot (*Calidris canutus rufa*), the federally threatened Southeastern beach mouse (*Peromyscus polionotus niveiventris*), the federally threatened piping plover (*Charadrius melodus*), the federally endangered leatherback sea turtle (*Dermochelys coriacea*), the federally listed loggerhead sea turtle (*Caretta caretta*), and the federally threatened green sea turtle (*Chelonia mydas*).

All project alternatives are likely to have no effect on the West Indian manatee, ivory-billed woodpecker, Florida scrub-jay, hawksbill sea turtle, eastern indigo snake, and wood stork as the project area does not provide suitable habitat for these species. The project area may contain suitable habitat for the Southeastern beach mouse, however, due to population decline they are no longer found in Martin County (USFWS, 2019).

4.9.2 Environmental Consequences

The threshold level for a significant impact to threatened and endangered species is defined by the take of an individual protected under the ESA.

Alternative 1 – Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

An informal consultation was conducted with the USFWS to determine the potential impacts of activities under Alternative 1 on listed threatened and endangered species in the area. It was determined that Alternative 1 may affect, but is not likely to adversely affect, nesting sea turtles, piping plover, and red knots. FEMA received concurrence from the USFWS on these effect determinations in an email dated April 8, 2021 (Appendix H). To protect the nesting turtles, piping plover, and red knot, Martin County must adhere to the piping plover conservation measures and

the sea turtle conservation measures outlined in the Service's August 27, 2007, *Repair and Replacement of Pre-existing Facilities in Florida* programmatic biological opinion and listed in Table 4, pages 13 to 15.

Based on the analysis conducted, Alternative 1 would have a minor impact to threatened and endangered species. The impact would not be significant.

Alternative 2 – Elevate a Portion of SE MacArthur Boulevard

The informal consultation conducted with USFWS for activities under Alternative 1 also covers all activities proposed under Alternative 2. It was determined that Alternative 2 may affect, but is not likely to adversely affect, nesting sea turtles, piping plover, and red knots. FEMA received concurrence from the USFWS on these effect determinations in an email dated April 8, 2021 (Appendix H). To protect the nesting turtles, piping plover, and red knot, Martin County must adhere to the piping plover conservation measures and the sea turtle conservation measures outlined in the Service's August 27, 2007, *Repair and Replacement of Pre-existing Facilities in Florida* programmatic biological opinion.

Based on the analysis conducted, Alternative 2 would have a minor impact to threatened and endangered species. The impact would not be significant.

Alternative 3 – No Action Alternative

The No Action Alternative would not involve the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas. Therefore, the No Action Alternative would have no effect on threatened and endangered species.

4.10 CULTURAL RESOURCES

4.10.1 Existing Environment

Cultural resources include historic architectural properties (including buildings, structures, and objects), prehistoric and historic archaeological sites, historic districts, designed landscapes, and traditional cultural properties. The primary federal statutes that apply to cultural resources are NEPA and Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended. The NHPA created the National Register of Historic Places (NRHP) and criteria to determine if cultural resources are eligible for listing in the NRHP. The NHPA defines historic properties as any prehistoric or historic district, site, building, structure, or object that is listed in, or eligible for listing in, the NRHP (36 CFR 800.16). When NRHP-eligible properties are present, federal agencies must assess the effect of the undertaking on them and consider ways to avoid, minimize, or mitigate potential adverse effects.

The area of potential effect (APE) for cultural resources is limited to the area within which all construction and ground-disturbing activities would be confined and the viewshed of the proposed project.

A literature review of the Florida Master Site File was conducted in July 2020. The literature review focused on the APE and included a 1-mile buffer around the APE. Three cultural resource investigations occurred within portions of the APE, however, no historic resources were identified within the APE.

Historic aerial imagery from 1958 demonstrates SE MacArthur Boulevard was already established at the time. The imagery also depicts additional disturbance for parking lots and residential development occurring within the area between 1970 and 1994.

4.10.2 Environmental Consequences

The threshold level for significant impacts to cultural resources under NEPA would be those impacts that adversely affect any historic property that is eligible for or listed in the NRHP under Section 106 or has been identified by a federally recognized tribe as a sacred site or traditional cultural property.

Alternative 1 - Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Alternative 1 would involve the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas. FEMA consulted with the Florida SHPO on its effect determinations for the proposed activities under Alternative 1 via letter dated September 17, 2020. In this letter, FEMA concluded that no properties listed or considered eligible for listing in the NRHP are located within the APE, resulting in a determination of “No Historic Properties Affected.” FEMA specified the following conditions for the treatment of fortuitous finds or unexpected discoveries during ground disturbing activities within the project area:

- If human remains or intact archaeological deposits are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The applicant will ensure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The applicant’s contractor will provide immediate notice of such discoveries to the applicant. The applicant shall contact the Florida Division of Historic Resources and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with SHPO, Tribes, and other consulting parties as necessary. In the event that unmarked human remains are encountered during permitted activities; all

work shall stop immediately, and the proper authorities notified in accordance with Florida Statutes, Section 872.05.

- Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant's right-of-way.
- Any changes to the approved scope of work will require submission to, and evaluation and approval by, the State and FEMA, prior to initiation of any work, for compliance with Section 106.

The Florida SHPO concurred with the findings of No Historic Properties Affected in a letter dated October 13, 2020.

FEMA also consulted with the following Tribal Historic Preservation Offices (THPO) for the following federally recognized tribes on the proposed activities under Alternative 1 via letter dated September 17, 2020: Alabama-Quassarte Tribal Town, Miccosukee Tribe of Indians of Florida, Muscogee (Creek) Nation, Poarch Band of Creek Indians, Seminole Nation of Oklahoma, and Seminole Tribe of Florida. In a letter dated October 10, 2020, The Seminole Tribe of Oklahoma provided concurrence with the findings of No Historic Properties Affected and stated that if, in the event of inadvertent discoveries of human remains and related NAGPRA items occur in areas of existing or prior development, work shall cease and the Seminole Nation of Oklahoma and other appropriate agencies shall be notified immediately. In a letter dated October 10, 2020, the Seminole Tribe of Florida stated there were no objections or other comments related to the project at the time and requested to be notified if any archaeological, historical, or burial resources are inadvertently discovered during project implementations. In a letter dated October 20, 2020, the Muscogee (Creek) Nation provided concurrence with the determination of No Historic Properties Affected and stated that in the event of inadvertent discoveries of human remains and related NAGPRA items occur, all work shall cease and the Muscogee (Creek) Nation office as well as other appropriate agencies shall be notified immediately. No other responses were received from the other federally recognized tribes and their concurrence is assumed.

Based on the analysis conducted and the conditions required for fortuitous finds or unexpected discoveries, Alternative 1 will have no effect on historic properties.

Alternative 2 - Elevate a Portion of SE MacArthur Boulevard

Alternative 2 would involve the elevation and widening of a portion of SE MacArthur Boulevard. Activities under Alternative 2 would be anticipated to have a smaller potential impact to historic properties than Alternative 1 due to the exclusion of the sheet pile wall and the two retention areas. Therefore, FEMA's determination of No Historic Properties Affect would also apply to Alternative 2. Activities under Alternative 2 were included in the consultation letter sent to SHPO on its effect determinations for the proposed activities under Alternative 1 via letter dated September 17, 2020. In this letter, FEMA concluded that no properties listed or considered eligible for listing in the NRHP are located within the APE, resulting in a determination of "No Historic Properties

Affected.” FEMA specified the following conditions for the treatment of fortuitous finds or unexpected discoveries during ground disturbing activities within the project area:

- If human remains or intact archaeological deposits are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The applicant will ensure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The applicant’s contractor will provide immediate notice of such discoveries to the applicant. The applicant shall contact the Florida Division of Historic Resources and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with SHPO, Tribes, and other consulting parties as necessary. In the event that unmarked human remains are encountered during permitted activities; all work shall stop immediately, and the proper authorities notified in accordance with Florida Statutes, Section 872.05.
- Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant’s right-of-way.
- Any changes to the approved scope of work will require submission to, and evaluation and approval by, the State and FEMA, prior to initiation of any work, for compliance with Section 106.

The Florida SHPO concurred with the findings of No Historic Properties Affected in a letter dated October 13, 2020.

FEMA also consulted with the following THPO for the following federally recognized tribes on the proposed activities under Alternative 1 via letter dated September 17, 2020: Alabama-Quassarte Tribal Town, Miccosukee Tribe of Indians of Florida, Muscogee (Creek) Nation, Poarch Band of Creek Indians, Seminole Nation of Oklahoma, and Seminole Tribe of Florida. In a letter dated October 10, 2020, The Seminole Tribe of Oklahoma provided concurrence with the findings of No Historic Properties Affected and stated that if, in the event of inadvertent discoveries of human remains and related NAGPRA items occur in areas of existing or prior development, work shall cease and the Seminole Nation of Oklahoma and other appropriate agencies shall be notified immediately. In a letter dated October 10, 2020, the Seminole Tribe of Florida stated there were no objections or other comments related to the project at the time and requested to be notified if any archaeological, historical, or burial resources are inadvertently discovered during project implementations. In a letter dated October 20, 2020, the Muscogee (Creek) Nation provided concurrence with the determination of No Historic Properties Affected and stated that in the event of inadvertent discoveries of human remains and related NAGPRA items occur, all work shall cease and the Muscogee (Creek) Nation office as well as other appropriate agencies shall be notified immediately. No other responses were received from the other federally recognized tribes and their concurrence is assumed.

Based on the analysis conducted and the conditions required for fortuitous finds or unexpected discoveries, Alternative 2 will have no effect on historic properties.

Alternative 3 - No Action Alternative

The No Action Alternative would not involve the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas. Therefore, the No Action Alternative would have no effect on historic properties.

