UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

F/SER31: JAD

Chief, Miami Permits Section
Jacksonville District Corps of Engineers
Department of the Army
9900 Southwest 107th Avenue, Suite 203
Miami, Florida 33176

APR 07 2017

Dear Sir or Madam:

Enclosed is the National Marine Fisheries Service's (NMFS) Biological Opinion (Opinion) on the U.S. Army Corps of Engineers (USACE), Jacksonville District's proposed actions to issue permits to the applicants in the following table. All projects are located within Miami-Dade County.

	Project Applicant	**NMFS number**	**USACE Number**
1	Samuel Bejar	SER-2015-17061	SAJ-2008-02609 (LP-AG)
2	Edmund Irvine	SER-2015-17171	SAJ-2015-01571 (LP-AG)
3	Marcos Macias	SER-2016-17648	SAJ-2007-02395 (LP-NDF)
4	Satinder K. Sandhu	SER-2015-16759	SAJ-2014-02433 (LP-AMK)
5	Miami Beach Banyan Trust	SER-2016-17737	SAJ-2015-02246 (LP-AG)
6	West San Marino	SER-2015-17612	SAJ-2015-01691 (LP-AG)

We are responding to your consultation requests on these projects in a batched format. We have batched these projects based on the similarity of their location, type, construction methods, and the fact that they have the potential to affect the same ESA-listed species and designated critical habitat. This Opinion analyzes the potential for these projects to affect sea turtles (loggerhead, leatherback, Kemp's ridley, hawksbill, and green), smalltooth sawfish, ESA-listed corals, Johnson's seagrass, and designated critical habitat for Johnson's seagrass in accordance with Section 7 of the Endangered Species Act. This analysis is based on project-specific information provided by USACE, any consultants for the projects, and NMFS's review of published literature. We conclude that these projects are likely to adversely affect, but are not likely to destroy or adversely modify, Johnson's seagrass critical habitat. The Opinion includes conservation recommendations for your consideration.

We look forward to further cooperation with you on other USACE projects to ensure the conservation and recovery of our threatened and endangered marine species. If you have any questions regarding this consultation, please contact Jacquelyn DeAngelo, Consultation Biologist, at (727) 209-5977, or by email at jacquelyn.deangelo@noaa.gov.

Sincerely,

For Roy E. Crabtree, Ph.D.
Regional Administrator

Enc.: Biological Opinion
File: 1514-22.F.4

Endangered Species Act - Section 7 Consultation
Biological Opinion

Agency: United States Army Corps of Engineers, Jacksonville District

Activity: Proposed issuance of 6 regulatory permits batched together in this consultation

	Project Applicant	NMFS Number	USACE Number
1	Samuel Bejar	SER-2015-17061	SAJ-2008-02609 (LP-AG)
2	Edmund Irvine	SER-2015-17171	SAJ-2015-01571 (LP-AG)
3	Marcos Macias	SER-2016-17648	SAJ-2007-02395 (LP-NDF)
4	Satinder K. Sandhu	SER-2015-16759	SAJ-2014-02433 (LP-AMK)
5	Miami Beach Banyan Trust	SER-2016-17737	SAJ-2015-02246 (LP-AG)
6	West San Marino	SER-2015-17612	SAJ-2015-01691 (LP-AG)

Consulting Agency: National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southeast Regional Office, Protected Resources Division, St. Petersburg, Florida

Approved By: Roy E. Crabtree, Ph.D., Regional Administrator
NMFS, Southeast Regional Office
St. Petersburg, Florida

Date Issued: 4/7/17

Approved By: for Roy E. Crabtree, Ph.D.
Regional Administrator

CONTENTS

List of Tables

Figures

Glossary of Commonly Used Acronyms

ESA	Endangered Species Act
DPS	Distinct Population Segment
NMFS	National Marine Fisheries Service
Opinion	Biological Opinion
USACE	U.S. Army Corps of Engineers

Units of Measurement

ac	acre(s)
ft	foot/feet
ft^2	square feet
in	inch(es)
lin ft	linear foot
m	meter(s)

1 BACKGROUND

Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1531 et seq.), requires that each federal agency shall ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species. Section 7(a)(2) requires federal agencies to consult with the appropriate Secretary on any such action. NMFS and the U.S. Fish and Wildlife Service share responsibilities for administering the ESA.

Consultation is required when a federal action agency determines that a proposed action "may affect" listed species or designated critical habitat. Consultation concludes after NMFS determines that the action is not likely to adversely affect listed species or critical habitat or issues a Biological Opinion ("Opinion") that identifies whether a proposed action is likely to jeopardize the continued existence of a listed species, or destroy or adversely modify critical habitat.

This document represents NMFS's Opinion based on our review of impacts associated with the proposed actions to issue permits for in-water construction activities. This Opinion analyzes the actions' effects to listed species and critical habitat, in accordance with Section 7 of the ESA, and is based on project information provided by USACE and other sources of information, including the published literature cited herein.

2 CONSULTATION HISTORY

Between August 18, 2015, and January 28, 2016, NMFS received requests by email for consultation under the ESA from the USACE on 6 projects requiring a USACE permit, described in Table 1. NMFS requested additional information (Table 2) and initiated consultation on those actions when all necessary information was received. After the initiation of consultation, Project 3 was revised. Also, another project was withdrawn and replaced with a new project (Project 6),

which was added to this batch consultation. The USACE effects determinations are listed in Tables 3 and 4. Our effects determinations are shown in Table 6.

Table 1. USACE Permitted Projects Under Consultation

	Project Applicant	Project Type
1	Samuel Bejar	Dock extension
2	Edmund Irvine	Dock replacement and reconfiguration, seawall and riprap installation
3	Marcos Macias	Dock replacement and reconfiguration, mooring pile installation
4	Satinder K. Sandhu	Dock installation
5	Miami Beach Banyan Trust	Dock replacement and reconfiguration and boatlift installation
6	West San Marino	Installation of dock, boat lift, mooring piles, and riprap

Table 2. Consultation History for the Projects

	Project Applicant	Consultation Requested	Requested Information	Response Received
1	Samuel Bejar	8/18/15	5/19/16, 5/20/16	5/20/16, 5/31/16
2	Edmund Irvine	9/2/15	5/26/16	5/31/16
3	Marcos Macias	12/31/15	10/5/16, 10/25/16	10/5/16, 10/25/16
4	Satinder K. Sandhu	04/30/15	5/12/16, 10/3/16	10/4/16
5	Miami Beach Banyan Trust	1/28/16	N/A	N/A
6	West San Marino	12/3/15	6/22/16, 10/3/16	10/24/16

Table 3. USACE Effects Determinations and Status for Species and Critical Habitat in or Near the Action Area that the USACE Believes May Be Affected by the Proposed Actions

Species	ESA Listing Status	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6
Sea Turtles[1]							
Green (North and South Atlantic distinct population segment [DPS])	T	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA
Kemp's ridley	E	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA
Leatherback	E	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA

[1] In the Section 7 Checklist from the USACE for Project 1, Samuel Bejar, the USACE indicated that the project may affect, but is not likely to adversely affect, olive ridley sea turtles. Olive ridley sea turtles are not mentioned in other correspondence from the USACE and are not present in the action area. Therefore, they will not be considered further.

Species	ESA Listing Status	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6
Loggerhead (Northwest Atlantic Ocean DPS)	T	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA
Hawksbill	E	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA
Fish							
Smalltooth sawfish (U.S. DPS)	E	NLAA	NLAA	NLAA	NLAA	NLAA	NLAA
Invertebrates and Marine Plants							
Elkhorn coral (*Acropora palmata*)	T	NE	NE	ND	NE	NE	NE
Staghorn coral (*Acropora cervicornis*)	T	NE	NE	ND	NE	NE	NE
Boulder star coral (*Orbicella franksi*)	T	NE	NE	ND	NE	NE	NE
Mountainous star coral (*Orbicella faveola*ta)	T	NE	NE	ND	NE	NE	NE
Lobed star coral (*Orbicella annularis*)	T	NE	NE	ND	NE	NE	NE
Rough cactus coral (*Mycetophyllia ferox*)	T	NE	NE	ND	NE	NE	NE
Pillar coral (*Dendrogyra cylindrus*)	T	NE	NE	ND	NE	NE	NE
Johnson's seagrass	T	NE	NE	NE	NE	NE	NE
E = endangered; T = threatened; NLAA = may affect, not likely to adversely affect; NE = no effect; ND = no determination made							

Table 4. USACE Effects Determinations for Designated Critical Habitat the USACE Believes May Be Affected by the Proposed Actions

Designated Critical Habitat	Project 1	Project 2	Project 3	Project 4	Project 5	Project 6
Johnson's seagrass	NLAA	NLAA	NLAA	NLAA	NLAA	LAA
NLAA = may affect, not likely to adversely affect; LAA = may affect, likely to adversely affect						

3 DESCRIPTION OF THE PROPOSED ACTIONS AND ACTION AREAS

3.1 Proposed Actions

This Opinion analyzes the following 6 projects. All of the projects propose docks in Johnson's seagrass critical habitat; however, none of the projects will meet the (1) NMFS's *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation, Marsh, or Mangrove Habitat*, dated August 2001, or (2) the NMFS and USACE's *Key for Construction Conditions for Docks or Other Minor Structures Constructed in*

or Over Johnson's seagrass (Halophila johnsonii), dated October 2002. All project applicants will comply with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*, dated March 23, 2006 (enclosed), including the requirement to use turbidity curtains and to cease operating construction equipment if a sea turtle or smalltooth sawfish is seen within 50 ft of moving equipment.

