DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, JACKSONVILLE DISTRICT
10117 PRINCESS PALM AVE, SUITE 120
TAMPA, FLORIDA 33610-8302

June 30, 2021

REPLY TO ATTENTION OF

Regulatory Division
West Branch
Tampa Permits Section
SAJ-2000-00050 (SP-RGH)

Isaac Brownman
Public Works Director, Town of Longboat Key
600 General Harris Street
Longboat Key, Florida 34228
ibrownman@longboatkey.org

Dear Mr. Brownman:

The U.S. Army Corps of Engineers (Corps) has completed the review and evaluation of your permit application number SAJ-2000-00050. Our regulations require you have an opportunity to review the terms and conditions prior to final signature by the Department of the Army. Enclosed is an unsigned Department of the Army permit instrument (permit).

Please read carefully the Special Conditions beginning on page 2 of the permit. These were developed to apply specifically to your project. Water Quality Certification is also required prior to issuance of a permit. A copy of the State certification for your project has been received. In accordance with General Condition 5 of the permit, the Water Quality Certification has been attached to the Department of the Army permit.

This letter contains a proffered permit for your proposed project. If you object to this decision, you may request an administrative appeal under Corps' regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this decision, you must submit a completed RFA form to the South Atlantic Division Office at the following address:

Mr. Phillip A. Shannin
South Atlantic Division
U.S. Army Corps of Engineers
CESAD-CM-CO-R, Room 9M15
60 Forsyth St., SW.
Atlanta, Georgia 30303-8801.

Mr. Shannin can be reached by telephone number at 404-562-5136, or by facsimile at 404-562-5138.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division office within 60 days of the date of the RFA. Should you decide to submit an RFA form, it must be received at the above address by **August 27, 2021.**

It is not necessary to submit an RFA form to the Division office, if you do not object to the decision in this letter. In this case, the permit must be signed by the applicant in the space provided on the signature page of the permit. In the case of corporations, acceptance must be by an officer of that corporation authorized to sign on behalf of the corporation. The party responsible for assuring the work is done in accordance with the permit terms and conditions must sign the permit. Please type or print the name and title of the person signing below the signature and the date signed.

SIGN (PAGE 12) AND RETURN THE ENTIRE PERMIT, INCLUDING ALL ATTACHMENTS, TO THE LETTERHEAD ADDRESS.

The permit will be signed by the District Engineer or his representative. The Corps will add the permit expiration date to the permit, the permit issuance date on the *Notice of Department of the Army Permit* form and return the permit to you. It is important to note that the permit is not valid until the District Engineer or his representative signs it.

Thank you for your cooperation with our permit program. The Corps' Jacksonville District Regulatory Division is committed to improving service to our customers. We strive to perform our duty in a friendly and timely manner while working to preserve our environment. We invite you to complete our automated Customer Service Survey at - https://regulatory.ops.usace.army.mil/customer-service-survey/. Please be aware this Internet address is case sensitive; and, you will need to enter it exactly as it appears above. Your input is appreciated – favorable or otherwise.

Should you have any questions, please contact Ryan Hendren in writing at the letterhead address, by electronic mail at Ryan.G.Hendren@usace.army.mil, or by telephone at 813-769-7075.

Sincerely,

HOGAN-CHARLES.MELINDA.G.1229746711

Digitally signed by HOGAN-CHARLES.MELINDA.G.1229746711
Date: 2021.07.09 12:22:39 -04'00'

For Shawn H. Zinszer
Chief, Regulatory Division

Enclosures

cc:(w/o encls)

Jenna Phillips
Taylor Engineering, Inc.
1800 2nd Street, Suite 714
Sarasota, Florida 34231
904-731-7040
jphillips@taylorengineering.com (via email)

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Town of Longboat Key	File Number: **SAJ-2000-00050**	Date: June 30, 2021
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
X	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision you may contact: **Project Manager as noted in letter**	If you have questions regarding the appeal process you may contact: Mr. Phillip A. Shannin South Atlantic Division U.S. Army Corps of Engineers CESAD-CM-CO-R, Room 9M15 60 Forsyth St., SW. Atlanta, Georgia 30303-8801 (404) 562-5137

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

DEPARTMENT OF THE ARMY PERMIT

Permittee: Isaac Brownman
Public Works Director, Town of Longboat Key
600 General Harris Street
Longboat Key, Florida 34228
941-316-1988
ibrownman@longboatkey.org

Permit No: SAJ-2000-00050

Issuing Office: U.S. Army Engineer District, Jacksonville

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the U.S. Army Corps of Engineers (Corps) having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: Applicant proposes to perform the maintenance dredging of 14 residential canals (01, 02, 02B, 03, 06, 18, 20P, 21A, 21P, 22A, 32P, 49, 55, 55A) in the Town of Longboat Key, Sarasota & Manatee Counties, Florida. The proposed maintenance dredging to remove about 9,053 cubic yards (yd^3) of material from 14 existing residential canals, located along the length of the Longboat Key. Natural resources within the project dredging vicinity include seagrasses and oyster reefs. To avoid and minimize impacts to those resources to the extent practicable the dredge template has been refined to reflect a range of bottom cut widths. The residential canals will be dredged to a maximum depth of – 5ft Mean Lower Low Water (MLLW) or previously authorized depth with bottom cut widths ranging from 0 feet (ft) to 30 ft depending on the existing channel alignment, available space, and presence of natural resources, for a total of 4.43 acres (including side-slopes). Some areas of seagrasses could not be avoided while maintaining safe navigation; 7 of the 14 canals may result in seagrass impacts of approximately 1.37 acres. Canal dredging will be performed by mechanical means. Contractor equipment will be stored along a designated area at Overlook Park. The sediment will be mechanically dredged, placed into a shallow draft hopper barge, and transported by barge to the east side of Sarasota Bay for placement within a designated mitigation area. The work is expected to require approximately 6–8 months. The work described above is to be completed in accordance with the 21 pages of drawings and 8 attachments affixed at the end of this permit instrument.

Project Location: The project is located at several locations within Longboat Key, in Sections 15, 22, 23, 24, 25, & 36, Township 35 South, Range 16 East; Sections 5, 8, 21, 22, & 27, Township 36 South, Range 17 East, Longboat Key, Manatee and Sarasota Counties, Florida.

Directions to site: As the proposed project involves residential canals, project sites area generally accessible by boat. There are public boat ramps on the north (Coquina Beach South Boat Ramp) and south (Ken Thompson Boat Ramp) ends of Longboat Key. To access these

ramps, from I-75 S take exit 228 to I-275 N, travel for 1 mile, then take exit 2 to US-41 S/Tamiami Trail. Continue for about 7 miles, then turn right onto FL-64 W/Manatee Avenue. From there, drive for 4.5 miles, tum left onto 75th Street W, travel for 2.3 miles then turn right onto SR 684/Cortez Rd. Continue straight for 4 miles, then turn left onto Gulf Drive N. Going straight through any roundabout, travel for about 1.5 miles. The entrance to the Coquina Beach South Boat Ramp will be on your left. To get to Ken Thompson Boat Ramp, continue past Coquina Beach for another 10.8 miles. Turn left onto Ken Thompson Parkway, drive for 0.4 mile, take a right, and the ramp will be straight ahead.

Approximate Central Coordinates:

Canal	Latitude	Longitude
01	27.44060833	-82.68484194
02	27.43384806	-82.68324722
02B	27.43235778	-82.6798325
03	27.43006528	-82.67709639
06	27.42871694	-82.67511667
18	27.41622611	-82.65815417
20P	27.41131472	-82.65457028
21A	27.41116028	-82.65385611
21P	27.40694528	-82.65146306
22A	27.4066775	-82.64847194
32P	27.38026556	-82.61900111
49	27.34008056	-82.59467861
55	27.33404778	-82.58378083
55A	27.33238167	-82.58610472

Approximate Central Coordinates of Mitigation Area:

Canal	Latitude	Longitude
Southern Cell	27.422920°	-82.637706°
Northern Cell	27.427070°	-82.640293°

Permit Conditions

General Conditions:

1. The time limit for completing the work authorized ends on **DATE**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature and the mailing address of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. **Reporting Addresses:** The Permittee shall submit all reports, notifications, documentation, and correspondence required by the general and special conditions of this permit to the following address**:**

a. For standard mail: U.S. Army Corps of Engineers, Regulatory Division, Special Projects & Enforcement Branch, P.O. Box 4970, Jacksonville, FL 32232-0019.

b. For electronic mail: SAJ-RD-Enforcement@usace.army.mil (not to exceed 15 MB). Files over 15MB can be uploaded to our web application at https://safe.apps.mil/. Permittee shall reference this permit number, SAJ-2000-00050 (SP-RGH), on all submittals.

2. **Commencement Notification:** Within 10 days from the date of initiating the work authorized by this permit the Permittee shall submit a completed “Commencement Notification” Form (Attachment F).

3. **As-Built Certification:** Within 60 days of completion of the work authorized by this permit, the Permittee shall submit as-built drawings of the authorized work and a completed "As-Built Certification By Professional Engineer" form (Attachment E) to the Corps. The as-built drawings shall be signed and sealed by a registered professional engineer and include the following:

    a. A plan view drawing of the location of the authorized work footprint, as shown on the permit drawings, with transparent overlay of the work as constructed in the same scale as the permit drawings on 8½-inch by 11-inch sheets. The plan view drawing should show all "earth disturbance," including wetland impacts and water management structures.

    b. A list of any deviations between the work authorized by this permit and the work as constructed. In the event that the completed work deviates, in any manner, from the authorized work, describe on the attached "As-Built Certification By Professional Engineer" form the deviations between the work authorized by this permit and the work as constructed. Clearly indicate on the as-built drawings any deviations that have been listed. Please note that the depiction and/or description of any deviations on the drawings and/or "As-Built Certification by Professional Engineer" form does not constitute approval of any deviations by the Corps.

    c. Include the Department of the Army permit number on all sheets submitted.

4. **Notice of Permit:** The Permittee shall complete and record the "Notice of Department of the Army Permit" form (Attachment G) with the Clerk of the Circuit Court, Registrar of Deeds or other appropriate official charged with the responsibility of maintaining records of title to or interest in real property within the county of the authorized activity. Within 90 days from the effective date of this permit, the Permittee shall provide a copy of the recorded Notice of Permit to the Corps clearly showing a stamp from the appropriate official indicating the book and page at which the Notice of Permit is recorded and the date of recording.

5. **Turbidity Barriers:** Prior to the initiation of any of the work authorized by this permit, the Permittee shall install floating turbidity barriers with weighted skirts that extend to within 1-foot of the bottom around all work areas that are in, or adjacent to, surface waters. The turbidity barriers shall remain in place and be maintained until the authorized work has been completed and all suspended and erodible materials have been stabilized. Turbidity barriers shall be removed upon stabilization of the work area.

6. **Fill Material:** The Permittee shall use only clean fill material for this project. The fill material shall be free from items such as trash, debris, automotive parts, asphalt, construction materials, concrete block with exposed reinforcement bars, and soils contaminated with any toxic substance, in toxic amounts in accordance with Section 307 of the Clean Water Act.

7. **Manatee Conditions:** The Permittee shall comply with the 2011 "Standard Manatee Conditions for In-Water Work" provided as an attachment to this permit (Attachment C).