4.11 HAZARDOUS MATERIALS AND SOLID WASTES

4.11.1 Existing Environment

Hazardous materials have been declared hazardous through various regulations including 40 CFR Parts 302.4 and 355, and 29 CFR Part 1910.1200. Hazardous waste is any solid, liquid, or contained gas waste that is dangerous or potentially harmful to human and health of the environment. Thousands of contaminated sites exist nationally due to hazardous waste being dumped, left out in the open, or otherwise improperly managed and disposed. In response, Congress established the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) on December 11, 1980. CERCLA, commonly known as Superfund, was enacted to allow EPA to clean up contaminated sites. The EPA utilizes the National Priorities List (NPL), the list of contaminated sites of national priority, to guide the determination of which sites warrant further investigation. According to the NPL, accessed February 1, 2021, the project area does not contain any Superfund sites.

4.11.2 Environmental Consequences

The threshold level for a significant impact to hazardous materials and waste would include a release of hazardous materials or waste, or a violation of local, state, or federal regulations pertaining to hazardous materials or waste.

Alternative 1 – Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Alternative 1 would involve the use of typical construction-related hazardous materials. Handling, storage, and disposal of hazardous materials and waste during construction activities, including measures to prevent releases, would be conducted in accordance with applicable environmental compliance regulations. Non-hazardous solid waste generated during construction would be disposed of at an offsite landfill, recycled, or reused as appropriate.

Based on the review conducted, Alternative 1 would have a negligible impact on hazardous materials/waste and solid waste. The impact would not be significant.

Alternative 2 – Alternative 2 – Elevate a Portion of SE MacArthur Boulevard

Alternative 2 would involve the use of typical construction-related hazardous materials. Handling, storage, and disposal of hazardous materials and waste during construction activities, including measures to prevent releases, would be conducted in accordance with applicable environmental compliance regulations. Non-hazardous solid waste generated during construction would be disposed of at an offsite landfill, recycled, or reused as appropriate.

Based on the review conducted, Alternative 2 would have a negligible impact on hazardous materials/waste and solid waste. The impact would not be significant.

Alternative 3 – No Action Alternative

Under the No Action Alternative, SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. The roadway would continue to be maintained by Martin County in its current state. Martin County is responsible for managing any associated hazardous materials and wastes, including measures to prevent releases, in accordance with applicable environmental compliance regulations. Therefore, the No Action Alternative would have no effect on hazardous materials/waste and solid waste.

4.12 UTILITIES

4.12.1 Existing Environment

Existing utilities on the project location include electrical power, communication, cable television, water services, and other Martin County utilities. Utilities occur both underground and via overhead lines along the east side of SE MacArthur Boulevard.

4.12.2 Environmental Consequences

The threshold level for significant impact to utilities would be an exceedance of the existing utility service capacity.

Alternative 1 - Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, the elevation of SE MacArthur Boulevard would require existing residential water services and the park's water services to be adjusted due to the change in elevation. Water services in the area are subject to limited service interruptions not to exceed 4 hours. Each residence and the park facilities would be interrupted one at a time and would occur during the night to minimize impacts unless otherwise authorized by the Martin County Utilities and Solid Waste Department. Material would be preassembled to the extent possible in order to minimize the length of interruption and residents would be notified of interruptions a minimum of 24 hours

in advance. The widening of SE MacArthur Boulevard, the two new retention areas, the elevation of the existing retaining wall, and the installation of the sheet pile wall is not anticipated to disrupt utilities.

Coordination would occur with Florida Power and Light Company for filling over and around existing utility poles and anchors. Poles will be protected against damage during construction. Prior to construction, verification that overhead lines have the required minimum clearances above the elevated roadway is required.

Based on the analysis conducted, Alternative 1 would have a minor impact on utilities. The impact would not be significant.

Alternative 2 - Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, the elevation of SE MacArthur Boulevard would require existing residential water services and the park's water services to be adjusted due to the change in elevation. Water services in the area are subject to limited service interruptions not to exceed 4 hours. Each residence and the park facilities would be interrupted one at a time and would occur during the night to minimize impacts unless otherwise authorized by the Martin County Utilities and Solid Waste Department. Material would be preassembled to the extent possible in order to minimize the length of interruption and residents would be notified of interruptions a minimum of 24 hours in advance.

Coordination would occur with Florida Power and Light Company for filling over and around existing utility poles and anchors. Poles will be protected against damage during construction. Prior to construction, verification that overhead lines have the required minimum clearances above the elevated roadway is required.

Based on the analysis conducted, Alternative 2 would have a minor impact on utilities. The impact would not be significant.

Alternative 3 – No Action Alternative

Under the No Action Alternative, SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. The roadway would continue to be maintained by Martin County in its current state. Therefore, the No Action Alternative would have no effect to utilities.