3.1.1 Samuel Bejar Project Description

The project site consists of a single-family residence in the uplands, a dock with boatlifts, and a seawalled shoreline with a riprap bag footer at the toe (Figure 1). The applicant describes the benthic conditions as mostly sand and silt. A Biological Assessment was conducted on May 21, 2013. The Assessment indicated the presence of several species of algae, sponges, tunicates, and fish, but no ESA-listed corals or mangroves. The survey documented patchy seagrasses at the project area; however, Johnson's seagrass was not observed.

The applicant proposes to:

- Install a new 12-foot (ft) by 8-ft personal watercraft floating vessel platform on the inside of the existing L-shaped dock. The floating platform will be constructed on land and placed in the water by land-based crews. The platform will be attached to the existing pier with cabling, so no piles are required for installation. The construction of this project and use of non-grated decking will result in 96 square foot (ft^2) of shading from the floating vessel platform.
- Construction will increase the number of wet slips at the site from 3 to 4. Since the wet slips will be on the solid floating vessel platform, the vessels mooring at those slips will not increase shading beyond that already calculated above for the floating platform.

An additional boatlift and 2 new mooring piles were already permitted by the USACE under SAJ-17. The effects of projects permitted under SAJ-17 were considered in the programmatic consultation on SAJ-17 (SER-2011-01939) and will not be considered in this Opinion.

The construction of this project will shade 96 ft^2 of waterbottom from the floating vessel platform.

The applicant will comply with NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*; however, turbidity curtains should not be necessary since no new piles will be installed. If turbid conditions arise, however, work will be stopped until turbid conditions dissipate and water clarity returns to normal. Thereafter, turbidity curtains will be placed around the platform work area and work will continue once the curtains are in place. In-water work will take approximately 1 day to complete and will be conducted during daylight hours only.

Figure 1. Samuel Bejar project location and surrounding area (©2016 Google)

3.1.2 Edmund Irvine Project Description

The applicant proposes to replace an existing seawall and dock. A Biological Assessment was conducted by Miami's Department of Resource Management on October 15, 2014. The Assessment documented patchy seagrasses at the project area; however, Johnson's seagrass was not observed. There were no corals or mangroves observed at the project site.

Demolition will include removing an existing irregular shaped dock, 2 mooring piles, a seawall-mounted boatlift, and a seawall-mounted davit arm.

Construction will include:

- Installation of 150 linear feet (lin ft) of concrete panel seawall and a concrete seawall cap. The new seawall will be placed a maximum of 1 ft waterward of the existing seawall, will stretch the length of the existing seawall (150 ft²).
- Installation of 148 cubic yards (1,036 ft²) of limestone riprap boulders. Riprap will be installed at the toe of the seawall and extend a maximum of 7 ft waterward from face of the new seawall.
- Installation of 15 new 12-inch (in) concrete king piles and 14 new 12-in concrete batter piles to support the seawall. King piles will fall within the footprint of the seawall. The batter piles supporting the seawall will extend waterward of the riprap.
- Installation of a new 497-ft² T-shaped wood dock (Access walkway: 7.5 ft x 14 ft = 105 ft^2, Terminal platform: 7 ft x 56 ft = 392ft^2). A portion of the access walkway (52.5 ft^2) will be positioned over the proposed riprap.
- Installation of 15 wooden 12-in diameter piles associated with the dock will be positioned underneath the dock.
- No new wet slips will be created by the dock replacement.

Construction of this project will shade 444.5 ft^2 of water bottom from the new dock (497 ft^2 – 52.5 ft^2 positioned over the riprap = 444.5 ft^2).

The concrete pre-fabricated seawall panels, king and batter piles and wooden dock piles will be installed using a vibratory hammer. Demolition and construction will be conducted from a barge. The new dock will be non-grated and will have a 42-in-high aluminum railing along the edges of the walkway and the landward side of the terminal platform, which will prevent additional mooring. The work will take approximately 60 days, excluding weekends, to complete and will be conducted during daylight hours.

Figure 2. Edmund Irvine project location and surrounding area (©2016 Google)

3.1.3 Marcos Macias Project Description

The project site is located within an open body of water and consists of a multi-family residence, a dock, and a seawalled shoreline with riprap along a portion (Figure 3). Field observations were conducted by Ocean Consulting on June 7, 2016. The reports indicate that dense paddle grass, other sparse seagrasses and microalgae were identified, although Johnson's seagrass was not documented at the site. No ESA-listed corals or mangroves were observed on-site. To minimize impacts to resources, the proposed dock and associated slip spaces have been positioned in areas with the sparsest coverage of seagrass along this property's shoreline.

The applicant proposes to:

- Install 3 new finger piers measuring 3 ft by 26 ft for a total of 234 ft^2. The new wooden piers will be constructed by installing 18 new wood piles with 12-in diameters, which are partially located under the dock.
- Install 6 new wooden mooring piles with 12-in diameters.

- Replace the existing 705.2 ft² marginal dock (86 ft by 8.2 ft^2) in the same footprint reusing the existing support piles.
- The new dock will accommodate 5 new vessels that the USACE estimates will shade 3,010 ft² of waterbottom based on the slip size.

The construction of this project will shade an additional 3,244 ft² of waterbottom (234 ft² from shading from the new finger piers + 3,010 ft^2 from the shading of additional vessels that will be moored at this location). As is discussed in Section 7, concerning the effects of the action, the 705.2 ft^2 area that will be shaded under the replacement marginal dock was already shaded under the existing dock and thus replacing this dock will not result in additional shading. All of the piles (the mooring piles and the piles supporting the finger piers) will be installed using a barge-mounted impact hammer. The remaining dock construction will be completed from the uplands. In-water work will take approximately 4-5 weeks to complete and will be conducted during daylight hours only.

Figure 3. Marcos Marcias project location and surrounding area (©2016 Google)

3.1.4 Satinder Sandhu Project Description

The project site consists of a single-family residence and a concrete seawall with concrete bag footer. A Biological Assessment was completed on May 27, 2014, and noted sandy substrate and sparse seagrass coverage consisting of non-ESA listed seagrass species. Several species of macroalgae were identified along the shoreline. Additionally, patches of non-ESA listed corals were noted at the project site. No ESA-listed corals, Johnson's seagrass, or mangroves were observed on-site.

[2] Based on the site plan, the existing dock is 86 ft by 8 ft 2 in, or 705.2 ft^2 (86 x 8.2 = 705.2 ft^2). It will be replaced by a dock of the same size, in the same footprint.

The applicant proposes to:

- Construct a 482-ft² wood dock consisting of a 30-ft by 10-ft terminal platform and a 4-ft by 45-ft 5-in walkway. The proposed dock will be constructed 5-ft above mean high water and have hand railings to restrict mooring in unauthorized areas.
- Construction of the dock will require the installation of 14 wood piles with 12-in diameters. The piles will be positioned underneath the dock.
- The new dock will accommodate 1 new vessel at the dock which will shade 360 ft^2 of waterbottom.

The applicant previously proposed to repair the existing seawall by adding 6 new 12-in by 12-in pre-stressed concrete batter piles (6 ft²) for support and a new seawall cap. The USACE permitted the pile installation associated with the seawall repair under SAJ-42, and the effects of those installations are considered in the programmatic consultation on SAJ-42 (SER-2008-01790) and will not be addressed in this Opinion.

Construction of this dock will result in shading of 842 ft^2 of waterbottom (482 ft^2 of dock shading + 360 ft² of vessel shading = 842 ft^2). Work will be completed using a barge-mounted crane and vibratory hammer. Dock and cap construction is expected to take 2 weeks and will be conducted during daylight hours only.

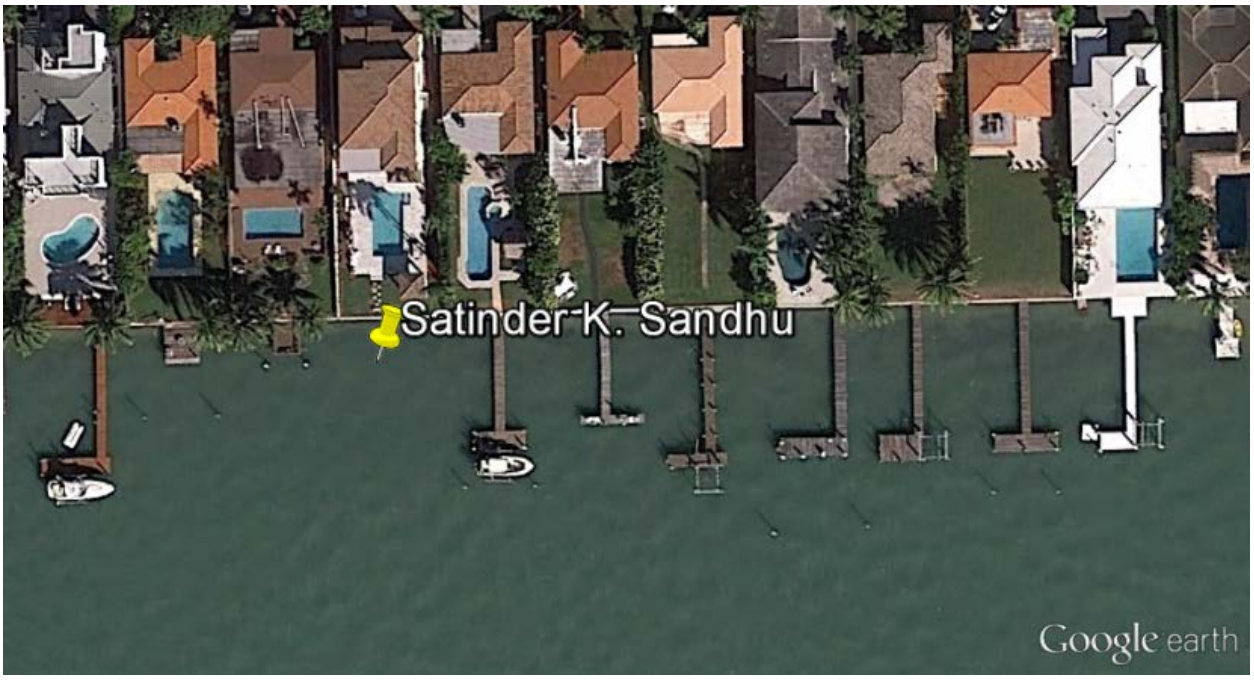

Figure 4. Project location (©2016 Google, Data SIO, NOAA, U.S. Navy, NGA, GEBCO)