8. **Manatee Condition for Clamshell Dredge**: During clamshell dredging operations, the dredge operator shall gravity-release the clamshell bucket only at the water's surface, and only after confirmation that there are no manatees within the safety distance identified in the standard construction conditions (or a 75-foot buffer if dredging is authorized at night).

9. **Jacksonville District Programmatic Biological Opinion (JAXBO), November 2017, Project Design Criteria (PDCs):** Structures authorized under this permit must comply with all applicable PDCs, based on the permitted activity, as required by JAXBO (Attachment D). Please note that failure to comply with the applicable PDCs, where a take of listed species occurs, would constitute an unauthorized take, and noncompliance with this permit. The NMFS is the appropriate authority to enforce the terms and conditions of JAXBO. The most current version of JAXBO can be accessed at the Jacksonville District Regulatory Division internet webpage in the Endangered Species section of the Sourcebook located at:
http://www.saj.usace.army.mil/Missions/Regulatory/SourceBook.aspx

   Note - JAXBO may be subject to revision at any time. The most recent version of these conditions must be utilized during the design and construction of the permitted work. In accordance with the Endangered Species Act, and for those projects which do not comply with JAXBO, the Corps will seek individual consultation with the NMFS.

   Note - some authorized activities may deviate from the PDCs. In cases, where the activity (i.e., structure dimensions, length, etc.) deviates from the PDCs, the permit drawings shall supersede the PDCs.

   For each of the following authorized activities subject of this permit, the permittee shall adhere to the following PDCs, which are attached to, and made part of, this authorization/verification letter:

   Activity 3 - Maintenance, Minor, and Muck Dredging: (AP.1-14; A3.1-9)
   Activity 7 - Aquatic Habitat Enhancement: (AP.1-14; A7.1-31)

10. **Posting of Permit:** The Permittee shall ensure that all contractors, subcontractors, and entities associated with the implementation of the project review, understand, and comply with the approved plans and special conditions made part of this permit. The Permittee shall inform all parties associated with the activity of the construction area boundaries and the location of adjacent wetlands to be avoided. Complete copies of the permit and approved plans shall be available at the construction site at all times. Failure to comply with the approved plans and permit special conditions may subject the Permittee to enforcement action.

11. **Essential Fish Habitat:** his permit will require compliance with the following:

    a. The USACE will require pre- and post-construction SAV surveys be conducted between June 1 and September 30 to assess to determine direct and secondary SAV impacts at the dredging and mitigation sites (e.g., sloughing of side slopes and sedimentation within 100 feet of both side edges of the channel dredging and mitigation sites).

    b. The USACE will require in-kind compensatory mitigation for any secondary SAV impacts resulting from the proposed maintenance dredging and SAV restoration at the mitigation site. The amount of mitigation should be based upon a functional assessment (e.g., UMAM) for secondary SAV impacts for this project.

    c. The applicant will develop a quality assurance plan outlining expected SAV restoration and mitigation goals, success criteria, monitoring protocol, and a contingency plan if anticipated SAV restoration does not achieve ecological success within the expected time frame. A contingency plan will be developed in the future if the proposed SAV mitigation activities do not achieve anticipated mitigation goals and acreages within expected timeframe(s). Details of the plan can be provided at a later date to the Corps and NMFS HCD once it becomes apparent the proposed mitigation is not expected to achieve anticipated results.

    d. If it is determined the project will require stockpiling seagrass planting units, then the permittee or their designated agent will need to refer to the *"Guidelines for the Conservation and Restoration of Seagrasses in the United States and Adjacent Waters" by Mark Fonseca, Jud Kenworthy, and Gordon Thayer, November 1998*, and available at: http://sero.nmfs.noaa.gov/habitat_conservation/documents/pdfs/sav_lit/fonseca_et_al_1998.pdf . The permittee or their designated agent will need to notify the Corps and NMFS HCD prior to stockpiling seagrass on how they plan to handle and store the planting units to minimize mortality and ensure seagrass restoration success.

12. **Dredged material Disposal:** The Permittee shall place all dredged material in the permitted Mitigation Site as detailed on drawing sheet 20 of 21 (Mitigation Plan and Cross-Sections). The Permittee shall only use material that is consistent with the sediment characteristics for the 14 proposed canals as outlined in the August 2019 Geotechnical Exploration Report and in accordance with the FDEP permit (No. 41-0380753-001 EI) language under Specific Condition No. 3 (pages 3 and 4) which states "Prior to Placing any fill material in the seagrass restoration area, that has been obtained from a source other than the canal sediment authorized to be dredged by this permit, the permittee shall provide Department with the source and technical specifications of the sediment fill material to be used. This shall include reasonable assurance that the sediment fill material is clean sand, and shall be free of excess silt, clay, organic material

and toxic deleterious substances/ contaminants, and has a proportion of clay and silt which does not exceed that of the sediments currently within the project area. No more than 10% of the fill material shall pass through a #200 sieve. If more than 10% of the fill material passes the #200 sieve, the Permittee shall meet with Department to determine if further testing or project modifications are necessary, and the project may not commence without written authorization.

13. **Compensatory Mitigation:** Within 12 months from the first impact of seagrass authorized by this permit, the Permittee shall begin construction and implementation of mitigation activities in accordance with the approved final compensatory mitigation plan included as Attachment H. Mitigation will need to be finalized within the authorized time limits provided in this permit.

14. **Monitoring and Reporting Timeframes:** To document achievement of the performance standards identified in the approved mitigation plan (Attachment H) **Compensatory Mitigation** Special Condition of this permit. In addition, provide monitoring reports as detailed in the Monitoring Requirements section of the approved mitigation plan.

15. **Reporting Format:** The Permittees shall submit all monitoring documentation to the Corps including the following:

    a. Project Overview:
        1. Department of the Army Permit Number.
        2. Name and contact information of Permittees and consultant.
        3. Name of party responsible for conducting the monitoring and the date(s) the inspection was conducted.
        4. A brief paragraph describing the purpose of the approved project, acreage and type of aquatic resources impacted, and mitigation acreage and type of aquatic resources authorized to compensate for the aquatic impacts.
        5. Written description of the location, any identifiable landmarks of the compensatory mitigation project including information to locate the site perimeter(s), and coordinates of the mitigation site (expressed as latitude, longitude (*preferably decimal degrees*), UTMs, state plane coordinate system, etc.).
        6. Dates compensatory mitigation commenced and/or was complete.
        7. Short statement on whether the performance standards are being met.
        8. Dates of any recent corrective or maintenance activities conducted since the previous report submission.
        9. Specific recommendations for any additional corrective or remedial actions.

    b. Requirements: List the monitoring requirements and performance standards, as specified in the approved mitigation plan and special conditions of this permit and

evaluate whether the compensatory mitigation project site is successfully achieving the approved performance standards or trending towards success. A table is a recommended option for comparing the performance standards to the conditions and status of the developing mitigation site.

c. Summary Data: Summary data should be provided to substantiate the success and/or potential challenges associated with the compensatory mitigation project. Photo documentation may be provided to support the findings and recommendations referenced in the monitoring report and to assist the PM in assessing whether the compensatory mitigation project is meeting applicable performance standards for that monitoring period. Submitted photos should be formatted to print on a standard 8½-inch x 11-inch piece of paper, dated, and clearly labeled with the direction from which the photo was taken. The photo location points should also be identified on the appropriate maps.

d. Maps and Plans: Maps shall be provided to show the location of the compensatory mitigation site relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, and/or other features pertinent to the mitigation plan. In addition, the submitted maps and plans should clearly delineate the mitigation site perimeter(s). Each map or diagram should be formatted to print on a standard 8½-inch x 11-inch piece of paper and include a legend and the location of any photos submitted for review. As-built plans may be included.

e. Conclusions: A general statement shall be included that describes the conditions of the compensatory mitigation project. If performance standards are not being met, a brief explanation of the difficulties and potential remedial actions proposed by the Permittee or sponsor, including a timetable, shall be provided. The District Commander will ultimately determine if the mitigation site is successful for a given monitoring period.

16. **Remediation:** If the compensatory mitigation fails to meet the performance standards 5-years after completion of the compensatory mitigation objectives, the compensatory mitigation will be deemed unsuccessful. Within 60 days of notification by the Corps that the compensatory mitigation is unsuccessful, the Permittee shall submit to the Corps an alternate compensatory mitigation proposal sufficient to create the functional lift required under this permit. The alternate compensatory mitigation proposal may be required to include additional mitigation to compensate for the temporal loss of wetland functions associated with the unsuccessful compensatory mitigation activities. The Corps reserves the right to fully evaluate, amend, and approve or reject the alternate compensatory mitigation proposal. Within 120 days of Corps approval, the Permittee will complete the alternate compensatory mitigation proposal.

17. **Mitigation Release:** The Permittee's responsibility to complete the required compensatory mitigation, as set forth in the **Compensatory Mitigation** Special

Condition of this permit will not be considered fulfilled until mitigation success has been demonstrated and written verification has been provided by the Corps. A mitigation area which has been released will require no further monitoring or reporting by the Permittee; however the Permittee, Successors and subsequent Transferees remain perpetually responsible to ensure that the mitigation area(s) remain in a condition appropriate to offset the authorized impacts in accordance with General Condition 2 of this permit.

18. **Agency Changes/Approvals:** Should any other agency require and/or approve changes to the work authorized or obligated by this permit, the Permittee is advised a modification to this permit instrument is required prior to initiation of those changes. It is the Permittee's responsibility to request a modification of this permit from the Tampa Permits Section. The Corps reserves the right to fully evaluate, amend, and approve or deny the request for modification of this permit.

19. **Assurance of Navigation and Maintenance:** The Permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structures or work herein authorized, or if in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

20. **Cultural Resources/Historic Properties:** No structure or work shall adversely affect impact or disturb properties listed in the National Register of Historic Places (NRHP) or those eligible for inclusion in the NRHP.

    a. If during the ground disturbing activities and construction work within the permit area, there are archaeological/cultural materials encountered which were not the subject of a previous cultural resources assessment survey (and which shall include, but not be limited to: pottery, modified shell, flora, fauna, human remains, ceramics, stone tools or metal implements, dugout canoes, evidence of structures or any other physical remains that could be associated with Native American cultures or early colonial or American settlement), the Permittee shall immediately stop all work and ground-disturbing activities within a 100-meter diameter of the discovery and notify the Corps within the same business day (8 hours). The Corps shall then notify the Florida State Historic Preservation Officer (SHPO) and the appropriate Tribal Historic Preservation Officer(s) (THPO(s)) to assess the significance of the discovery and devise appropriate actions.

    b. Additional cultural resources assessments may be required of the permit area in the case of unanticipated discoveries as referenced in accordance with the above Special Condition ; and if deemed necessary by the SHPO, THPO(s), or Corps, in accordance with 36 CFR 800 or 33 CFR 325, Appendix C (5). Based, on the

circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend, or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume on non-federal lands without written authorization from the SHPO for finds under his or her jurisdiction, and from the Corps.

c. In the unlikely event that unmarked human remains are identified on non-federal lands; they will be treated in accordance with Section 872.05 Florida Statutes. All work and ground disturbing activities within a 100-meter diameter of the unmarked human remains shall immediately cease and the Permittee shall immediately notify the medical examiner, Corps, and State Archeologist within the same business day (8-hours). The Corps shall then notify the appropriate SHPO and THPO(s). Based, on the circumstances of the discovery, equity to all parties, and considerations of the public interest, the Corps may modify, suspend, or revoke the permit in accordance with 33 CFR Part 325.7. Such activity shall not resume without written authorization from the State Archeologist and from the Corps.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344)

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413)

2. Limits of this authorization.

   a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

   b. This permit does not grant any property rights or exclusive privileges.

   c. This permit does not authorize any injury to the property or rights of others.

   d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

_____ _____
(PERMITTEE) (DATE)

_____
(PERMITTEE NAME-PRINTED)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

_____ _____
(DISTRICT ENGINEER) (DATE)
Andrew D. Kelly, Jr.
Colonel, U.S. Army
District Commander

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____
(TRANSFEREE-SIGNATURE) (DATE)

_____
(NAME-PRINTED)

_____
(ADDRESS)

_____
(CITY, STATE, AND ZIP CODE)

Attachments to Department of the Army Permit Number SAJ-2000-00050

1. PERMIT DRAWINGS: 21 pages, dated September 2019

2. WATER QUALITY CERTIFICATION: Specific Conditions of the water quality permit/certification in accordance with General Condition number 5 on page 2 of this DA permit. 46 pages.