4.13 LAND USE

4.13.1 Existing Environment

The project area consists of SE MacArthur Boulevard and Bathtub Reef Beach Park. The project area contains an existing asphalt paved road, vegetated rights-of-way, the parking lot for the Bathtub Reef Beach Park, and areas along the landward side of the existing dune. Per the Martin County Zoning map, accessed November 13, 2020, the land use of the project area consists of public recreational use. Nearby land use includes low density single family residential to the west and north of the project area and planned unit development residential use to the south.

4.13.2 Environmental Consequences

The threshold level for a significant impact to land use is defined as the disruption or displacement of an existing or planned land use without providing a suitable means to replace or relocate the affected land use.

Alternative 1 - Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, the widening of a portion of SE MacArthur Boulevard would change the area being widened from a vegetated area to a paved road. This would not adversely affect the land use within or adjacent to the project area as it is occurring within the road's existing right-of-way and would not restrict the current land use of public recreational use. Other project activities would not change land use within or adjacent to the project area. Therefore, Alternative 1 would have a negligible impact on land use. The impact would not be significant.

Alternative 2 - Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, the widening of a portion of SE MacArthur Boulevard would change the area being widened from a vegetated area to a paved road. This would not adversely affect the land use within or adjacent to the project area. Therefore, Alternative 2 would have a negligible impact on land use. The impact would not be significant.

Alternative 3 - No Action Alternative

Under the No Action Alternative, existing conditions would be maintained and SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. Therefore, the No Action Alternative would have no effect on land use.

4.14 TRANSPORTATION AND TRAFFIC

4.14.1 Existing Environment

The project is located along SE MacArthur Boulevard and includes beach access, a parking area, and beach boardwalk located at the east side of the roadway at Bathtub Reef Beach Park. The portion of the roadway is specifically located about 200 feet north of the intersection with SE South Marina Way and extends continuing north about 1,100 feet. SE MacArthur Boulevard is within a barrier island and adjacent to the beach, and this roadway provides the only vehicular access for residential properties and public facilities within the community of Sailfish Point. SE MacArthur Boulevard is also the emergency evacuation route for the area.

4.14.2 Environmental Consequences

The threshold level for a significant impact to transportation and traffic would be a permanent increase in traffic volume in a given area or an increase in road hazards.

Alternative 1 – Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Under Alternative 1, the elevation and widening of a portion of SE MacArthur Boulevard, the installation of a sheet retaining wall, the elevation of the existing retaining wall, and the construction of two new retention areas would provide protection to the roadway against flood damage and storm surge. This would reduce potential risk of future road closures to the only access road and emergency evacuation route in the area. The widening of SE MacArthur Boulevard would provide increased road safety in the area by adding a 12-foot additional lane, a hardened shoulder, and a clear zone. The additional lane and hardened shoulder would allow vehicles to pull over in the event of an emergency and allow access for emergency vehicles, and the clear zone between the roadway and the retaining wall would provide an unobstructed, traversable roadside area to allow drivers to safely stop or regain control of vehicles that leave the roadway.

Traffic interruptions would be intermittent, localized, and temporary (limited to the construction period). During active construction periods, construction workers would direct traffic through and around the construction area. One lane of traffic would remain open at all times during asphalt base installation and roadway construction. During construction activities, construction vehicles may generate an increase in traffic to the area; this increase is anticipated to be short-term and limited to the duration of the construction. Alternative 1 would not add or remove sources of vehicle traffic outside the construction period and, therefore, would have no effect on long-term traffic levels in the area. Alternative 1 would eliminate the traffic from the trucking of sand for an emergency berm to protect the roadway prior to erosion forecasts as was required in the years 2008, 2010, 2011, 2012, 2013, 2014, 2017, 2019, and 2020, and therefore would reduce traffic before a storm event. During construction, access to Bathtub Reef Beach Park would be closed to the public, reducing traffic loads for the duration of construction.

Based on the review conducted, Alternative 1 is expected to have a moderate positive impact on transportation and traffic. The impact would not be significant.

Alternative 2 – Alternative 2 – Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, the elevation and widening of a portion of SE MacArthur Boulevard would provide protection to the roadway against future flood damage. The widening of SE MacArthur Boulevard would also provide increased road safety in the area.

Traffic interruptions would be intermittent, localized, and temporary (limited to the construction period). During active construction periods, construction workers would direct traffic through and around the construction area. One lane of traffic would remain open at all times during asphalt base installation and roadway construction. During construction activities, construction vehicles may generate an increase in traffic to the area; this increase is anticipated to be short-term and limited to the duration of the construction. Alternative 2 would not add or remove sources of vehicle traffic outside the construction period and, therefore, would have no effect on long-term traffic levels in the area. Alternative 2 does not include the retaining wall along the east side of Bathtub Beach Reef Park, therefore the traffic from trucking of sand for an emergency berm to protect the roadway prior to erosion forecasts would continue as it was in the years 2008, 2010, 2011, 2012, 2013, 2014, 2017, 2019, and 2020. During construction, access to Bathtub Reef Beach Park would be closed to the public, reducing traffic loads for the duration of construction.