3.1.5 Miami Beach Banyan Trust Project Description

The project site located on a man-made peninsula and consists of a single-family residence, a marginal dock, a boatlift, a double Jet Ski lift, and a seawalled shoreline (Figure 5). Biological Assessments were conducted on July 29, 2015, and August 4, 2015. The report from the assessments states that various species of seagrass were identified, although Johnson's seagrass

was not documented at the site. In addition to these patches of seagrass, macroalgae and sponges were observed. No ESA-listed corals or mangroves were observed on-site.

The applicant proposes to remove the existing dock, Jet Ski lift, boatlift, and a mooring pile, and:

- Install a 500-ft^2 marginal dock, partially within the same footprint of the existing, smaller dock structure (188-ft^2 of overlap with the previous marginal dock[3]).
- Construction of the marginal dock will require the installation of 5 new 12-in diameter wood piles. The piles will be located adjacent to the dock.
- Install a boatlift on the dock to accommodate a vessel that is 40 ft by 12 ft (480 ft^2).
- Construction of the new boat lift will require installation of 4 new 12-in by 12-in concrete piles.

The new dock configuration will reduce the number of mooring areas available from 4 to 1. The existing dock features a double Jet Ski lift, a boat lift, and a marginal dock. The proposed dock will feature only a single mooring opportunity at the boat lift.

The new dock will shade an additional 312 ft^2 of waterbottom (500 ft^2 – 188 ft^2 of overlap with existing dock). The vessel will shade 480 ft^2 of waterbottom.

The piles for the dock and boatlift will be driven via a barge-mounted impact hammer. Dock construction will be completed from the uplands. In-water work will take approximately 2 weeks to complete and will be conducted during daylight hours only.

Figure 5. Miami Beach Banyan Trust project location and surrounding area (©2016 Google)

[3] Previous marginal dock was 5.3 ft by 35.5 ft, which is 188.15ft^2, which we round down to 188 ft^2.

3.1.6 West San Marino, LLC

The proposed project is an existing single-family residential property with an existing marginal dock, davit, boat lift, concrete seawall, and concrete bag toewall footer. A biological assessment was conducted on February 23, 2015. The assessment describes the site as barren substrate with a small patch of non-ESA listed seagrass, macroalgae, sponges, and one small colony of non-ESA listed coral. The coral is located on the concrete bag footer and is proposed to be relocated prior to construction. No mangroves were identified onsite. The site plans show the applicant's proposal to replace the existing seawall; demolish the existing dock; install riprap; and install a replacement dock, 2 mooring piles, and 2 boatlifts. The USACE stated that the replacement of the seawall, including the installation of the associated concrete batter/king piles and removal of the dock and associated wooden piles were permitted under Nationwide Permit 3, and that it was only seeking consultation on the following activities to be permitted:

- Install 203 ft of riprap at the base of the seawall extending out 8 ft waterward for a total area of impact of 1,624 ft^2 (203 ft x 8 ft = 1,624 ft^2).
- Install a 131.6 ft^2 (18.8 ft by 7 ft = 131.6 ft^2) upland decking segment. Approximately 17 ft^2 of the upland decking will be positioned over the riprap, and the remainder will be positioned over land.
- Install a 341 ft^2 wooden L-shaped dock, consisting of a 23.7 ft x 4 ft (94.8 ft^2) access walkway and a 30.75 ft by 8 ft (246 ft^2) terminal platform. Approximately 32 ft^2 (8 ft x 4 ft = 32 ft^2) of the access walkway will be positioned over the footprint of the riprap. Only 309 ft^2 wood L-shaped dock will be positioned over water (341 ft^2 – 32 ft^2 = 309 ft^2).
- Install 13 new 12-in wood piles to support the dock. Four of these wooden piles will be installed partially adjacent to the dock. Seven of these piles will be located underneath the dock and 2 will be located in the same area as the riprap.
- Install 2, 12-in diameter wood mooring piles adjacent to the terminal platform of the dock to help secure the boat that will be moored at the platform.
- Install a 124 ft^2 wooden deck boatlift (wooden deck boatlift: 12.4 ft x 10 ft = 124). This wooden deck boatlift will be mounted to two of the piles associated with the dock.
- Install an additional boatlift (not a wooden deck boatlift) that will accommodate a 325 ft^2 vessel (25 ft x 13 ft). The boatlift will be supported by two of the piles for the wooden L-shaped dock.
- The applicant proposes to moor a 700 ft^2 vessel (vessel: 35 ft x 20 ft vessel) at the dock (not at the aforementioned boatlifts).

The construction of this project will result in shading of 433 ft^2 of waterbottom from structures (309 ft^2 from shading under the dock + 124 ft^2 from shading under the wooden deck boatlift) and shading of 1,025 ft^2 of waterbottom from vessels (325 ft^2 + 700 ft^2 = 1025 ft^2). The reconfiguration can accommodate 3 vessels, 1 at the deck boatlift, 1 moored to the dock, and 1 at the boatlift. The prior structure could accommodate 1 vessel.

The 13 new 12-in wood dock piles and 2, 12-in wood mooring piles will be installed by a barge mounted impact hammer and riprap will be placed with a barge-mounted crane. Construction is expected to take 5 weeks to complete. All work will be done during daylight hours during the work week.

Figure 6. West San Marino project location and surrounding area (©2016 Google)

3.2 Action Area

50 CFR 402.02 defines action area as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." The individual project areas are described in Table 5 and shown in Figures 1-6. The action areas for these projects include the waters and submerged lands within and in the footprint of the project sites. Additionally, the action areas includes the immediate vicinity of the project sites and the radius where endangered species could be exposed to potentially harmful noise levels as calculated in Section 4.11. Figure 7 shows the proximity of the project areas to each other.

Table 5. Project Locations

Project	**Applicant**	**Address** (Miami-Dade County, Florida)	**Latitude/ Longitude (North American Datum 1983 [NAD 83])**
1	Samual Bejar	1145 North Biscayne Point Road, Miami Beach	25.866940ºN, 80.130070ºW
2	Edmund Irvine	428 South Hibiscus Drive, Miami	25.784531ºN, 80.165491 ºW
3	Marcos Marcias	1110 Venetian Way, Miami, Beach	25.789263°N, 80.172621°W
4	Satinder K. Sandhu	1110 Stillwater Drive, Miami Beach	25.868844°N 80.131485°W
5	Miami Beach Banyan Trust	5030 North Bay Road, Miami Beach	25.827386°N, 80.133676°W
6	West San Marino	421 E. San Marino Drive, Miami Beach	25.793136°N, 80.162219°W