3. MANATEE CONDITIONS: 2 pages, *Standard Manatee Conditions for In-Water Work – 2011*

4. JAXBO CONDITIONS: 12 pages, *U.S. Army Corps of Engineers Jacksonville District's Programmatic Biological Opinion (JaxBO) Project Design Criteria (PDCs) for In-Water Activities, November 20, 2017*

5. COMMENCEMENT NOTIFICATION: 1 page

6. AS-BUILT CERTIFICATION FORM: 2 pages

7. NOTICE OF PERMIT FORM: 2 pages

7. MITIGATION PROCEDURES: 92 pages

Longboat Key Residential Canal Maintenance Dredging

SAJ-2000-00050 (SP-RGH)

ATTACHMENT A:

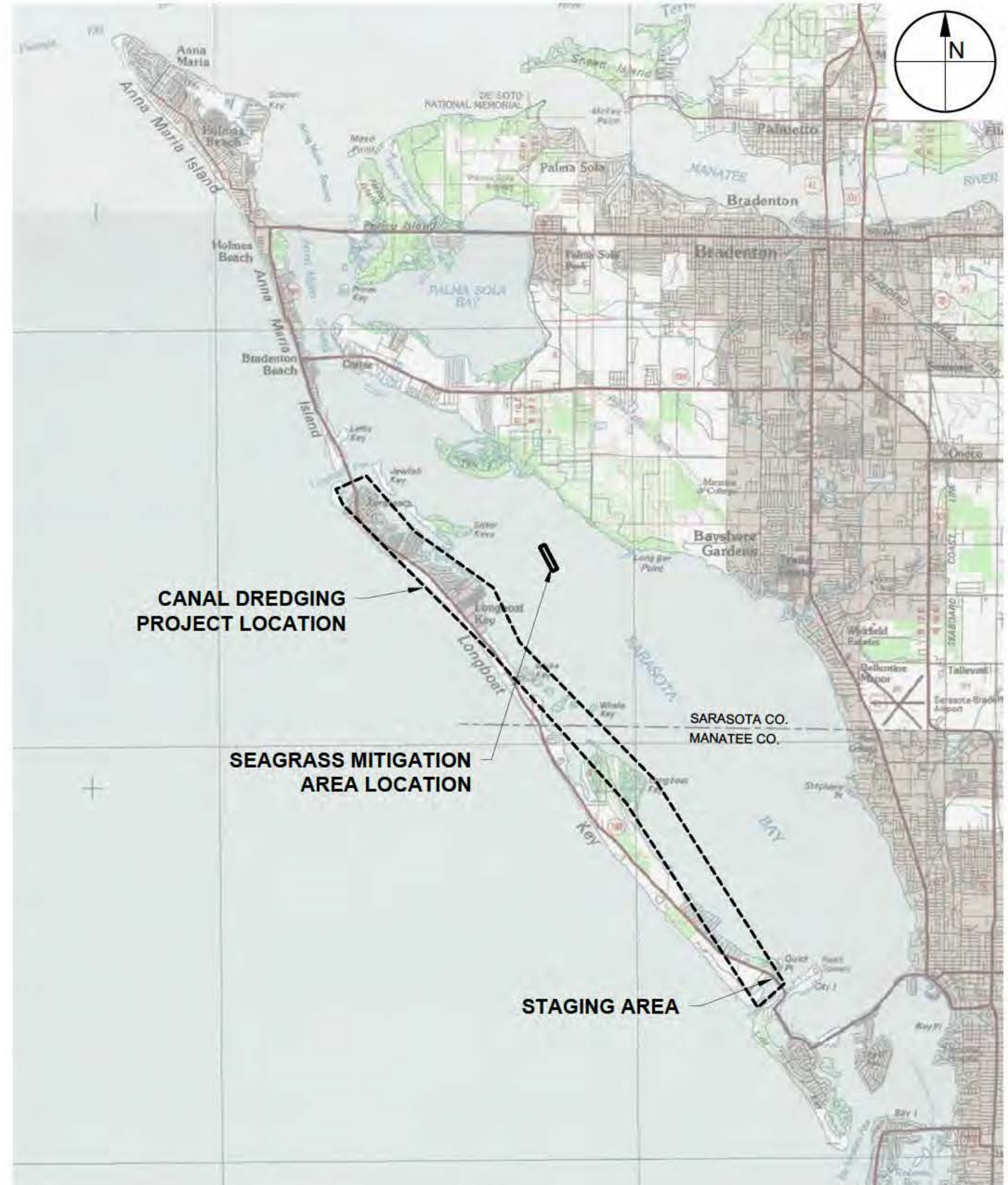
Permit Drawings / Project Plans

(20 Pages)

LONGBOAT KEY CANAL MAINTENANCE DREDGING

MANATEE & SARASOTA COUNTIES, FLORIDA

DRAWING INDEX



VICNITY MAP
1" = 2 MILES

PROJECT	C2016-006
DRAWN BY	AF
SHEET	1 of 21
DATE	SEPT 2019

SEAL
YEHYA S. SIDDIQUI P.E. #87400
DATE

FIGURE C-1
TITLE SHEET
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

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U.S. ARMY CORPS OF ENGINEERS
PERMIT NO: SAJ-2000-00050
DRAWING 2 OF 21 04/2021

GENERAL NOTES:
1. ELEVATIONS REFERENCE MEAN LOW WATER (MLW) ON ALL SHEETS EXCEPT FOR SHEET C-20 MITIGATION PLAN AND CROSS-SECTIONS
2. SURVEY BY HYATT SURVEY INC, AUGUST 2017
3. ALL DREDGE CUTS PROPOSED IN ACCORDANCE WITH REQUIRED DREDGE SUMMARY TABLE SHOWN ON SHEET C-3
4. CONTRACTOR STAGING AREA LOCATED AT OVERLOOK PARK ADJACENT TO THE NEW PASS BRIDGE ABUTMENT IN SOUTH LONGBOAT KEY
5. STAGING AREA MAY BE USED TO STOCKPILE MATERIALS AND EQUIPMENT
6. CHANNEL BOTTOM CUT WITH VARIES
7. CONTRACTOR SHALL PERFORM SPOT DREDGING ONLY AS IDENTIFIED BY CROSS-HATCHED AREAS

TIDAL DATUM REFERENCE (NOAA CORTEZ STATION 8726217):
NOTE: 0 NAVD-88 = +1.21 MLW

SAV IMPACT SUMMARY TABLE

CANAL	IMPACT AREA (SQ. FT.)	IMPACT AREA (ACRES)
1	1654	0.04
18	360	0.01
21A	9341	0.21
21P	23744	0.55
22A	18068	0.41
55	2763	0.06
55A	3945	0.09
TOTAL	59875	1.37

SEAL

YEHYA S. SIDDIQUI P.E. #87400

DATE

PROJECT	C2016-006
DRAWN BY	AF
SHEET	2 of 21
DATE	SEPT 2019

FIGURE C-2
PROJECT OVERVIEW
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
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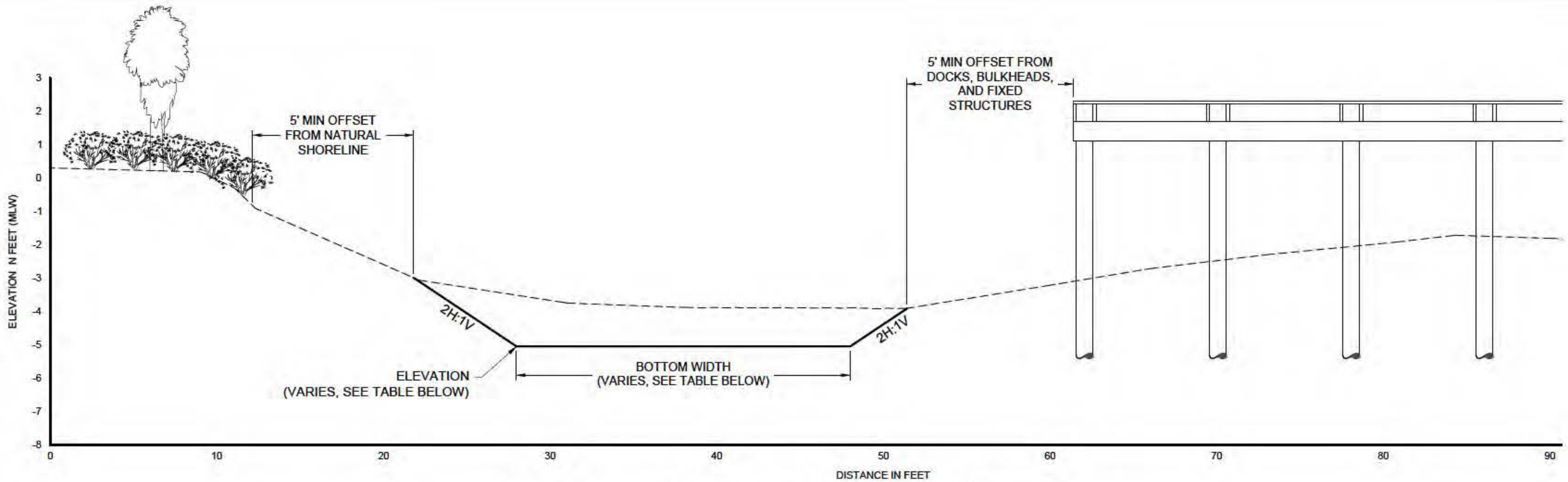