Based on the review conducted, Alternative 2 is expected to have a minor positive impact on transportation and traffic. The impact would not be significant.

Alternative 3 – No Action Alternative

Under the No Action Alternative, the road would not be improved but would continue to be maintained by Martin County in its current state. Vehicular access to the beach and residential community would continue to be affected by future flooding and storm surge, leading to future road closures and damages. SE MacArthur Boulevard is an emergency evacuation route and the only vehicular access route to the Sailfish Point community. The loss of this road could prevent residents from entering or leaving the area after a disaster, prevent emergency medical staff and other first responders from easily entering the area, and prevent Martin County staff from accessing the area to assess damages and community needs after a disaster. The traffic from trucking of sand for an emergency berm to protect the roadway prior to erosion forecasts would continue to be required as it was in the years 2008, 2010, 2011, 2012, 2013, 2014, 2017, 2019, and 2020. Therefore, the No Action Alternative would have a moderate effect to transportation and traffic. The impact would not be significant.

4.15 OCCUPATIONAL HEALTH AND SAFETY

4.15.1 Existing Environment

Occupational health and safety hazards could include chemical agents (such as asbestos or lead), physical agents (such as noise or vibration), physical hazards (such as slip, trip, and fall hazards, electricity, or machinery), or biological hazards (such as infectious waste, poisonous plants, ticks, or other hazardous biota). Occupational health and safety concerns could affect both workers and other non-workers near the project site. County employees and contractors are responsible for following applicable OSHA regulations and for conducting their work in a manner that does not pose any risk to other workers or the public.

4.15.2 Environmental Consequences

The threshold level for a significant impact to occupational health and safety would be (1) exposure of workers to health and safety hazards without proper protection or (2) creating health and safety hazards that could affect the public.

Alternative 1 - Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Occupational health and safety hazards under Alternative 1 would include those common to construction and demolition activities, such as loud noise, heavy machinery, debris, electricity, and hazardous materials used or encountered during work. To minimize occupational health and safety risks, workers would wear and use appropriate personal protective equipment and follow all applicable OSHA standards and procedures. A health and safety plan would be developed and implemented for work. Work areas would be clearly marked with appropriate signage and secured against unauthorized entry. Standard construction traffic control measures would be used to protect workers, residents, and the travelling public.

Based on the review conducted, Alternative 1 would have a negligible impact on occupational health and safety. The impact would not be significant.

Alternative 2 - Elevate a Portion of SE MacArthur Boulevard

Occupational health and safety hazards under Alternative 2 would include those common to construction and demolition activities, such as loud noise, heavy machinery, debris, electricity, and hazardous materials used or encountered during work. To minimize occupational health and safety risks, workers would wear and use appropriate personal protective equipment and follow all applicable OSHA standards and procedures. A health and safety plan would be developed and implemented for work. Work areas would be clearly marked with appropriate signage and secured against unauthorized entry. Standard construction traffic control measures would be used to protect workers, residents, and the travelling public.

Based on the review conducted, Alternative 2 would have a negligible impact on occupational health and safety. The impact would not be significant.

Alternative 3 - No Action Alternative

Under the No Action Alternative, SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. Storm damage to the road and surrounding area could be a general health and safety risk if the road cannot be used by the residents or emergency service personnel. Therefore, the No Action Alternative would have a minor impact on general health and safety. The impact would not be significant.

4.16 SOCIOECONOMICS

4.16.1 Existing Environment

In 2010, the population of Martin County was 146,318 (U.S. Census Bureau, 2010). Based on the American Community Survey (ACS) 5-year estimates for 2014 to 2018, 31.5% of the population is 65 years and over, the total labor force is 58,917 people, the median household income is \$57,959, and the per capita income is \$40,389 (US Census Bureau, 2019).

In 2010, the population of Sailfish Point was 1,002 (US Census Bureau, 2010). Based on the ACS 5-year estimates for 2013 to 2017, children 18 years and younger in Sailfish Point are 5% of the population; minorities (African-American, Native American, Asian, Native Hawaiian/Pacific Islanders, Hispanic or Latino, or a mix of these races) are 4% of the population; and families below the poverty level (with household income below \$25,000 per year) are 10% of the population.

Historically, the roadway has experienced flooding, washouts and erosion due to high seas and strong waves from storm surge events due to its geographical location next to the beach and within the Coastal High Hazard Area (VE Zone). Martin County incurred the costs of repairs needed to the road, beach renourishment projects, and ferry transportation in order to provide residents access to their homes while the road was damaged.

4.16.2 Environmental Consequences

The threshold level for a significant impact to socioeconomics would be a substantial change in population, demographics, economic conditions, housing, or public service.

Alternative 1 – Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Alternative 1 would not directly change the number of persons living in the local area. Therefore, Alternative 1 would have no impact on the demographics, number of persons living in housing,

number of children attending schools, or demand for emergency services (medical, police, and firefighting) in the area. Construction work under Alternative 1 would have a minor, short-term, beneficial impact on the local economy. Construction work would have a negligible impact on the total labor force and employment in the region due to the minimal number of jobs that would be created.