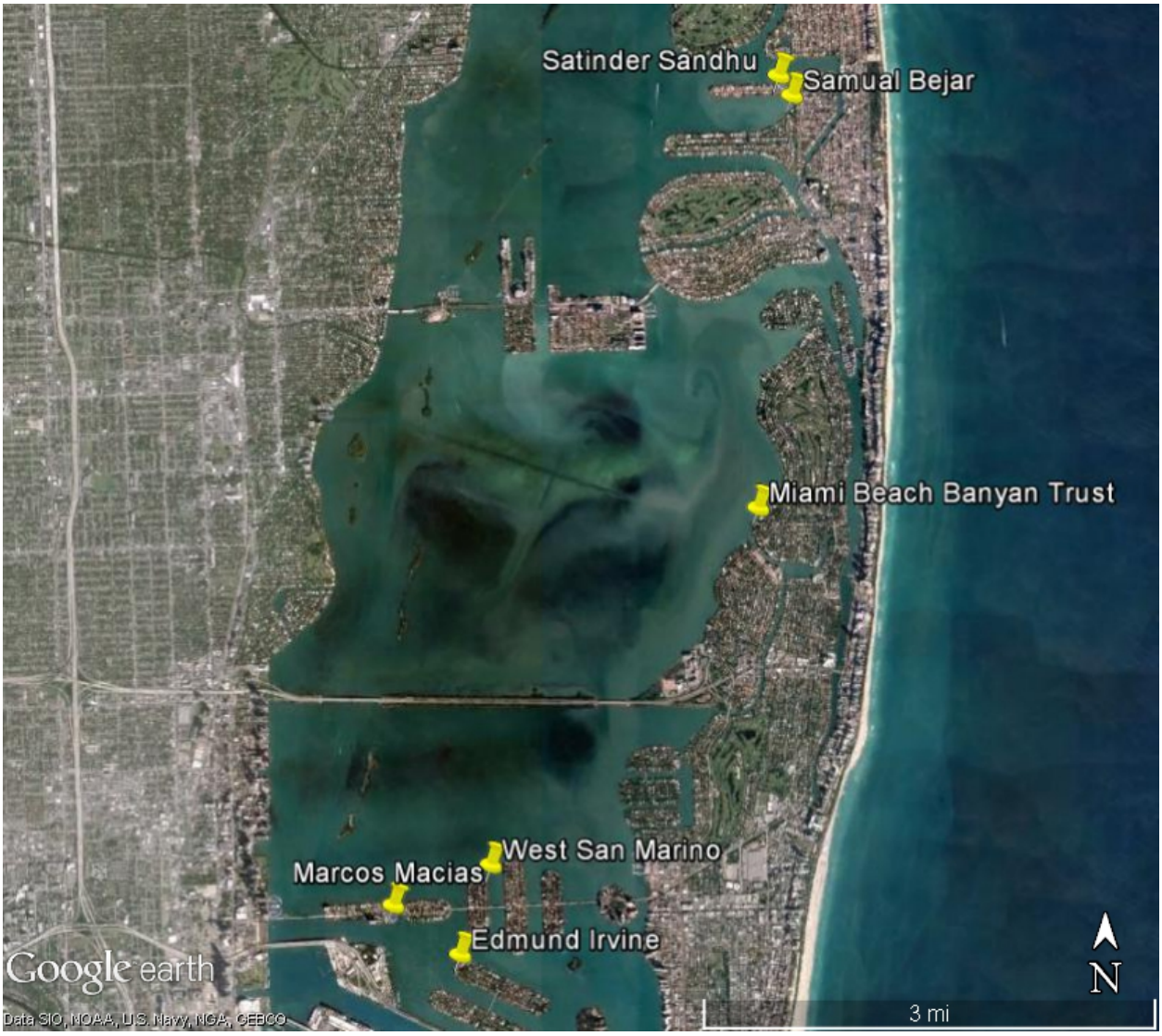

Figure 7. Project locations of 6 projects and the surrounding area (©2016, Data SIO, NOAA, U.S. Navy, NGA, GEBCO)

4 STATUS OF LISTED SPECIES AND CRITICAL HABITAT

We believe the species listed in Table 6 may be present within the action area and may be affected by the proposed projects as explained in this section. The projects are located in Johnson's seagrass critical habitat (Unit J- Northern Biscayne Bay).

Table 6. NMFS Effects Determinations and Listing Status for Species and Critical Habitat that May Be Present in or Near the Action Area that NMFS Believes May Be Affected by the Proposed Action

Species	ESA Listing Status	NMFS Effects Determinations
Sea Turtles		
Green (North and South Atlantic DPS)	T	NLAA
Kemp's ridley	E	NLAA
Loggerhead (Northwest Atlantic Ocean DPS)	T	NLAA
Hawksbill	E	NLAA
Fish		
Smalltooth sawfish (U.S. DPS)	E	NLAA
Critical Habitat		
Johnson's seagrass Unit J		LAA; no DAM
E = endangered; T = threatened; NLAA = may affect, not likely to adversely affect; LAA = likely to adversely affect; DAM = destruction or adverse modification		

We would not expect leatherback sea turtles to be present at the sites due to their very specific life history requirements which are not supported at or near the project sites. Leatherback sea turtles prefer open, deepwater habitat where they forage primarily on jellyfish.

We would not expect ESA-listed coral species to be present at the project sites or affected by the projects' activities because the sites do not contain the hard substrate free from fleshy macroalgae cover and sediment cover necessary for the species to survive. Further, ESA-listed coral species were not observed at the project sites.

Johnson's seagrass was not documented within the action areas. Thus, the actions will not affect Johnson's seagrass.

4.1 Species Not Likely to be Adversely Affected

Potential effects to sea turtles and smalltooth sawfish include the risk of interaction with construction equipment including barges. We believe the chance of direct physical injury from interactions with construction equipment and associated barges is discountable as these species are mobile and are likely to avoid the areas during construction. Adherence to NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions* requires workers to observe water-related activities for the presence of these ESA-listed species near all the project areas and will help to avoid interactions with these species during structure removal and construction. Operation of any mechanical construction equipment will cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities will not resume until the protected species has departed the project area of its own volition.

Sea turtles may be affected during construction by being temporarily unable to use the site for foraging or refuge due to avoidance of construction activities and physical exclusion from areas blocked by turbidity curtains. Smalltooth sawfish likewise may be unable to use the project site for forage[4] for the same reasons. However, we find these effects to be insignificant given their short duration and limited impact on foraging and sheltering behavior. Construction activities will last between 1 and 5 weeks and the turbidity curtains will be removed soon after all construction-induced turbidity has subsided and water quality has returned to pre-construction conditions. In addition, because construction will only be conducted during daylight hours, the species can return to the sites should they desire at night, when construction stops. Sea turtles are highly mobile and we expect them to relocate to nearby areas that provide foraging and refuge habitat, such that any effects to the species from impacts from inability to access the project area would be difficult to meaningful measure. Likewise, we expect smalltooth sawfish to relocate to nearby areas that provide foraging habitat. Therefore, we find these effects to be insignificant.

Sea turtles and smalltooth sawfish may be affected by the permanent loss of foraging habitat from the proposed projects, once they are complete. Most of these projects are located in areas described as having patchy or sparse seagrasses. Projects 3 and 5 have some dense seagrass patches; however, the associated structures will be positioned in areas with the sparsest seagrass coverage. Projects 1-5 will impact at least some seagrasses; Project 6 will be positioned to avoid all seagrass impacts. Projects 1 and 5 also have sponges in the area that will be affected by the project. Projects 4 and 6 each have non-ESA listed corals and Project 6 intends to relocate one of these corals out of the project footprint. Green sea turtles may forage in the area on seagrasses; however, we believe the small loss of seagrasses from these projects will have an insignificant effect on green sea turtles given the availability of foraging habitat nearby and throughout the Biscayne Bay. Similarly, smalltooth sawfish may forage in the area amongst seagrasses and we believe the small loss of patchy seagrasses will have insignificant effects on smalltooth sawfish given the availability of foraging habitat near the project sites and throughout the Biscayne Bay. We also believe the small loss of sponges at Projects 1 and 5 will have an insignificant effect on hawksbill sea turtles that forage on sponges given the alternate foraging habitat available nearby and throughout the Bay. Areas without seagrasses may still support the macroalgae, fish, jellyfish, crustaceans, and mollusks that serve as prey for Kemp's ridley and loggerhead sea turtles; however, the small loss of these resources also will have an insignificant effect on these sea turtles given the availability of alternate foraging resources.

Effects to listed species as a result of noise created by construction activities can physically injure animals in the affected areas or change animal behavior in the affected areas. Physical injurious effects can occur in 2 ways. First, immediate adverse effects can occur to listed species if a single noise event exceeds the threshold for direct physical injury. Second, effects can result from prolonged exposure to noise levels that exceed the daily cumulative exposure threshold for the animals, and these can constitute adverse effects if animals are exposed to the noise levels for sufficient periods. Behavioral effects can be adverse if such effects interfere with the species' ability to migrate, feed, rest, or reproduce, for example. Our evaluation of effects to listed species as a result of noise created by construction activities is based on the analysis prepared in

[4] Based on the Biological Assessments for the projects, the projects do not contain mangroves, which are used as refuge habitat by smalltooth sawfish, and therefore will not affect the sheltering behavior of the smalltooth sawfish.

support of the Opinion for SAJ-82.[5] The noise analysis in this consultation evaluates effects to ESA-listed fish and sea turtles identified by NMFS as potentially affected in Table 6.

Table 7 provides a summary of activities from each of the 6 projects that are expected to produce noise that may result in physical or behavioral impacts. The location of the projects in a confined space[6] or open-water environment[7] is also considered. This differentiation is important because if a project occurs in a confined space, an animal may be unable to move through or past a noise source to avoid it. All 6 projects are considered to be in open-water environments.

Table 7. Pile Installation

	Pile Types	**Number of Piles/ Size of sheet piles**	**Installation Method**
Project 1 Samual Bejar	N/A	N/A	N/A
Project 2 Edmund Irvine	12-in concrete king piles	15	Vibratory
	12-in concrete batter piles	14	
	12-in diameter wood piles	15	
	Concrete pre-fabricated seawall panels	150 lin ft total	
Project 3 Marcos Marcias	12-in diameter wood dock piles	18	Impact hammer
	12-in wood mooring piles	6	
Project 4 Satinder K. Sandhu	12-in diameter wood piles	14	Vibratory
Project 5 Miami Beach Banyan Trust	12-in diameter wood piles	5	Impact hammer
	12-in concrete piles	4	
Project 6 West San Marino	12-in wood dock piles	13	Impact hammer
	12-in wood mooring piles	2	

[5] NMFS. Biological Opinion on Regional General Permit SAJ-82 (SAJ-2007-01590), Florida Keys, Monroe County, Florida. June 10, 2014.

[6] A confined space is considered as any area that has another solid object (e.g., shorelines or jetties) or structure within 150 ft of the pile installation site that would effectively serve as a barrier or otherwise prevent species from moving past it to exit the area. This does not include objects such as docks or other pile-supported structures that would not stop or reflect noise.