TYPICAL CANAL DREDGING SECTION

NOT TO SCALE

PROPOSED CANAL DREDGING SUMMARY TABLE

CANAL	SEGMENT	STATION START	STATION END	BOTTOM WIDTH	ELEVATION (MLW)	CUT VOLUME (CY)	SEE SHEET
CANAL 01	1	9+14	11+29	20	-4	9	C-8
	2	11+98	13+79	20	-4	24	C-8
	3	14+68	18+08	20	-4	260	C-8
	4	18+74	19+43	20	-4	48	C-8
CANAL 02	1	0+00	3+94	30	-5	1000	C-9
	2	3+94	6+19	3	-5	99	C-9
CANAL 02B	1	0+48	1+75	15	-5	117	C-9
CANAL 03	1	0+00	7+27	2	-4	254	C-10
CANAL 06	1	0+00	4+06	4	-4	92	C-11
	2	4+06	8+96	10	-4	126	C-11
CANAL 18	1	0+00	3+03	0	-3	44	C-12
	2	3+03	18+55	4	-3	218	C-12
CANAL 20P	1	1+61	2+21	15	-5	61	C-13
	2	2+21	3+51	0	-3	37	C-13
	3	3+51	4+44	15	-5	102	C-13
CANAL 21A	1	0+46	2+94	20	-5	363	C-13
	2	6+95	8+94	20	-5	301	C-13
CANAL 21P	1	1+07	9+44	10	-5	1529	C-14
	2	10+64	13+28	10	-5	293	C-14
	3	16+16	16+70	10	-5	42	C-14
	4	16+70	17+44	0	-5	42	C-14
	5	17+44	18+72	10	-5	207	C-14
CANAL 22A	1	1+39	13+81	15	-5	1819	C-15
CANAL 32P	1	45+15	51+56	20	-5	1000	C-16
	2	64+54	67+52	20	-5	453	C-16
CANAL 49	1	0+00	0+95	15	-5	88	C-16
CANAL 55	1	20+30	22+29	15	-5	218	C-17
CANAL 55A	1	1+27	5+80	2	-5	207	C-17
TOTAL						9051	

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PROJECT C2016-006
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SHEET 3 of 21
DATE SEPT 2019

FIGURE C-3
TYPICAL SECTION AND REQUIRED DREDGING TABLE
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
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DRAWING 4 OF 21 04/2021

FIGURE C-4
CANAL OVERVIEW
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

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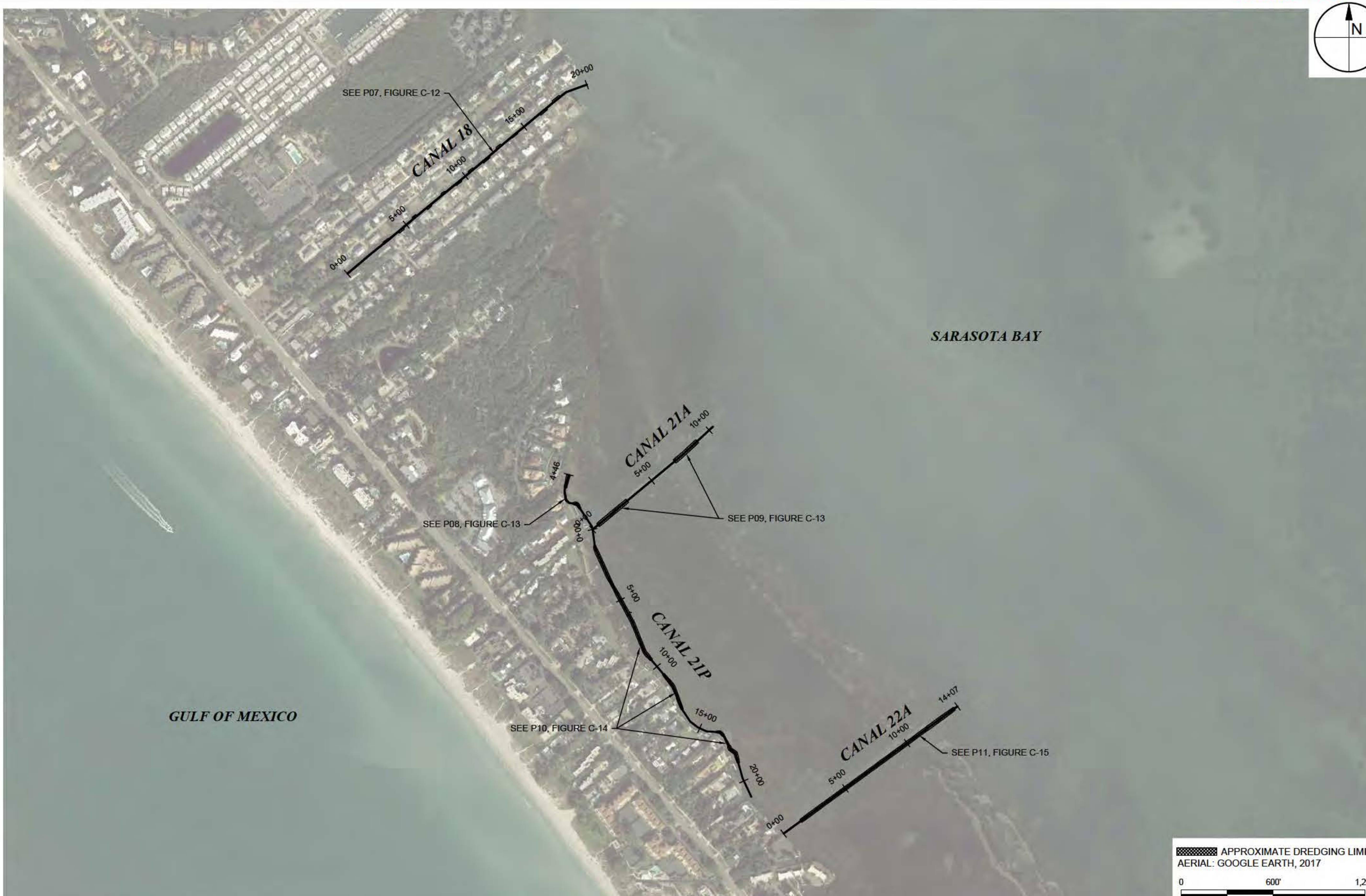

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DATE	SEPT 2019

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FIGURE C-5
CANAL OVERVIEW
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

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1800 2ND STREET
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FIGURE C-6
CANAL OVERVIEW
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

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FIGURE C-7
CANAL OVERVIEW
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

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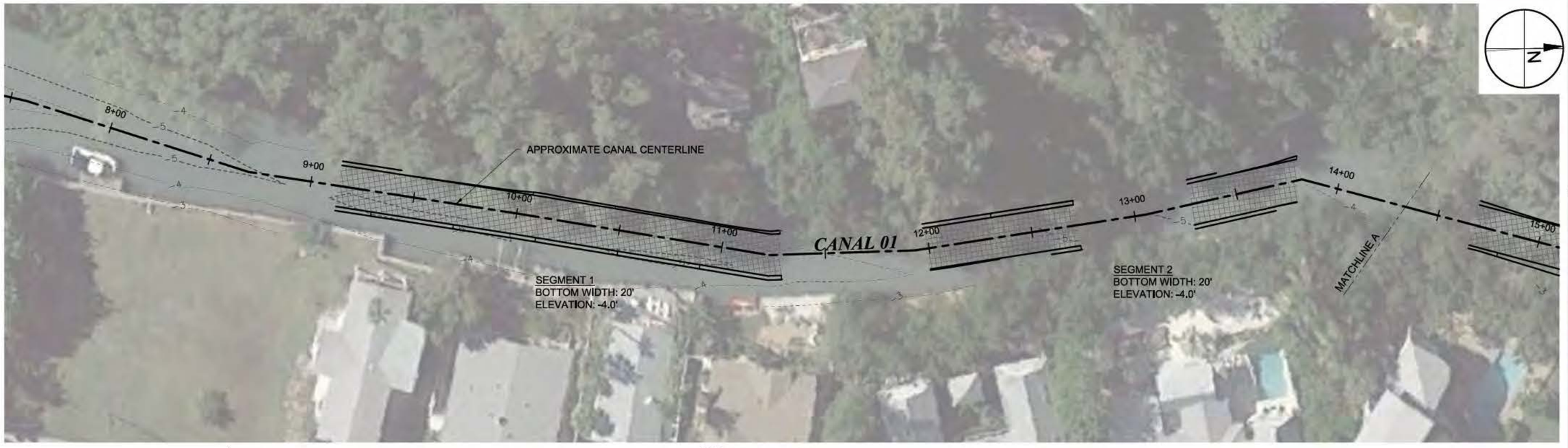

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

P02 C-4 CANAL 01
SCALE: 1" = 50' 0 50'

FIGURE C-8
CANAL 1 DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

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PERMIT NO: SAJ-2000-00050
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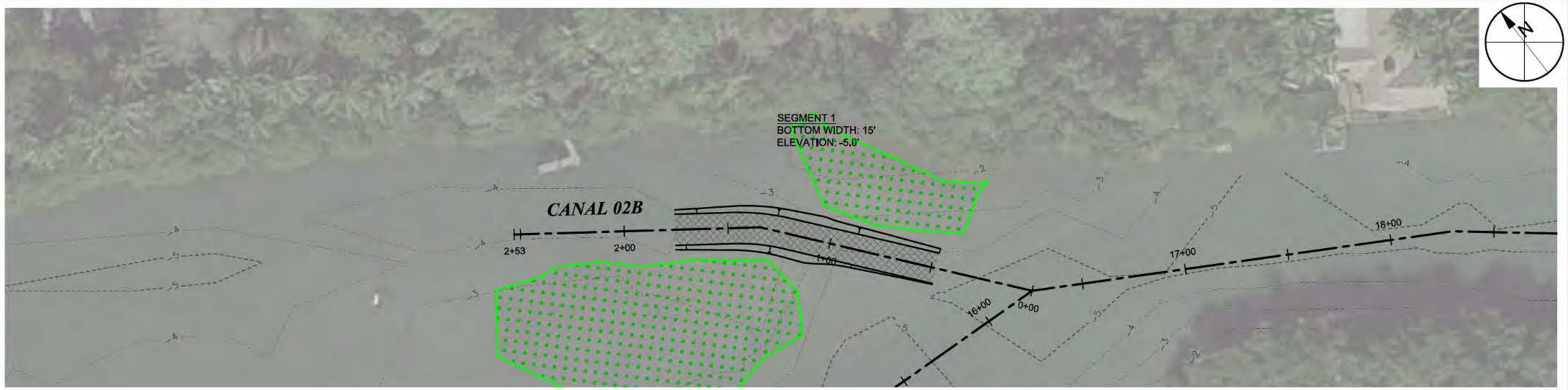
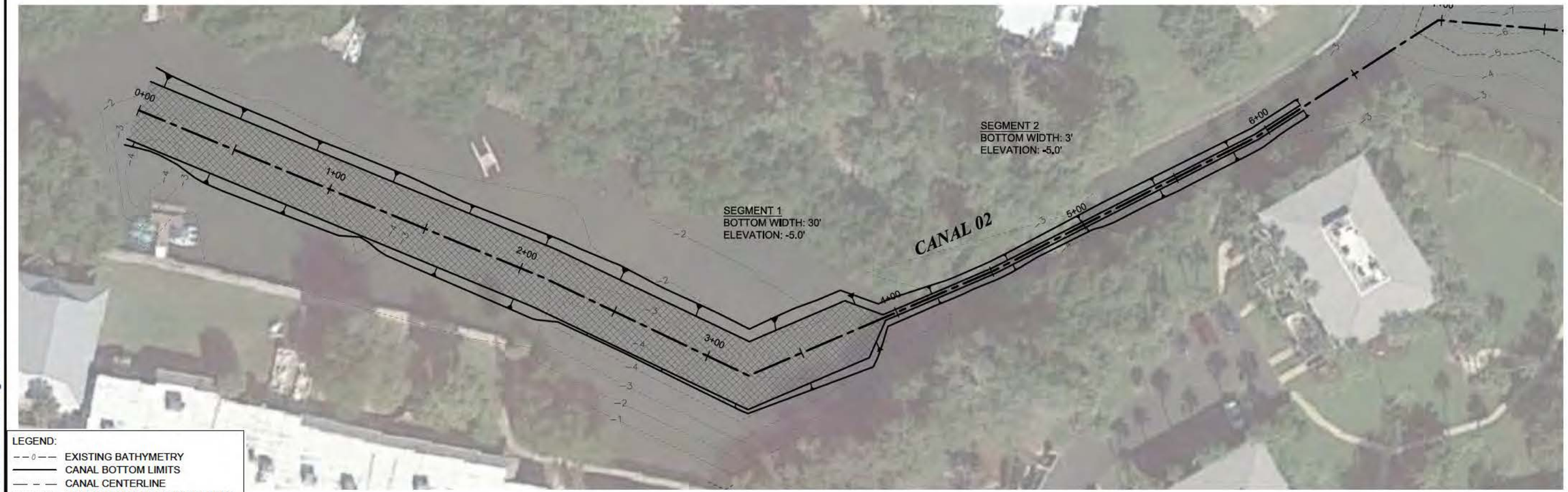