Based on the review conducted, Alternative 1 would have a minor beneficial impact on socioeconomics. The impact would not be significant.

Alternative 2 – Alternative 2 – Elevate a Portion of SE MacArthur Boulevard

Alternative 2 would not directly change the number of persons living in the local area. Therefore, Alternative 2 would have no impact on the demographics, number of persons living in housing, number of children attending schools, or demand for emergency services (medical, police, and firefighting) in the area. Construction work under Alternative 2 would have a minor, short-term, beneficial impact on the local economy. Construction work would have a negligible impact on the total labor force and employment in the region due to the minimal number of jobs that would be created.

Based on the review conducted, Alternative 2 would have a minor beneficial impact on socioeconomics. The impact would not be significant

Alternative 3 – No Action Alternative

Under the No Action Alternative, SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. The existing road would continue to be maintained by Martin County in its current state. If the No Action Alternative is taken, the county would continue to be incurring costs for future flooding and storm surge damages. Access to the beach, Sailfish Point Golf Club and other public facilities would continue to be affected, which would negatively affect the local economy. Therefore, the No Action Alternative would have a moderate impact on socioeconomics. The impact would not be significant.

4.17 ENVIRONMENTAL JUSTICE AND PROTECTION OF CHILDREN

4.17.1 Existing Environment

EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, requires federal agencies to address disproportionate environmental and human health impacts from federal actions on minority populations and low-income populations. All federal agencies must analyze the environmental effects, including human health, social, and economic effects, on minority and low-income communities.

Guidelines for the protection of children are specified in EO 13045, *Protection of Children from Environmental Health Risks and Safety Risk* (Federal Register, Volume, 62, Number 78, April 23, 1997). This EO requires that federal agencies make it a high priority to identify and assess policies, programs, and standards addressing disproportionate adverse risks to children resulting from environmental health or safety risks.

In 2010, the population of Sailfish Point was 1,002 (US Census Bureau, 2010). Based on the ACS 5-year estimates for 2013 to 2017, children 18 years and younger in Sailfish Point are 5% of the population; minorities (African-American, Native American, Asian, Native Hawaiian/Pacific Islanders, Hispanic or Latino, or a mix of these races) are 4% of the population; and families below the poverty level (with household income below \$25,000 per year) are 10% of the population.

4.17.2 Environmental Consequences

The threshold level for a significant impact to environmental justice is disproportionately high or adverse human health or environmental effects on minority or low-income populations. The threshold level for a significant impact to protection of children is disproportionate environmental health or safety risks to children.

Alternative 1 – Elevate a Portion of SE MacArthur Boulevard and Install a Sheet Pile Retaining Wall (Preferred Alternative)

Alternative 1 would have minor impacts on the resources most relevant for assessing impacts on human populations, which are air quality, noise, groundwater, surface water, and hazardous materials/wastes. The potential impacts Alternative 1 would have on these resources would not adversely affect human populations. Therefore, Alternative 1 would not have disproportionately high or adverse human health or environmental effects on minority or low-income populations. Activities under Alternative 1 would not result in disproportionate health or safety risks to children.

Alternative 2 – Alternative 2 – Elevate a Portion of SE MacArthur Boulevard

Under Alternative 2, the elevation and widening of a portion of SE MacArthur Boulevard would have similar impacts on human populations as those described for Alternative 2. Therefore, Alternative 2 would not have disproportionately high or adverse human health or the environmental effects on minority or low-income populations and Alternative 2 would not result in disproportionate health or safety risk to children.

Alternative 3 – No Action Alternative

Under the No Action Alternative, SE MacArthur Boulevard would not be elevated or widened, the sheet pile retaining wall would not be installed, the existing retaining wall to the west of SE MacArthur Boulevard would not be elevated, and the two retention areas would not be constructed. The road would continue to be maintained by Martin County in its current state. Therefore, the No Action Alternative would not have disproportionately high or adverse human health or

environmental effects on minority or low-income populations and would not result in disproportionate health or safety risks to children.

5.0 CUMULATIVE IMPACTS

Per the CEQ regulations, cumulative impacts refer to the impact on the environment that “results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taken place over a period of time” (40 CFR 1508.7). In accordance with NEPA, this EA considered the combined effect of the preferred alternative and other actions occurring or proposed in the vicinity of the proposed project site.

Due to the project being in a coastal area, it is inherently susceptible to coastal erosion and flooding from tropical storms and hurricanes which may result in future presidential declarations. Future re-nourishment efforts to the adjacent Bathtub Reef Beach due to storm and background erosion is expected. The proposed project is expected to increase the level of storm protection to the Bathtub Reef Beach Park and a portion of SE MacArthur Boulevard. It is not expected that the project will increase development along the shoreline but will help protect and maintain existing infrastructure.