[7] In an open-water environment, the animal would be able to move away from the noise without passing through or by the noise source.

The analysis below is distinguished by installation material, method, and location.

Vibratory installation of wood and concrete piles
Based on our noise calculations in SAJ-82 (Appendix B, Table 11), none of the proposed installation of wood or concrete piles by vibratory hammer will result in any form of physical injurious noise effects. In SAJ-82, we noted that our estimate of the noise expected from the vibratory pile driving of wood and concrete piles up to a certain size was based on the known noise from the vibratory installation of a 13-in steel pipe pile. Using such a surrogate is a very conservative approach because the installation of a 13-in steel pipe pile would be considerably louder than a similarly sized wood or concrete pile or vinyl sheet pile. Based on the surrogate, we estimate that vibratory installation of the wood or concrete piles could result in behavioral effects at radii of up to 16 ft (5 meter[m]) for sea turtles and up to 72 ft (22 m) for ESA-listed fishes. Given the mobility of sea turtles and ESA-listed fish species, we expect them to move away from noise disturbances. Because there is similar habitat nearby, we believe this effect will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during pile installation. Since installation will occur only during the day, these species will be able to resume normal activities during quiet periods between pile installations and at night. Therefore, installation of piles by vibratory hammer will not result in any physical injurious noise effect, and we anticipate any behavioral effects will be insignificant.

Installation of wood piles by an impact hammer
Based on our noise calculations in SAJ-82 (Appendix B, Table 4), the installation of wood piles by impact hammer will not cause single-strike or peak-pressure injury to sea turtles or ESA-listed fish. The cumulative sound exposure level (cSEL) of multiple pile strikes over the course of a day may cause injury to ESA-listed fishes and sea turtles at a radius of up to 30 ft (9 m). Due to the mobility of sea turtles and ESA-listed fish species, we expect them to move away from noise disturbances. Because we anticipate the animals will move away, we believe that it is extremely unlikely for an animal to suffer physical injury from cumulative exposure to the noise. Even in the unlikely event an animal does not vacate the daily cumulative injurious impact zone, the radius of that area is smaller than the 50-ft radius that will be visually monitored for listed species. Construction personnel will cease construction activities if an animal is sighted per NMFS's *Sea Turtle and Smalltooth Sawfish Construction Conditions*. Thus, we believe the effect of any injurious cSEL effects is discountable. An animal's movement away from the injurious impact zone is a behavioral response, with the same effects discussed below.

Based on our noise calculations in SAJ-82 (Appendix B, Table 10), impact hammer installation of the wood piles could also cause behavioral effects at radii of 151 ft (46 m) for sea turtles and 705 ft (215 m) for ESA-listed fishes. Due to the mobility of sea turtles and ESA-listed fish species, we expect them to move away from noise disturbances. Because there is similar habitat nearby, we believe behavioral effects will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during pile installation. Since installation will occur only during the day, these species will be able to resume normal activities during quiet periods between pile installations and at night. Therefore, we anticipate any behavioral effects will be insignificant.

Installation of concrete piles by an impact hammer
Based on our noise calculations in SAJ-82 (Appendix B, Table 4), installation of concrete piles by impact hammer will not cause single-strike or peak-pressure injurious noise effects. However, the cumulative sound exposure level of multiple pile strikes over the course of a day may cause injury to ESA-listed fishes and sea turtles up to 72 ft (22 m) away from the pile. Due to the mobility of sea turtles and ESA-listed fish species, and because the projects occur in open water, we expect them to move away from noise disturbances. Because we anticipate the animals will move away, we believe that it is extremely unlikely for an animal to suffer physical injury from cumulative exposure to the noise, and thus the effect of such exposure is discountable. An animal's movement away from the injurious sound radius is a behavioral response, with the same effects discussed below.

The installation of piles using an impact hammer could also result in behavioral effects at radii 705 ft (215 m) for ESA-listed fishes and 151 ft (46 m) for sea turtles (SAJ-82, Appendix B, Table 10). Due to the mobility of sea turtles and ESA-listed fish species, we expect them to move away from noise disturbances in this open-water environment. Because there is similar habitat nearby, we believe behavioral effects will be insignificant. If an individual chooses to remain within the behavioral response zone, it could be exposed to behavioral noise impacts during pile installation. Since installation will occur only during the day, these species will be able to resume normal activities during quiet periods between pile installations and at night. Therefore, we anticipate any behavioral effects will be insignificant.

Sea turtles also could be adversely affected by the increase in vessel traffic associated with the increase in the wet slips (Table 8), since more vessels may increase the risk of collisions with these species. However, we believe the risk of adverse effects to sea turtles from vessel strikes will be discountable. As shown in Table 8, below, and discussed in the project descriptions, above, a total of 9 wet slips will be added to the area as a result of new construction and 3 will be removed from Project 5 (noted as [-3] in the table below). In total, then, 6 new vessel slips will be added for all projects combined, and we anticipate 6 new vessels will be added. A NMFS Protected Resource Division (PRD) analysis[8] determined that it would take an introduction of at least 300 new vessels to an area to result in a take of 1 sea turtle in any single year. Smalltooth sawfish would be unaffected by vessel traffic because of their bottom dwelling habits.

Table 8. Proposed Number of New Wet Slips

	Projects	Proposed New Wet Slips
1	Samual Bejar	1
2	Edmund Irvine	0
3	Marcos Marcias	5
4	Satinder K. Sandhu	1
5	Miami Beach Banyan Trust	-3
6	West San Marino	2
	Total	6

[8] Barnette, M. 2013. Threats and Effects Analysis for Protected Resources on Vessel Traffic Associated with Dock and Marina Construction. NMFS SERO PRD Memorandum. April 18, 2013.

5 CRITICAL HABITAT LIKELY TO BE ADVERSELY AFFECTED

The term "critical habitat" is defined in Section 3(5)(A) of the ESA as (i) the specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (1) essential to the conservation of the species and (2) that may require special management considerations or protection; and (ii) specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. "Conservation" is defined in Section 3(3) of the ESA as "…the use of all methods and procedures that are necessary to bring any endangered or threatened species to the point at which listing under the ESA is no longer necessary."

5.1 Johnson's Seagrass Critical Habitat

Description
NMFS designated Johnson's seagrass critical habitat on April 5, 2000 (65 FR 17786; see also, 50 CFR 226.213). The specific areas occupied by Johnson's seagrass and designated by NMFS as critical habitat are those with 1 or more of the following criteria:

1. Locations with populations that have persisted for 10 years.
2. Locations with persistent flowering populations.
3. Locations at the northern and southern range limits of the species.
4. Locations with unique genetic diversity.
5. Locations with a documented high abundance of Johnson's seagrass compared to other areas in the species' range.

Ten areas (Units) within the range of Johnson's seagrass (approximately 200 kilometers of coastline from Sebastian Inlet to northern Biscayne Bay, Florida) are designated as Johnson's seagrass critical habitat (Table 9). The total range-wide acreage of critical habitat for Johnson's seagrass is roughly 22,574 acre (ac) (NMFS 2002).

Table 9. Designated Critical Habitat Units for Johnson's Seagrass

Unit A	A portion of the Indian River, Florida, north of the Sebastian Inlet Channel
Unit B	A portion of the Indian River, Florida, south of the Sebastian Inlet Channel
Unit C	A portion of the Indian River Lagoon, Florida, in the vicinity of the Fort Pierce Inlet
Unit D	A portion of the Indian River Lagoon, Florida, north of the St. Lucie Inlet
Unit E	A portion of Hobe Sound, Florida, excluding the federally marked navigation channel of the Intracoastal Waterway
Unit F	A portion of the south side of Jupiter Inlet, Florida
Unit G	A portion of Lake Worth, Florida, north of Bingham Island
Unit H	A portion of Lake Worth Lagoon, Florida, located just north of the Boynton Inlet
Unit I	A portion of northeast Lake Wyman, Boca Raton, Florida, excluding the federally marked navigation channel of the Intracoastal Waterway
Unit J	A portion of northern Biscayne Bay, Florida, including all parts of the Biscayne Bay Aquatic Preserve excluding the Oleta River, Miami River, and Little River beyond their mouths, the federally marked navigation channel of the Intracoastal Waterway, and all existing federally authorized navigation channels, basins, and berths at the Port of Miami to the currently documented southernmost range of Johnson's seagrass, Central Key Biscayne

The physical habitat that supports Johnson's seagrass includes both shallow intertidal and deeper subtidal zones. The species thrives either in water that is clear and deep (2-5 m) or in water that is shallow and turbid. In tidal channels, it inhabits coarse sand substrates. The spread of the species into new areas is limited by its reproductive potential. Johnson's seagrass possesses only female flowers; thus, vegetative propagation, most likely through asexual branching, appears to be its only means of reproduction and dispersal. If an established community is disturbed, regrowth and reestablishment are extremely unlikely. This species' method of reproduction impedes the ability to increase distribution as establishment of new vegetation requires considerable stability in environmental conditions and protection from human-induced disturbances.

Essential Features of Critical Habitat

NMFS identified 4 habitat features essential for the conservation of Johnson's seagrass: (1) adequate water quality, defined as being free from nutrient over-enrichment by inorganic and organic nitrogen and phosphorous or other inputs that create low oxygen conditions; (2) adequate salinity levels, indicating a lack of very frequent or constant discharges of fresh or low-salinity waters; (3) adequate water transparency, which would allow sunlight necessary for photosynthesis; and (4) stable, unconsolidated sediments that are free from physical disturbance. All 4 essential features must be present in an area for it to function as critical habitat for Johnson's seagrass.