P04 / C-4 CANAL 02B
SCALE: 1" = 50' 0 50'



P03 / C-4 CANAL 02
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-9
CANAL 2 & 2B DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
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P05 / C-4 CANAL 03
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-10
CANAL 3 DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

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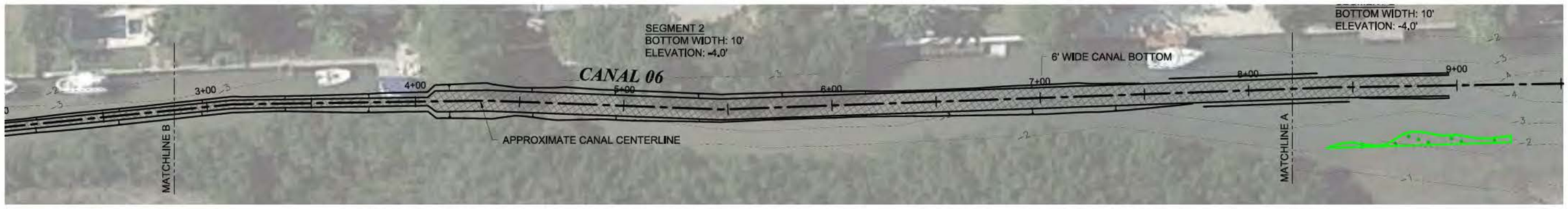

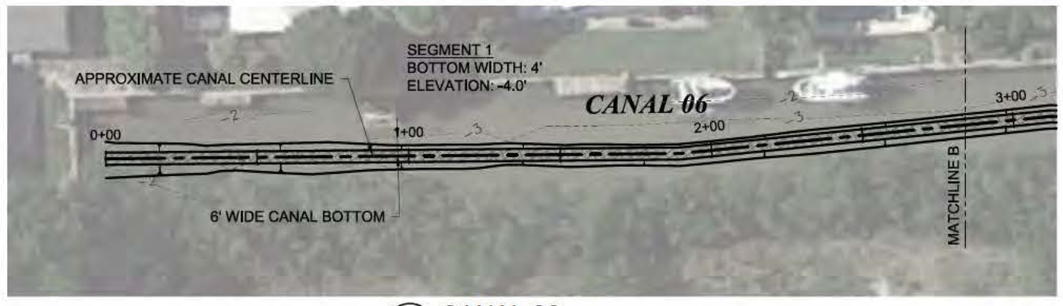

P06 / C-4 CANAL 06
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-11
CANAL 6 DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

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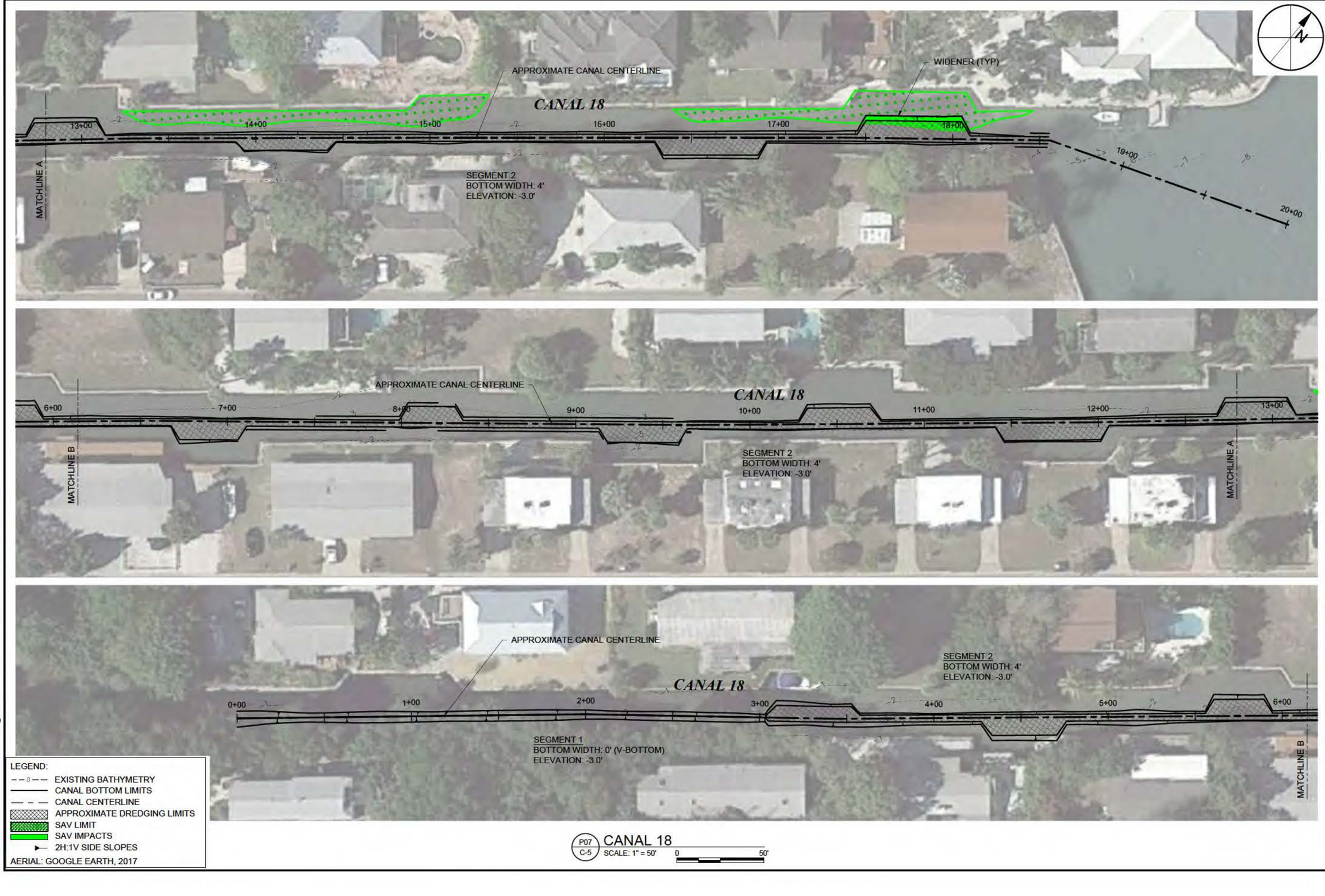

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

P07
C-5
CANAL 18
SCALE: 1" = 50' 0 50'

FIGURE C-12
CANAL 18 DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
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DATE	SEPT 2019

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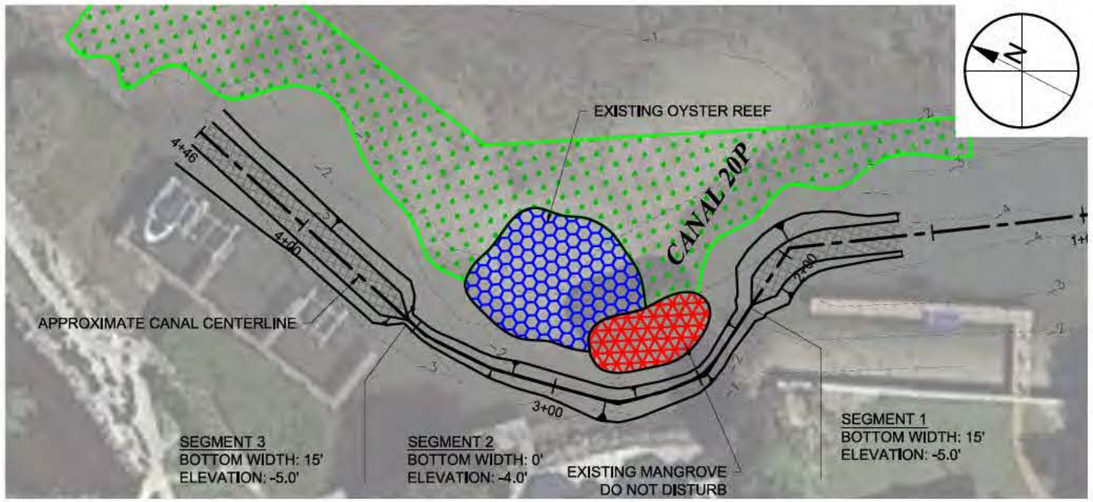
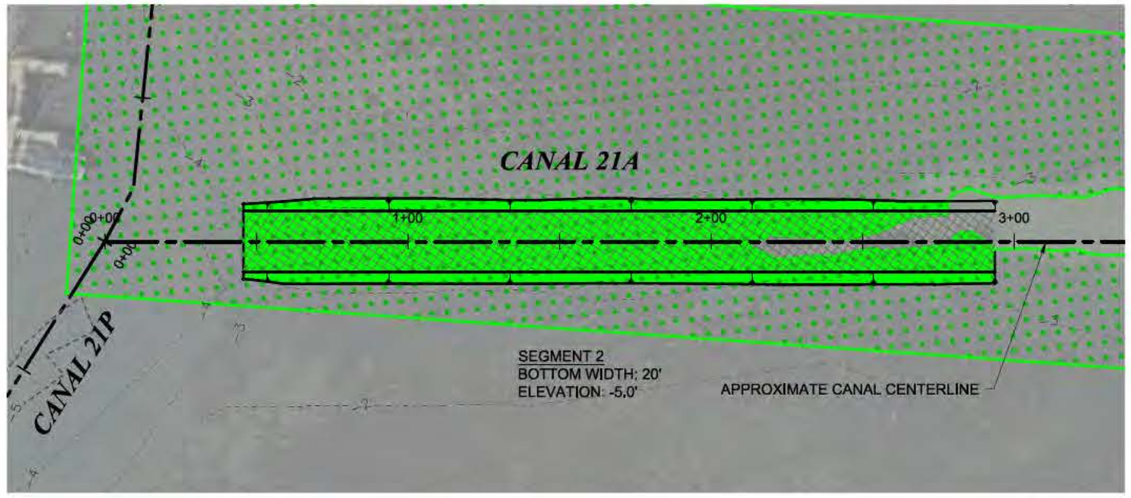
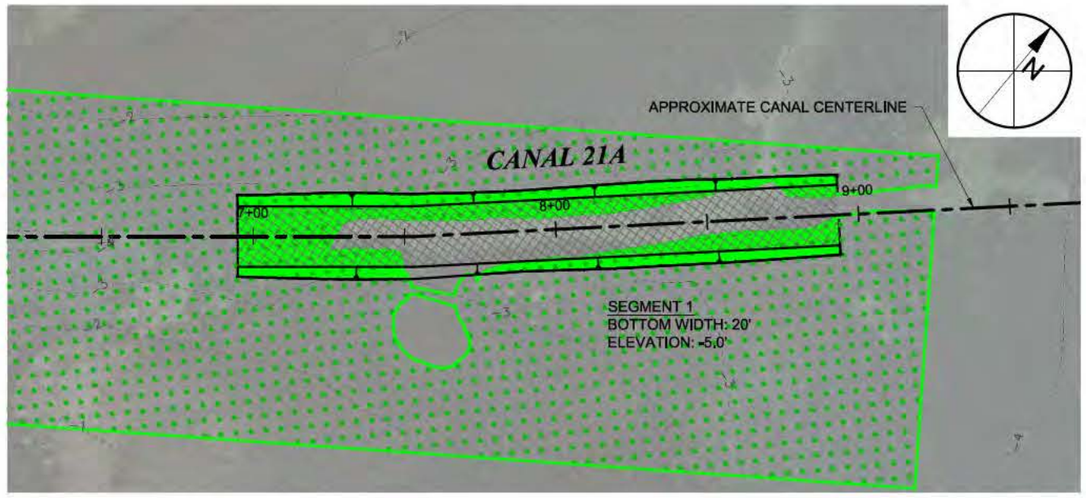