Bathtub Reef Beach has experienced dune washouts in the years 2008, 2010, 2011, 2012, 2013, 2014, 2017, 2019, and 2020 requiring sand to be trucked into the area to rebuild the dunes. The proposed new sheet pile wall will provide greater protection against storm surge to the park area and SE MacArthur Boulevard compared to the existing wall. The new sheet pile wall will also prevent the landward movement of sand via erosion towards the Bathtub Reef Park parking facilities and SE MacArthur Boulevard.

SE MacArthur Boulevard has also experienced past washouts that led to residents being unable to access (or leave and evacuate) their homes in the nearby community. SE MacArthur Boulevard is the only vehicular access road to the Sailfish Point Community; for example, the loss of road access in 2004 required a temporary ferry system to be implemented in order to transport residents to and from the area. Therefore, this road must be repaired each time after being damaged in order to restore the only vehicular access to the area. The proposed elevation of this portion of SE MacArthur Boulevard will reduce the risk of flooding and washout from future storm events, allowing for adequate road access after future storm events.

It is anticipated the proposed action will have short-term impacts to recreational use of Bathtub Reef Beach and residential road usage. However, it is expected the proposed action will not have long-term negative impacts to the recreational areas, the residential areas, or the environment in the project area, as the proposed action is meant to protect this portion of SE MacArthur Boulevard to prevent the loss of access to Bathtub Reef Park and the residential areas. In consideration of the

overall impact of the proposed project in relation to impacts from past, present, and reasonably foreseeable future activities, the proposed action is not expected to have significant adverse cumulative impacts on any resource.

6.0 PERMIT AND PROJECT CONDITIONS

1. Under Alternative 1 and 2, prior to construction, an appropriate Stormwater Pollution Prevention Plan (SWPPP), Erosion Control Plan, and National Pollution Discharge Elimination System (NPDES) permit must be obtained, and Martin County must comply with all of the conditions prescribed by the permit.
2. Martin County has obtained FDEP CCCL Permit Number MI-584 AR (Corrected) for activities pertaining to the sheet pile wall installation in Alternative 1. Martin County will follow the general and project specific conditions prescribed by the permit. See pages 2 to 5 for all applicable conditions and requirements in Appendix I. An additional CCCL Permit is required for other activities pertaining to Alternative 1 and all activities under Alternative 2, and Martin County must comply with all of the conditions prescribed by the permit.
3. Martin County has obtained notification that no permit is required by USACE under application number SAJ-2020-00373 (NPR-LCK) for activities related to the sheet pile wall installation under Alternative 1. Additional consultation is required for all other activities under Alternative 1 and 2, and Martin County must comply with all of the conditions prescribed by the permit if issued.
4. An Environmental Resource Permit from FDEP is required for Alternative 1 activities and Martin County must comply with all of the conditions prescribed by the permit.
5. If necessary, appropriate dewatering permits are required prior to dewatering activities and Martin County must comply with all of the conditions prescribed by the permit.
6. Under Alternative 1 and 2, the following measures would be adopted from USFWS *Programmatic Biological Opinion* with FEMA, *FEMA-funded repair and replacement of preexisting facilities in Florida*, and included in an informal consultation with USFWS:
 - a. Piping Plover and Red Knot:
 - i. Prior to construction, a survey for optimal non-breeding piping plover habitat shall be conducted in the project area. Optimal piping plover habitat whether existing or newly created by storm events shall be avoided to the maximum extent practicable. Surveys shall be performed by personnel having knowledge and experience in identification of piping plovers and knowledge of their roosting and feeding habits and requirements.
 - ii. Surveys for non-breeding piping plover shall be conducted daily starting two weeks prior to project initiation for the duration of the project between July 15 and May 15 if optimal non-breeding piping plover habitat is documented in the project area. If the project does not begin until after July 15, then surveys must start on July 15 and continue throughout the project construction period until May 15, whichever comes first. Locations of observed piping plovers shall be documented and

reported. Surveys shall be conducted by trained personnel and must be conducted in accordance with monitoring guidelines supplied by the USFWS (except daily versus twice monthly surveys are required). Data sheets must be completed for each daily survey, including negative reports. Locations of observed piping plovers must be recorded using latitude and longitude (GPS points preferred) and reported to the USFWS following project completion.