Critical Habitat Unit Impacted by this Action

This consultation focuses on activities that occur in Unit J, which encompasses the northern portion of Biscayne Bay from Northeast 163rd Street south to Central Key Biscayne at 25º45´N (Figure 7). This portion of Biscayne Bay is bound by heavy residential and commercial development, though a few areas of mangrove shoreline remain. Dredge and fill projects have resulted in a number of spoil islands and channels too deep for seagrass growth. Biscayne Bay supports a diversity of biological communities including intertidal wetlands, seagrasses, hard bottom, assemblages, and open water. Unit J is wholly within the Biscayne Bay Aquatic Preserve.

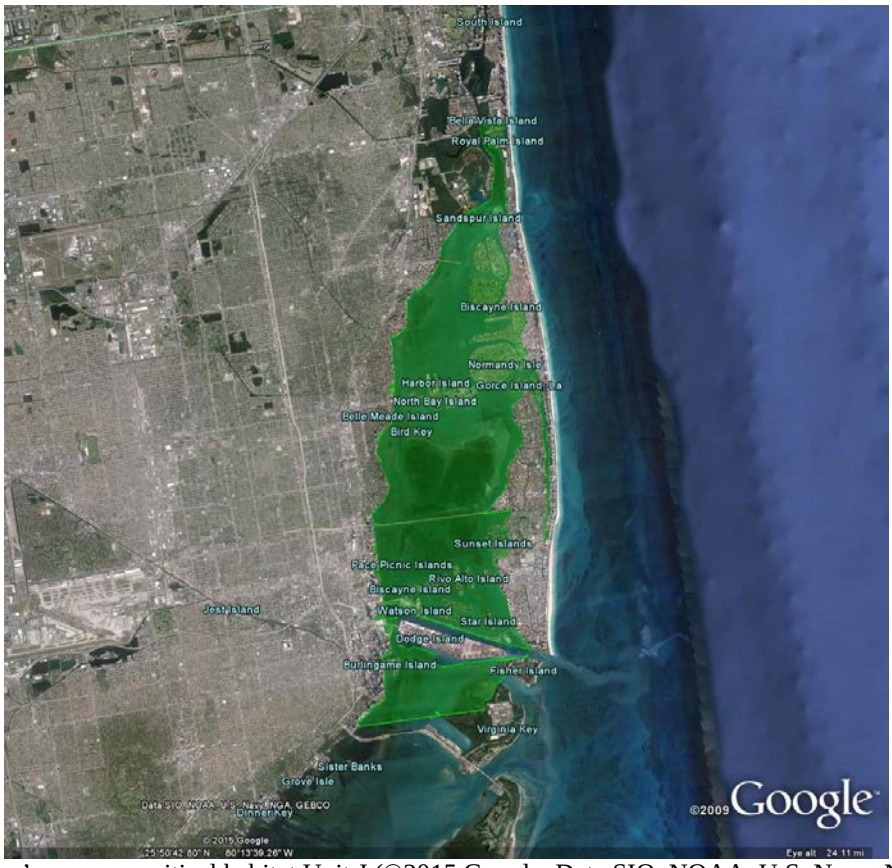

Figure 8. Johnson's seagrass critical habitat Unit J (©2015 Google, Data SIO, NOAA, U.S. Navy, NGA, GEBCO)

Status and Threats

A wide range of activities, many funded authorized or carried out by federal agencies, have and will continue to affect the essential habitat requirements of Johnson's seagrass. These are generally the same activities that may affect the species itself, and include: (1) vessel traffic and the resulting propeller dredging; (2) dredge and fill projects; (3) dock, marina, and bridge construction; (4) water pollution; and (5) land use practices (shoreline development, agriculture, and aquaculture).

Vessel traffic has the potential to affect Johnson's seagrass critical habitat by reducing water transparency. Operation of vessels in shallow water environments often leads to the suspension of sediments due to the spinning of propellers on or close to the bottom. Suspended sediments

reduce water transparency and the depth to which sunlight penetrates the water column. Populations of Johnson's seagrass that inhabit shallow water and water close to inlets where vessel traffic is concentrated are likely to be most affected. This effect is expected to worsen with increases in boating activity.

The dredging of bottom sediments to maintain, or in some cases create, inlets, canals, and navigation channels can directly affect essential features of Johnson's seagrass critical habitat. Dredging results in turbidity through the suspension of sediments. As discussed previously, the suspension of sediments reduces water transparency and the depth to which sunlight can penetrate the water column. The suspension of sediments from dredging can also re-suspend nutrients, which could result in over-enrichment and/or reduce dissolved oxygen levels. Further, dredging can destabilize sediments and alter both the shape and depth of the bottom within the dredged footprint. This may affect the ability of the critical habitat to function through the removal or modification of essential features.

Dock, marina, and bridge construction leads to loss of habitat via construction impacts (e.g., pile installation) and shading. Similar to dredging, installation of piles for docks or bridges can result in increased turbidity that can negatively impact water transparency over short durations. Additionally, installed piles also replace the stable, unconsolidated bottom sediments essential for the species. Completed structures can have long-term effects on critical habitat in the surrounding area because of the shade they produce. While shading does not affect water transparency directly, it does affect the amount and/or duration of sunlight that can reach the bottom. The threat posed by dock, marina, and bridge construction is especially apparent in coastal areas where Johnson's seagrass is found.

Other threats include inputs from adjacent land use. Johnson's seagrass critical habitat located in proximity to rivers, canal mouths, or other discharge structures is affected by land use within the watershed. Waters with low salinity that are highly colored and often polluted are discharged to the estuarine environment. This can impact salinity, water quality, and water transparency, all essential features of Johnson's seagrass critical habitat. Frequent pulses of freshwater discharge to an estuarine area may decrease salinity of the habitat and provoke physiological stress to the species. Nutrient over-enrichment, caused by inorganic and organic nitrogen and phosphorous loading via urban and agricultural land run-off, stimulates increased algal growth, decreased water transparency, and diminished oxygen content within the water. Low oxygen conditions have a demonstrated negative impact on seagrasses and associated communities. Discharges can also contain colored waters stained by upland vegetation or pollutants. Colored waters released into these areas reduce the amount of sunlight available for photosynthesis by rapidly reducing the amount of shorter wavelength light that reaches the bottom. In general, threats from adjacent land use will be ongoing, randomly occurring events that follow storm events.

6 ENVIRONMENTAL BASELINE

This section is a description of the past and ongoing human and natural factors leading to the current status of the species and its designated critical habitat within the action area. The environmental baseline includes state, tribal, local, and private actions already affecting the species and designated critical habitat and those that will occur at the same time as the

consultation in progress. Unrelated federal actions affecting Johnson's seagrass and its designated critical habitat that have completed formal or early consultation are also part of the environmental baseline, as actions within the action area that may benefit the species or its critical habitat. This Opinion describes these activities in the sections below.

6.1 Status of Johnson's Seagrass Critical Habitat within the Action Area

As discussed above, this consultation focuses on an activities occurring in Unit J, which encompasses the northern portion of Biscayne Bay from North East 163rd Street south to Central Key Biscayne at 25º45´N (Figure 3). This portion of Biscayne Bay is bound by heavy residential and commercial development, though a few areas of mangrove shoreline remain. Dredge-and-fill projects have resulted in a number of spoil islands and channels too deep for seagrass growth. Biscayne Bay supports a diversity of biological communities including intertidal wetlands, seagrasses, hard bottom, assemblages, and open water. Unit J is wholly within the Biscayne Bay Aquatic Preserve.

6.2 Factors Affecting Johnson's Seagrass Critical Habitat in the Action Area

Federal Actions

A wide range of activities funded, authorized, or carried out by federal agencies may affect the essential features of critical habitat for Johnson's seagrass. These include actions permitted or implemented by the USACE such as dredging, dock/marina construction, bridge/highway construction, residential construction, shoreline stabilization, breakwaters, and the installation of subaqueous lines or pipelines. Other federal activities that may affect Johnson's seagrass critical habitat include actions by the Environmental Protection Agency and the USACE to manage freshwater discharges into waterways, management of National Parks, regulation of vessel traffic to minimize propeller dredging and turbidity, and other activities by the U.S. Coast Guard and U.S. Navy. Although these actions have probably affected Johnson's seagrass critical habitat, none of these past actions have destroyed or adversely modified Johnson's seagrass critical habitat.

The Miami-Dade Programmatic General Permit (SAJ-42) authorizes docks that may affect Johnson's seagrass and its designated critical habitat. NMFS issued an Opinion concerning the Programmatic General Permit on February 10, 2011, and the USACE issued the permit on April 29, 2013. As is noted above, repairs to the seawall associated with the Sandhu location (Project 4) were processed under SAJ-42. In addition, according to the USACE, replacing the seawall and removing a marginal dock at the West San Marino location (Project 6) was permitted under Nationwide Permit 3.

According to NMFS's Public Consultation Tracking System database, the Samuel Bejar location (Project 1) has had an ESA Section 7 consultation completed on activities with the potential to affect Johnson's seagrass designated critical habitat within the action areas. NMFS consulted on the installation of a single family dock and boatlift at the project site in February 2009 (SER-2008-04852) and determined that the proposed action was not likely to adversely affect Johnson's seagrass critical habitat.