P08 / C-5 CANAL 20P
SCALE: 1" = 50' 0 50'





P09 / C-5 CANAL 21A
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-13
CANAL 20P & 21A DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

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YEHYA S. SIDDIQUI P.E.#57400
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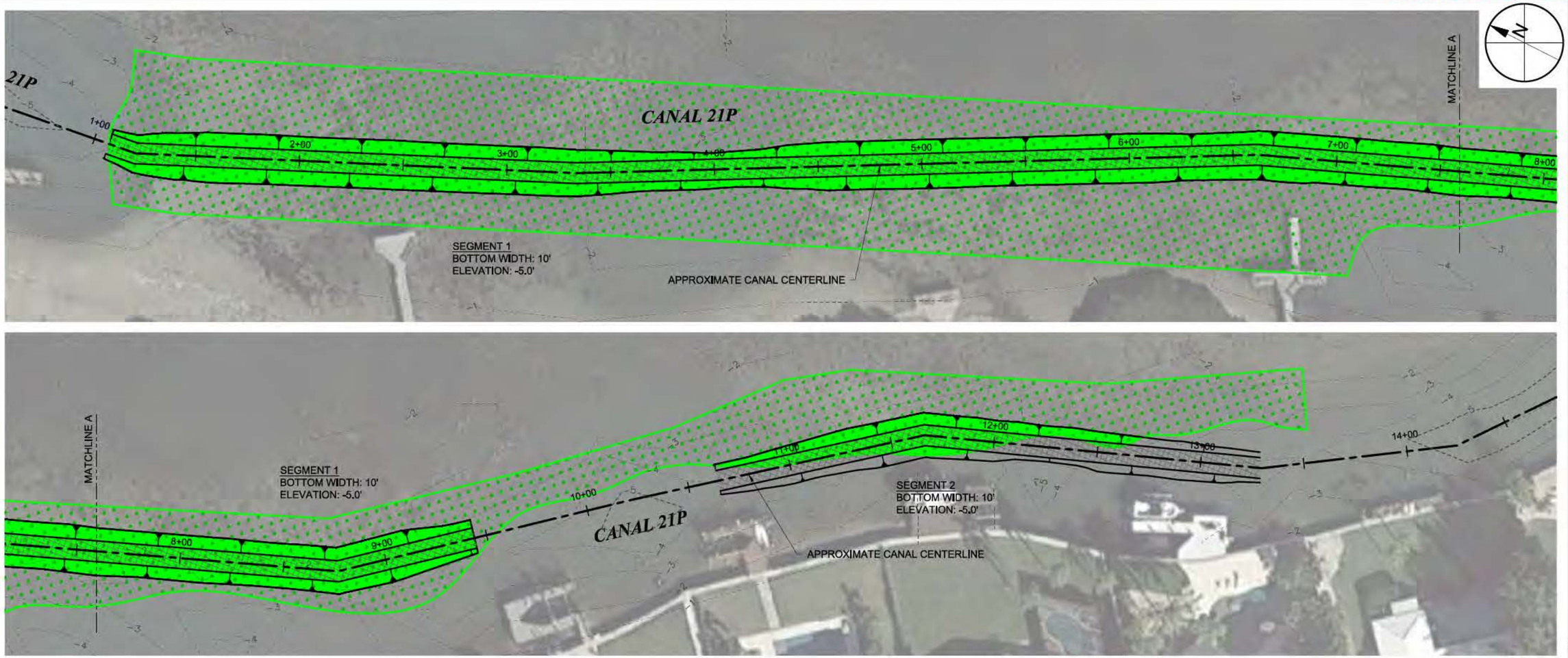
PERMIT NO: SAJ-2000-00050
DRAWING 14 OF 21 04/2021



LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

P10 / C-5 CANAL 21P
SCALE: 1" = 50' 0 50'

FIGURE C-14
CANAL 21P DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

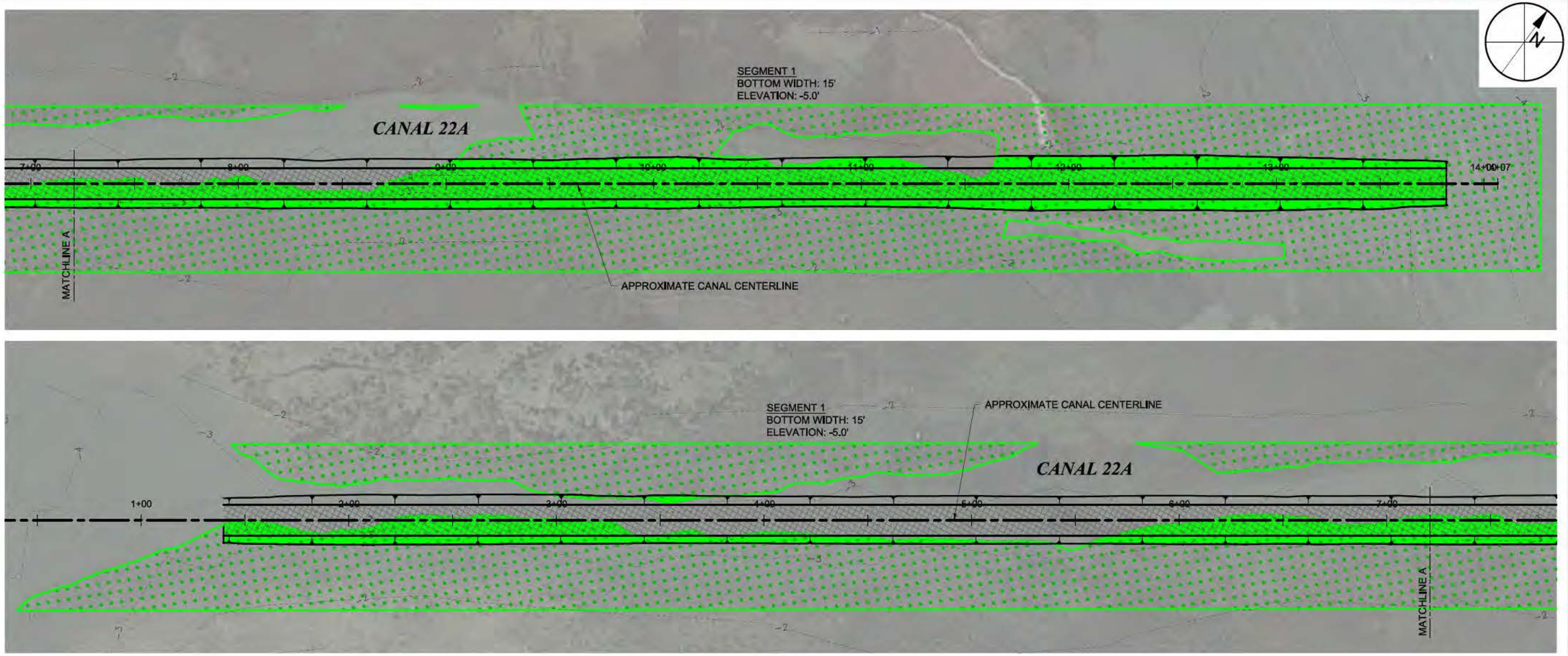
PROJECT	C2016-006
DRAWN BY	AF
SHEET	14 of 21
DATE	SEPT 2019

SEAL
YEHYA S. SODQUI P.E. #57400
DATE

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

PRELIM NARY DRAWINGS: THESE DRAW NGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

ANTON FLEWELLING X:\SYS\PROJECTS\C2016-006_LONGBOATKEY\PERMITS\C2016-006-P-CANALPLANS.DWG 9/13/2019 2:09:07 PM



P11 / C-5 CANAL 22A
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-15
CANAL 22A DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	15 of 21
DATE	SEPT 2019