- iii. Piping plover surveys shall be required following construction if piping plovers were documented prior to or during construction. These surveys shall be conducted daily for two weeks following completion of the entire project. Survey shall be conducted in accordance with survey guidelines.
 - iv. The results of the daily piping plover survey shall be submitted to the USFWS with maps documenting the locations of piping plovers (with GPS coordinates or latitude and longitude coordinates) if seen during the survey period.
 - v. When piping plovers are observed, “Disturbance-Free Zones” will be posted and roped off at least 300 feet away from the construction areas where potential bird nesting and feeding are occurring.
 - vi. No boardwalks shall be reconstructed or repaired that funnel pedestrians to a washover area or other optimal piping plover habitat.
- b. Sea Turtles:
- i. Repair or replacement of structures shall occur in the same location or footprint of the previously permitted structure unless it has been determined to be environmentally better to relocate the structure.
 - ii. All activity shall be confined to daylight hours and shall not occur prior to 9:00 a.m. following the completion of all necessary sea turtle surveys and conservation activities. No construction related lights shall be used during the nesting season.
 - iii. During the early and late periods of the sea turtle nesting season (March 1 to April 30 and November 1 to November 30) but, outside the peak period, surveys for early and late nesting turtles must be conducted. If nests are reported in the area of construction, the nest must be marked and avoided with a 10-foot buffer.
 - iv. During the sea turtle nesting season (May 1 through October 31) work shall be allowed, except as noted, provided the following measures are implemented.
 - a. Repair and restoration work shall only be conducted from a position landward of the dune vegetation with no physical intrusion onto the beach or dunes.
 - b. Fence shall be installed to designate the construction work areas off the beach and all equipment and activities shall be kept inside these areas.
7. Under Alternative 2 and 3, State Historic Preservation Office (SHPO)/National Historic Preservation Act (NHPA) Conditions are applicable:
- a. If human remains or intact archaeological deposits are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The applicant will ensure that archaeological discoveries are

secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The applicant's contractor will provide immediate notice of such discoveries to the applicant. The applicant shall contact the Florida Division of Historic Resources and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with SHPO, Tribes, and other consulting parties as necessary. In the event that unmarked human remains are encountered during permitted activities; all work shall stop immediately, and the proper authorities notified in accordance with Florida Statutes, Section 872.05.

- b. Construction vehicles and equipment will be stored onsite during the project or at existing access points within the Applicant's right-of-way.
 - c. Any changes to the approved scope of work will require submission to, and evaluation and approval by, the State and FEMA, prior to initiation of any work, for compliance with Section 106.
 - d. In the event of inadvertent discoveries of human remains and related Native American Graves Protection and Repatriation Act (NAGPRA) items occur in areas of existing or prior development, work shall cease and the Seminole Nation of Oklahoma, the Muscogee (Creek) Nation, and other appropriate agencies shall be notified immediately.
 - e. If any archaeological, historical, or burial resources are inadvertently discovered during project implementations, the Seminole Tribe of Florida will be contacted immediately.
8. Handling, storage, and disposal of hazardous materials and waste during construction activities, including measures to prevent releases, must be conducted in accordance with applicable environmental compliance regulations.

7.0 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

The following agencies were contacted during the preparation of this EA:

- Alabama-Quassarte Tribal Town
- Florida Department of Environmental Protection
- Florida Department of Transportation
- Florida Division of Historic Resources (SHPO)
- Florida State Clearinghouse
- Miccosukee Tribe of Indians of Florida
- Muscogee (Creek) Nation
- Poarch Band of Creek Indians
- Seminole Tribe of Florida
- Seminole Tribe of Oklahoma
- U.S. Army Corps of Engineers, Jacksonville District
- U.S. Fish and Wildlife Service

FEMA issued a disaster-wide initial public notice for Hurricane Matthew on November 21, 2016, to notify the public of projects under the Public Assistance, Individual Assistance, and Hazard Mitigation Grant programs that may be occurring within floodplains or wetlands.

The public was notified of the availability of this EA for review and comment by posting of the public notice on FEMA's website, Martin County's website, and near the project location at Bathtub Reef Beach Park. A hard copy of the EA was made available at the Martin County Administration Center, Public Works Department, located at 2401 SE Monterey Road, Stuart, Florida 34996 during normal business hours, as well as both websites. The public comment period ended on December 31, 2021 after 30 days from date of initial posting (December 1, 2021).

On November 29, 2021, Martin County sent direct mail letters to the property owners who would be directly impacted by the construction and provided availability to meet to discuss the proposed project plans, address any concerns, and answer questions. Four of the residents met with the county to provide comments between December 7, 2021 and January 4, 2022. The residents expressed concerns directly associated with the proposed construction activities and roadway improvements with a focus on how the project may negatively impact their private property. One topic discussed was the current drainage issues along the road during rain events, and the county discussed the proposed drainage system plans which include new retention pond areas to address these issues. Additional concerns presented were the direct impacts to the driveways, landscaping on or near the resident's properties, and viewshed of the beach from the resident's properties. The county expressed it would replace the existing driveways with in-kind materials after construction, replace landscaping impacted by the project, and confirmed the dune height would remain the same to not impact the viewshed from the resident's properties. Other areas of concern included the vibration of the equipment used to install the seawall, which would require monitoring to lessen the impacts to the residents and performed only during limited weekday hours, as well as ensuring emergency vehicle access to the residents would be maintained while work is being performed in the area. After the concerns of these residents were addressed, no further comments were received.

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**Appendices are available for review upon request to
FEMA-R4EHP-FLORIDA@fema.dhs.gov**