Private Recreational Vessel Traffic
Marina and dock construction increases recreational vessel traffic within areas of Johnson's seagrass critical habitat, which increases suspended sediments from propellers and could result in propeller dredging. As mentioned above, suspended sediments are known to adversely affect Johnson's seagrass critical habitat by reducing the water transparency essential feature. Shading from dock structures and vessel mooring also affects the water transparency essential feature of the designated critical habitat. Propeller dredging and installation of pilings and bridge support structures permanently removes the unconsolidated sediments essential feature of the critical habitat.

Marine Pollution and Environmental Contamination
The projects are located in highly developed coastal areas with extensive canal systems. This can lead to freshwater discharges and nutrient over-enrichment due to coastal runoff and canal discharges into the Bay. Freshwater discharge affects the salinity essential feature of the designated critical habitat while excess nutrients can lead to decreased water transparency and decreased dissolved oxygen content in the water.

State and Federal Activities That May Benefit Johnson's Seagrass Critical Habitat in the Action Area
State and federal conservation measures exist to protect Johnson's seagrass and its habitat under an umbrella of management and conservation programs that address seagrasses in general (Kenworthy et al. 2006). These conservation measures must be continually monitored and assessed to determine if they will ensure the long-term protection of the species and the maintenance of environmental conditions suitable for its continued existence throughout its geographic distribution.

7 EFFECTS OF THE ACTION

As discussed in Section 3.1, the projects propose to construct docks in Johnson's seagrass critical habitat. Table 10, below, provides a summary of the anticipated impacts to Johnson's seagrass critical habitat from the proposed activities, as calculated in Section 3.1 above.

Table 10. Impacts to Johnson's Seagrass Critical Habitat in Square Feet (ft^2)

		Critical habitat impacted from seawalls, riprap, and piles	Critical habitat impacted from structure shading[9]	Critical habitat impacted from vessel shading	Total critical habitat impacted
1	Samual Bejar	N/A	96	N/A	96
2	Edmund Irvine	1,200[10]	444.5	0	1,644.5
3	Marcos Marcias	15[11]	234	3,010	3,259
4	Satinder K. Sandhu	N/A	482	360	842
5	Miami Beach Banyan Trust	9[12]	312	480	801
6	West San Marino	1,628[13]	433	1025	3,086
	Total	**2,852**	**2001.5**	**4,875**	**9,728.5 ft^2**

All of the projects propose the placement of non-grated, overwater structures. These activities will affect the conservation function of critical habitat by preventing sunlight necessary for the photosynthesis from reaching the seagrass, thereby impacting the water transparency essential feature of the designated critical habitat as described above. In addition, the shading from the vessels moored at these structures will also affect the water transparency essential feature. The loss of one of the essential features results in a total loss in the conservation function of the critical habitat. Combined, the structures and moored vessels will result in a loss of 6,876.5 ft^2

[9] Shading results in the complete loss of the water transparency essential feature of Johnson's seagrass critical habitat, and the loss of one of the essential features results in a total loss in the conservation function of the critical habitat. The area under the piles that support the non-grated structures, which would remove the stable, unconsolidated bottom sediment essential feature, thus, is not separately counted toward the total area of impact because this area is already included in the calculation of the area that has been lost to shading.

[10] This figure reflects the 150 ft^2 of waterbottom replaced by the seawall, 1036 ft^2 covered by the riprap, and 14 ft^2 from the batter piles that extend waterward of the riprap. It does not include the waterbottom covered by the dock piles because, as stated in the text, we do not separately count the area covered by the piles supporting and located underneath the overwater structures as a loss of critical habitat as this loss is already accounted for when considering the effects from the shading from the overwater structures themselves. This figure also does not include the area under the king piles as the king piles are within the footprint of the seawall and the area under those piles is accounted for in the total area of the seawall.

[11] This figure reflects the waterbottom covered by the mooring piles (6 ft^2) and a portion of the dock piles that extend beyond the dock (9 ft^2). As we explain in the text, we do not separately count the area covered by the piles supporting and located underneath the overwater structures as a loss of critical habitat as this loss is already accounted for when considering the effects from the shading from the overwater structures themselves. Each of the 6 12-in diameter mooring piles cover the waterbottom (6 ft^2) and remove the unconsolidated sediment essential feature, impacting critical habitat. In addition, the 18 12-in diameter wood dock piles are partially located under the dock. We assume that half of the piles (or 9 ft^2) extend beyond the dock and impact critical habitat.

[12] This figure reflects the 5 ft^2 under the wooden piles adjacent to the dock and 4 ft^2 under the concrete piles associated with the boat lift.

[13] This figure reflects, 1624 ft^2 covered by the riprap, 2 ft^2 underneath the mooring piles, and 2ft^2 underneath the portion of the dock piles that extend beyond the footprint of the dock. We do not separately count the area covered by the piles supporting and located underneath the overwater structures as a loss of critical habitat as this loss is already accounted for when considering the effects from shading from the overwater structures themselves.

(2001.5 ft^2 + 4,875 ft^2), as shown in Table 10. This figure accounts for the impact to critical habitat as a result of these projects. We do not consider the 705.2 ft^2 area that will be shaded under the replacement marginal dock associated with Project 3 as an effect to the water transparency essential feature resulting from this project as the area was previously shaded (previously affected).

The table above notes the amount of critical habitat the ceases to function given the adverse effects to the water transparency essential feature from shading associated with these projects. Project 2 proposes to remove a marginal dock that had been shading the waterbottom and install a new T-shaped dock, leaving a portion of the waterbottom that had previously been covered and shaded from the prior overwater structures unshaded. This could have a beneficial effect on the water transparency essential feature; however, we do not have sufficient information to quantify the scope of the potential benefit given the continued use of the area and the location of the new structure. Likewise, Project 5 proposed to remove an existing dock, Jet Ski lift, and boat lift and replace those structures with one larger dock and associated boatlift that can accommodate 1 large vessel. Removing the existing structures and any vessels moored at them could allow light to reach previously shaded areas, providing a potential beneficial effect to the water transparency essential feature. However, we do not have sufficient information to quantity this potential beneficially effect; the structures overlap and the area will continue to be used by a vessel that shades the waterbottom.

In addition to effects from shading, the placement of structures, including piles, seawalls, and riprap, can remove the stable, unconsolidated bottom sediments essential feature for Johnson's seagrass critical habitat. However, the impact on critical habitat from installing piles supporting and located underneath overwater structures are not counted separately from the impact on critical habitat from the shading associated with the overwater structures. Shading from the overwater structures results in the complete loss of the water transparency essential feature of Johnson's seagrass critical habitat, and the loss of one of the essential features results in a total loss in the conservation function of the critical habitat. Counting the removal of the stable, unconsolidated sediments essential feature from installing the piles that are located under the overwater structures as an additional loss of critical habitat would result in double counting of the loss of critical habitat. We do, however, consider the effects of removing 2,852 ft^2 of the stable, unconsolidated bottom sediments essential feature from the placement of the seawalls, rip rap, and certain piles as a loss of that amount of critical habitat.

Projects 2 and 5 propose to remove mooring piles, which could have a beneficial effect on this essential feature, however, since we do not know whether the piles will be completely removed and whether the area under the piles will be able to provide the stable, unconsolidated bottom essential feature of the critical habitat, we have not quantified the scope of that potential beneficial effect.

The installation of the piles, seawall, and riprap will also have a temporary effect on Johnson's seagrass critical habitat by increasing turbidity (i.e., affect water transparency). This effect is expected to be contained to the immediate areas by the placement of turbidity curtains that will remain in place until construction is complete and water transparency has returned to pre-construction conditions.

In total, the projects' activities will result in a total loss of 9,728.5 ft^2 of Johnson's seagrass critical habitat, as shown in Table 10.

8 CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, or local private actions that are reasonably certain to occur in the action areas considered in this Opinion. Future federal actions that are unrelated to the proposed actions are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA.

No categories of effects beyond those already described are expected in the action areas. Dock and marina construction will likely continue at current rates, with associated loss and degradation of seagrass habitat, including Johnson's seagrass critical habitat. Because these activities are subject to USACE permitting, and thus the ESA Section 7 consultation requirement, they do not lead to cumulative non-federal effects to be discussed in this section.

NMFS and the USACE have developed protocols to encourage the use of light-transmitting materials in future construction of docks constructed in or over submerged aquatic vegetation (SAV), marsh or mangrove habitat, namely the *Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat*, and for docks within the range of Johnson's seagrass, namely NMFS and USACE's *Key for Construction Conditions for Docks or Other Minor Structures Constructed in or over Johnson's Seagrass* (*Halophila johnsonii*). However, even if all new docks are constructed in full compliance with the NMFS and USACE's guidance, NMFS acknowledges that shading impacts (and thus, impacts to the water transparency essential feature) to Johnson's seagrass will continue via dock construction. As NMFS and the USACE continue to encourage permit applicants to design and construct new docks in full compliance with the construction guidelines discussed above, and the recommendations in Adam (Adam 2012), Landry et al. (2008), and Shafer et al. (2008), NMFS believes that shading impacts to Johnson's seagrass will be reduced in the short- and long-term. Moreover, even with some shading from grated construction materials, researchers have found all 4 essential features necessary for Johnson's seagrass to persist under docks constructed of grated decking (Landry et al. 2008).