SEAL
YEHYA S. SIDDIQUI P.E.#67400
DATE

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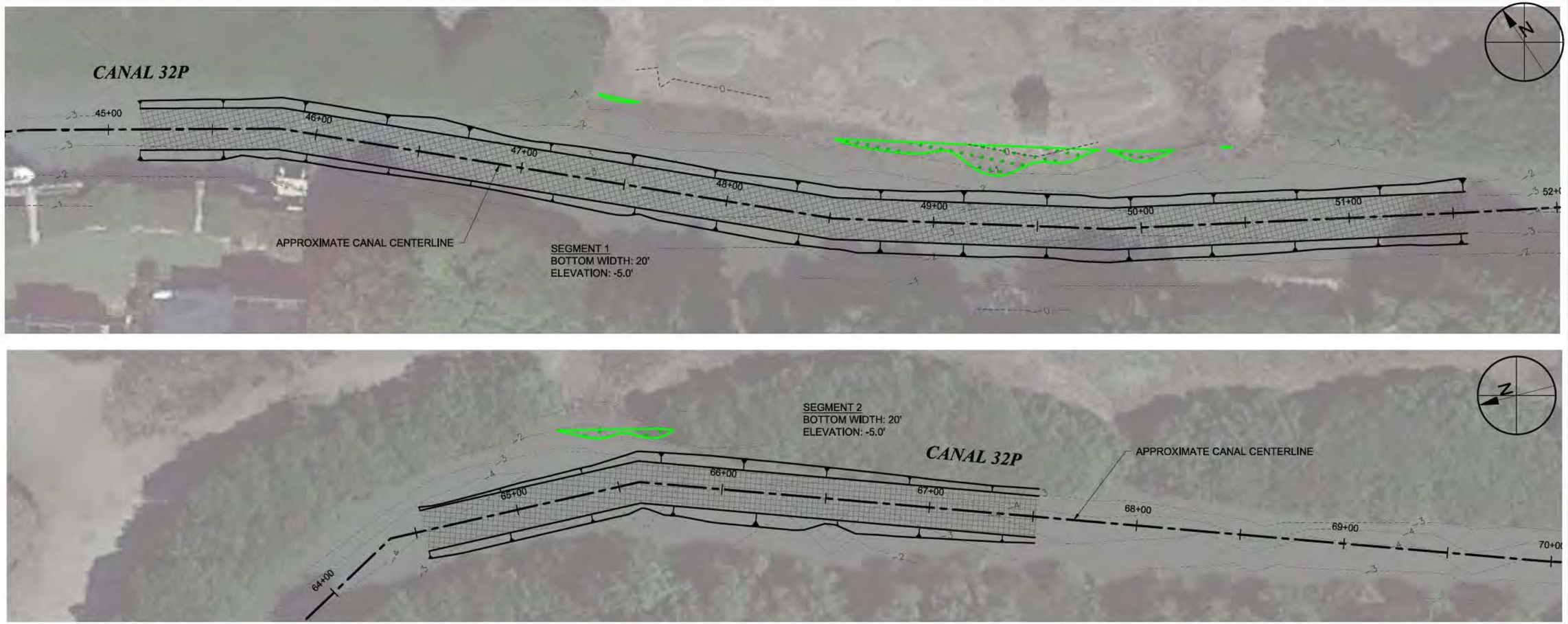
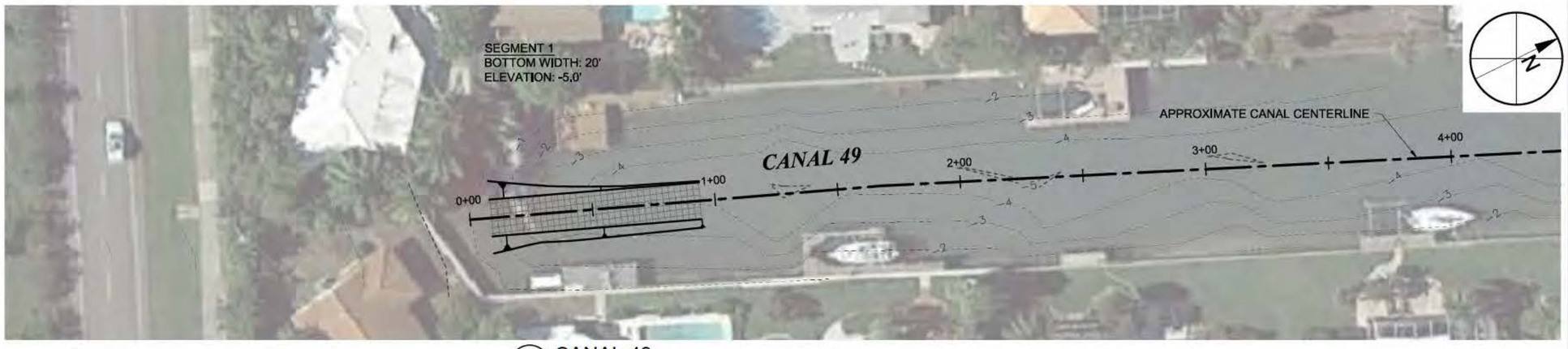
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

U.S. ARMY CORPS OF ENGINEERS
PERMIT NO: SAJ-2000-00050
DRAWING 16 OF 21 04/2021



P12 C-6 CANAL 33P
SCALE: 1" = 50' 0 50'



P13 C-7 CANAL 49
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

ANTON FLEWELLING X:\SYS\PROJECTS\C2016-006_LONGBOATKEY\PERMITS\C2016-006-P-CANALPLANS.DWG 9/13/2019 2:09:29 PM

SEAL
YEHYA S. SIDDIQUI P.E.#67400 DATE

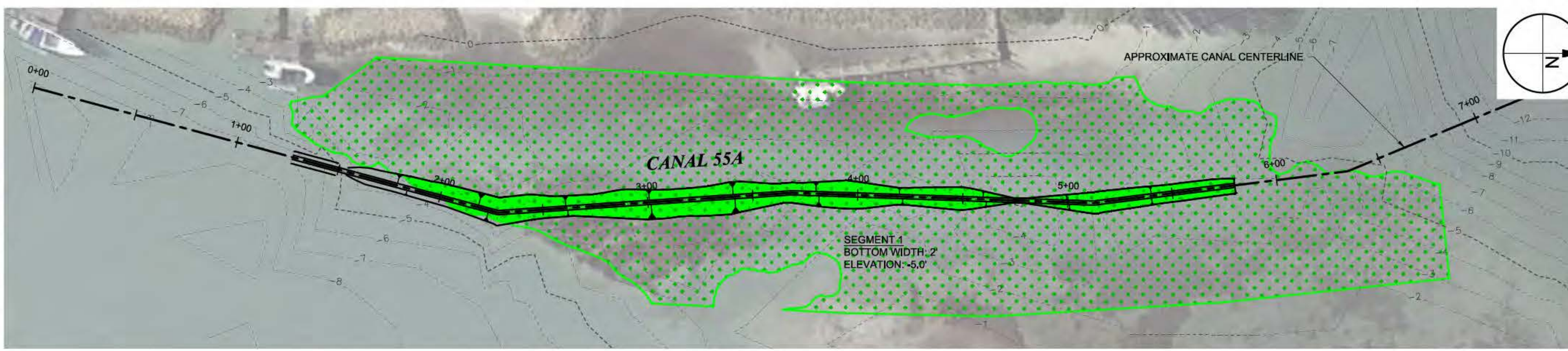
PROJECT	C2016-006
DRAWN BY	AF
SHEET	16 of 21
DATE	SEPT 2019

FIGURE C-16
CANAL 32P AND 49 DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

PRELIM NARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

P14 / C-7 CANAL 55
SCALE: 1" = 50' 0 50'



P15 / C-7 CANAL 55A
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-17
CANAL 55 & 55A DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

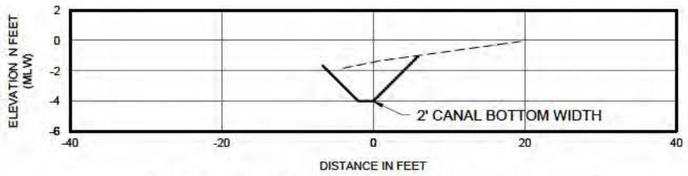
PROJECT	C2016-006
DRAWN BY	AF
SHEET	17 of 21
DATE	SEPT 2019

SEAL
DATE

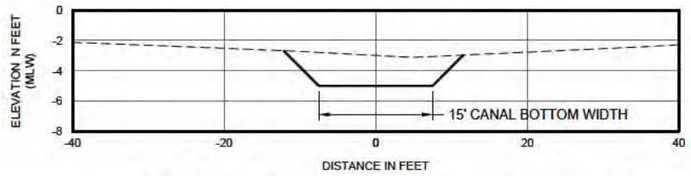
TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

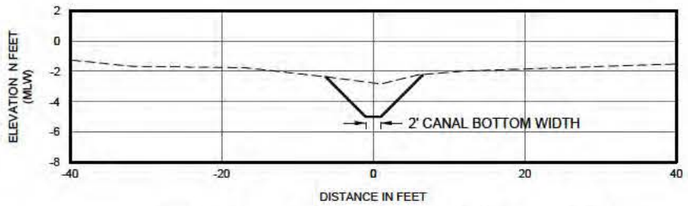
ANTON FLEWELLING X:\SYS\PROJECTS\C2016-006_LONGBOATKEY\PERMIT\C2016-006-P-CANALPLANS.DWG 9/13/2019 2:09:38 PM



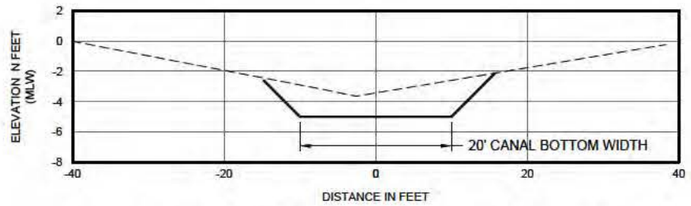
TYPICAL 0-FT CANAL BOTTOM WIDTH
CANAL 03 STA:2+00



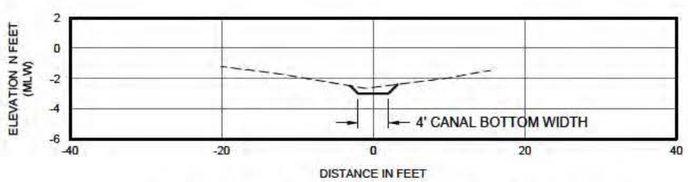
TYPICAL 15-FT CANAL BOTTOM WIDTH
CANAL 22A STA:8+00



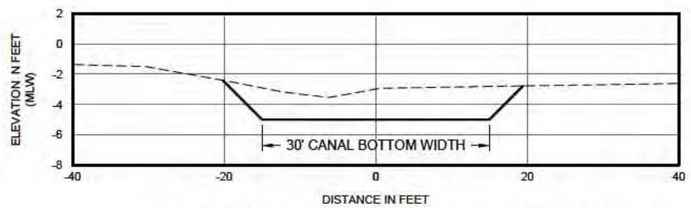
TYPICAL 2-FT CANAL BOTTOM WIDTH
CANAL 55A STA:4+00



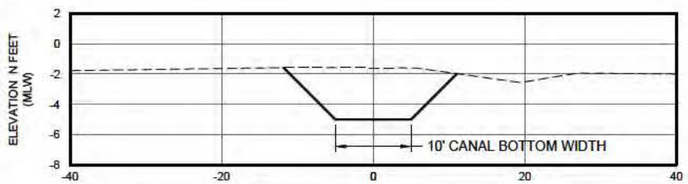
TYPICAL 20-FT CANAL BOTTOM WIDTH
CANAL 32P STA:49+00



TYPICAL 4-FT CANAL BOTTOM WIDTH
CANAL 18 STA:15+00



TYPICAL 30-FT CANAL BOTTOM WIDTH
CANAL 2 STA:1+00



TYPICAL 10-FT CANAL BOTTOM WIDTH
CANAL 21P STA:7+00

LEGEND:
- - - - - EXISTING GRADE
——— PROPOSED GRADE
NOTE: ALL SIDE SLOPES 2H:1V

0 20' 40'
SCALE: 1" = 20'
VERTICAL EXAGGERATION: 2X

FIGURE C-18
TYPICAL CROSS-SECTIONS
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	18 of 21
DATE	SEPT 2019

SEAL
YEHYA S. SOOKLALP.E.#67400
DATE

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

N

GULF OF MEXICO DRIVE

GATE

INSTALL PRIVACY FENCE AND APPROPRIATE BMPs AROUND PERIMETER (SEE SHEET C-21)

STAGING AREA

55

362'

TURBIDITY CURTAIN

CANAL 55 APPROXIMATE DREDGING LIMITS

NEW PASS

0 5,000' 10,000'