Upland development and associated runoff will continue to degrade the water quality essential feature necessary for Johnson's seagrass critical habitat. Flood control and imprudent water management practices will continue to result in freshwater inputs into estuarine systems, thereby degrading and altering the water quality and salinity essential features of Johnson's seagrass critical habitat.

Increased recreational vessel traffic will continue to result in damage to Johnson's seagrass and its designated critical habitat by improper anchoring, propeller scarring, and accidental groundings. However, we expect that ongoing boater education programs and posted signage about the dangers to seagrass habitat from propeller scarring and improper anchoring may reduce impacts to Johnson's seagrass designated critical habitat, including that in Unit J.

9 DESTRUCTION/ADVERSE MODIFICATION ANALYSIS

NMFS's regulations define destruction or adverse modification to mean "a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features" (50 CFR § 402.02). Alterations that may destroy or adversely modify critical habitat may include impacts to the area itself, such as those that would impede access to or use of the essential features. We intend the phrase "significant delay" in development of essential features to encompass a delay that interrupts the likely natural trajectory of the development of physical and biological features in the designated critical habitat to support the species' recovery. NMFS will generally conclude that a federal action is likely to "destroy or adversely modify" designated critical habitat if the action results in an alteration of the quantity or quality of the essential physical or biological features of designated critical habitat, or that precludes or significantly delays the capacity of that habitat to develop those features over time, and if the effect of the alteration is to appreciably diminish the value of critical habitat for the conservation of the species. This analysis takes into account the geographic and temporal scope of the proposed action. It recognizes that "functionality" of critical habitat necessarily means that it must now (and must continue in the future) to support the conservation of the species and progress toward recovery. Destruction or adverse modification does not depend strictly on the size or proportion of the area adversely affected, but rather on the role the action area serves with regard to the function of the overall designation, and how that role is affected by the action.

Recovery for Johnson's seagrass, as set forth in the final recovery plan (NMFS (2002) for Johnson's seagrass, will be achieved when the following recovery objectives are met: (1) the species' present geographic range remains stable for at least 10 years, or increases; (2) self-sustaining populations are present throughout the range at distances less than or equal to the maximum dispersal distance to allow for stable vegetative recruitment and genetic diversity; and (3) populations and supporting habitat in its geographic range have long-term protection (through regulatory action or purchase acquisition). We evaluated the projects' expected impacts on critical habitat to determine whether it will be able to continue to provide its intended functions in achieving these recovery objectives and supporting the conservation of the species.

The first recovery criterion for Johnson's seagrass is for its present range to remain stable for 10 years or to increase during that time. NMFS's 5-year review (2007) of the status of the species concluded that the first recovery objective has been achieved. In fact, the range had increased slightly northward at that time and we have no information indicating that range stability has decreased since then. NMFS has determined that 9,728.5 ft^2 of designated critical habitat for Johnson's seagrass will be permanently impacted by the proposed actions from the shading by non-grated overwater structures, shading from vessels, and placement of in-water structures (Table 10, Section 6). There is no Johnson's seagrass growing in the footprints of the projects, so the species' range-wide distribution will not be directly affected by the actions. Further, the action areas are not at a boundary of the species' range, the areas that will be impacted are very small, and loss of these potential areas for colonization will not affect the stability of the species'

range now or in the future. Thus, the proposed actions will not impact the critical habitat's ability to contribute to range stability for Johnson's seagrass.

The second recovery criterion for Johnson's seagrass requires that self-sustaining populations be present throughout the range at distances less than or equal to the maximum dispersal distance for the species. Due to its asexual reproductive mode, self-sustaining populations are present throughout the range of species. The proposed actions will not reduce the species' overall reproductive capacity because the proposed action will not reduce Johnson's seagrass, which were found beyond the construction areas. In addition, the proposed actions will only reduce a small amount of available critical habitat and thus, is not likely to affect self-sustaining populations. As discussed in Section 4.2, there are approximately 22,574 ac of Johnson's seagrass critical habitat. The loss of 9,728.5 ft² (0.22ac) of designated critical habitat for Johnson's seagrass in Unit J would equate to a loss of 0.00098% of Johnson's seagrass critical habitat (0.22 ac x 100 /22,574 ac). The loss of 0.00098% of Johnson's seagrass critical habitat in Unit J will not significantly reduce the available affect the critical habitat in a way that will significantly impact Johnson's seagrass self-sustaining populations (by adversely affecting the availability of suitable habitat in which the species can spread/flow in the future). Drifting fragments of Johnson's seagrass can remain viable in the water column for 4-8 days (Hall et al. 2006), and can travel several kilometers under the influence of wind, tides, and waves. Because of this, we believe that the removal of 9,728.5 ft² of critical habitat for these projects will not break up self-sustaining populations and accordingly will not appreciably diminish the conservation value of critical habitat in supporting self-sustaining populations.

The final recovery criterion is for populations and supporting habitat in the geographic range of Johnson's seagrass to have long-term protection (through regulatory action or purchase acquisition). Though the affected portion of the project sites will not be available for the long-term, thousands of acres of designated critical habitat are still available for long-term protection, which would include areas surrounding the action areas.

Therefore, we conclude that the proposed actions' adverse effects on Johnson's seagrass critical habitat will not impede achieving the recovery objectives listed above and will, therefore, not appreciably diminish the value of designated critical habitat for the conservation of Johnson's seagrass.

10 CONCLUSION

We have analyzed the best available data, the current status of the species, environmental baseline, effects of the proposed actions, and cumulative effects to determine whether the proposed actions are likely destroy or adversely modify Johnson's seagrass critical habitat. It is our Opinion that the proposed actions are likely to adversely affect, but not likely to destroy or adversely modify Johnson's seagrass critical habitat.

11 CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

NMFS believes the following conservation recommendations are reasonable, necessary, and appropriate to conserve and recover Johnson's seagrass. NMFS strongly recommends that these measures be considered and adopted.

1. NMFS recommends that a report of all current and proposed USACE projects in the range of Johnson's seagrass be prepared and used by the USACE to assess impacts on the species from these projects, to assess cumulative impacts, and to assist in early consultation that will avoid and/or minimize impacts to Johnson's seagrass and its critical habitat. Information in this report should include location and scope of each project and identify the federal lead agency for each project. The information should be made available to NMFS.

2. NMFS recommends that the USACE conduct and support research to assess trends in the distribution and abundance of Johnson's seagrass. Data collected should be contributed to the Florida Fish and Wildlife Conservation Commission's Florida Wildlife Research Institute to support ongoing geographic information system mapping of Johnson's seagrass and other seagrass distribution.

3. NMFS recommends that the USACE, in coordination with seagrass researchers and industry, support ongoing research on light requirements and transplanting techniques to preserve and restore Johnson's seagrass, and on collection of plants for genetics research, tissue culture, and tissue banking.

4. NMFS recommends that the USACE prepare an assessment of the effects of other actions under its purview on Johnson's seagrass for consideration in future consultations.

5. NMFS recommends that the USACE continue promoting the use of the October 2002 *Key for Construction Conditions for Docks or other Minor Structures Constructed in or over Johnson's Seagrass (Halophila johnsonii)* as the standard construction methodology for proposed docks located in the range of Johnson's seagrass.

6. NMFS recommends that the USACE review and implement the recommendations in the July 2008 report, *The Effects of Docks on Seagrasses, With Particular Emphasis on the Threatened Seagrass, Halophila johnsonii* (Landry et al. 2008).

7. NMFS recommends that the USACE review and implement the Conclusions and Recommendations in the October 2008 report, *Evaluation of Regulatory Guidelines to Minimize Impacts to Seagrasses from Single-family Residential Dock Structures in Florida and Puerto Rico* (Shafer et al. 2008).

12 REINITIATION OF CONSULTATION

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of taking specified in the proposed action is exceeded, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the Biological Opinion, or (4) a new species is listed or critical habitat designated that may be affected by the identified action.

13 LITERATURE CITED

Adam, T. 2012. Mutualistic cleaner fish initiate trait-mediated indirect interactions by influencing the behaviour of coral predators. Journal of Animal Ecology 81(3):692-700.

Hall, L. M., M. D. Hanisak, and R. W. Virnstein. 2006. Fragments of the seagrasses *Halodule wrightii* and *Halophila johnsonii* as potential recruits in Indian River Lagoon, Florida. Marine Ecology Progress Series 310:109-117.

Kenworthy, W. J., S. Wyllie-Echeverria, R. Coles, G. Pergent, and C. Pergent-Martini. 2006. Seagrass Conservation Biology: An Interdisciplinary Science for Protection of the Seagrass Biome. Pages 595-623 *in* A. W. D. Larkum, R. J. Orth, and C. M. Duarte, editors. Seagrasses: Biology, Ecology and Conservation. Springer Netherlands.

Landry, J. B., W. J. Kenworthy, and G. Di Carlo. 2008. The effects of docks on seagrasses, with particular emphasis on the threatened seagrass, *Halophila johnsonii*. Report submitted to NMFS Office of Protected Resources.

NMFS. 2002. Recovery plan for Johnson's seagrass (*Halophila johnsonii*). National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Office of Protected Resources, Silver Spring, Maryland.

NMFS. 2007. Endangered Species Act 5-year review: Johnson's seagrass (*Halophila johnsonii* Eiseman). National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Silver Spring, Maryland.

Shafer, D. J., J. Karazsia, L. Carrubba, and C. Martin. 2008. Evaluation of regulatory guidelines to minimize impacts to seagrasses from single-family residential dock structures in Florida and Puerto Rico. U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.