SCALE: 1" = 5,000'

FIGURE C-19
DREDGED MATERIAL AND EQUIPMENT STAGING AREA
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	19 of 21
DATE	SEPT 2019

SEAL

YEHYA S. SOOKUP P.E.#67400

DATE

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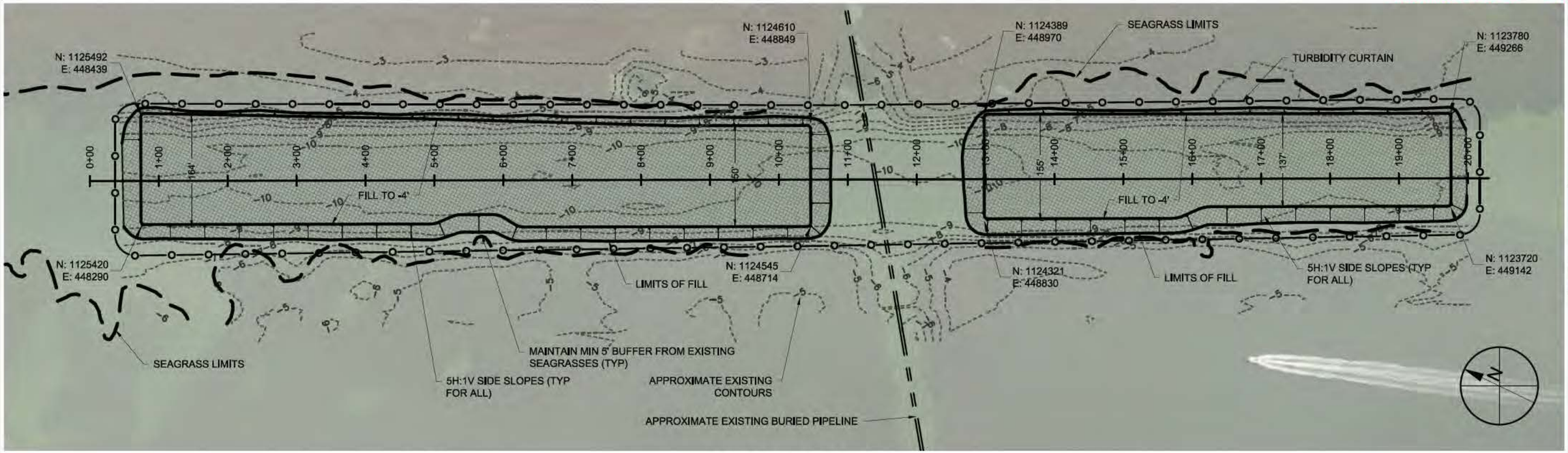
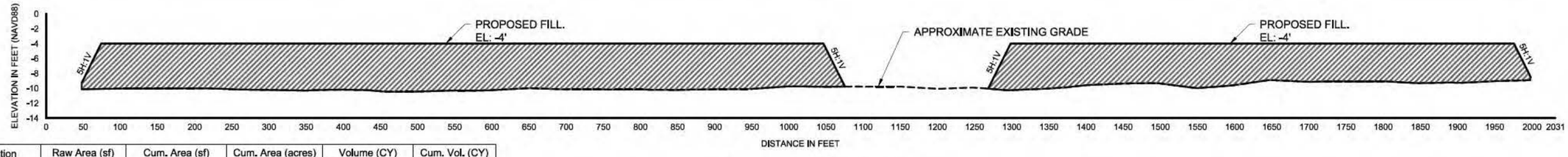
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815



MITIGATION PLAN VIEW

SCALE: 1" = 150' 0 150'



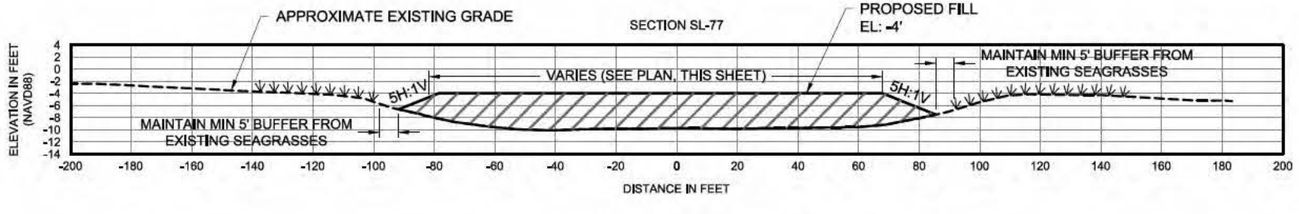
Station	Raw Area (sf)	Cum. Area (sf)	Cum. Area (acres)	Volume (CY)	Cum. Vol. (CY)
0-100	9283	9283	0.21	1729	1729
100-200	18595	27877	0.64	3428	5158
200-300	18575	46453	1.07	3419	8577
300-400	18327	64780	1.49	3463	12040
400-500	18180	82960	1.90	3547	15587
500-600	17999	100959	2.32	3481	19068
600-700	18121	119080	2.73	3421	22489
700-800	17963	137044	3.15	3508	25997
800-900	17872	154916	3.56	3542	29539
900-1000	17796	172712	3.96	3456	32995
1000-1100	12836	185548	4.26	1679	34674
1100-1200	0	185548	4.26	0	34674
1200-1300	4798	190346	4.37	1667	36341
1300-1400	18150	208496	4.79	3232	39573
1400-1500	17969	226466	5.20	3045	42618
1500-1600	17802	244268	5.61	2918	45536
1600-1700	17040	261308	6.00	2760	48296
1700-1800	16587	277896	6.38	2641	50937
1800-1900	16508	294404	6.76	2621	53558
1900-2000	15727	310131	7.12	1301	54860

MITIGATION PLAN AREA AND VOLUME TABLE

MITIGATION PROFILE

SCALE: 1" = 150' 0 150'
VERTICAL EXAGGERATION: 10X

NOTES
1. BATHYMETRIC SURVEY DATA SHOWN ON THIS SHEET REFERENCE TO NAVD-88
2. TOTAL SEAGRASS RESTORATION AREA IS 7.12 ACRES, OF WHICH ONLY 2.74 ACRES TO BE RESTORED FOR THIS PROJECT



TYPICAL MITIGATION SECTION

SCALE: 1" = 50' 0 50'
VERTICAL EXAGGERATION: 2X

SEAL

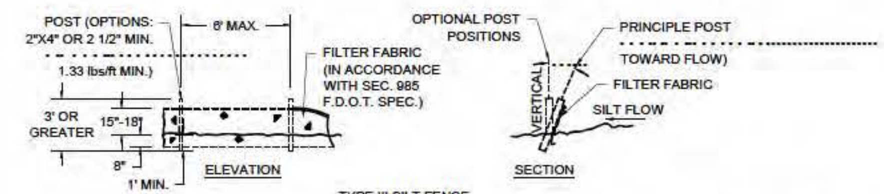
PROJECT	C2016-006
DRAWN BY	AF
SHEET	20 of 21
DATE	SEPT 2019

"ERYN S. SIDDIQUI P.E.#67400" DATE

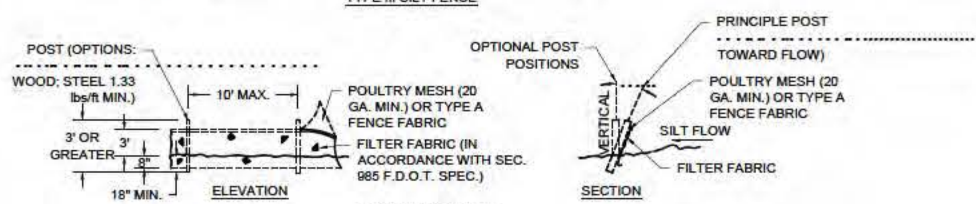
FIGURE C-20
MITIGATION PLAN AND CROSS-SECTIONS
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

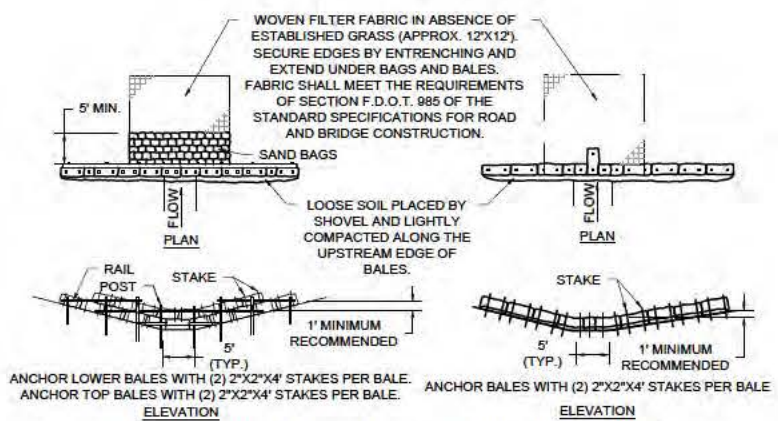
PRELIM NARY DRAWINGS: THESE DRAWNGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.



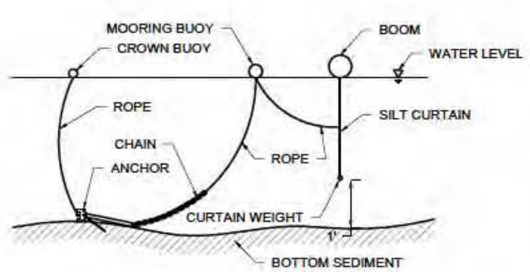
TYPE III SILT FENCE



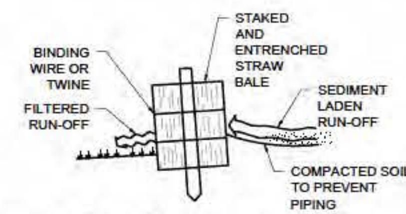
TYPE IV SILT FENCE



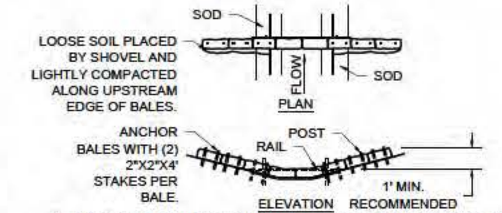
TYPICAL STRAW BALE DETAIL



TURBIDITY CURTAIN DETAIL

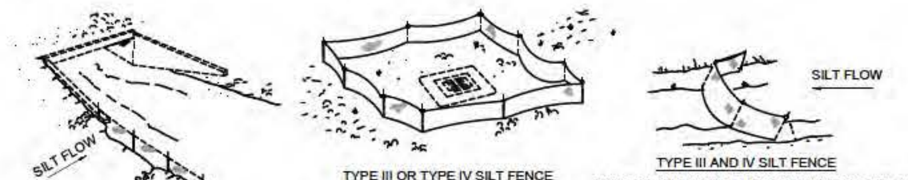


CROSS SECTION OF A PROPERLY INSTALLED STRAW BALE



SPACING: BALE BARRIERS FOR PAVED DITCHES SHOULD BE SPACED IN ACCORDANCE WITH CHART I, SHEET 1 OF 3, INDEX NO. 102 OF THE F.D.O.T. ROADWAY AND TRAFFIC DESIGN STANDARDS.

STRAW BALE BARRIER FOR PAVED DITCH



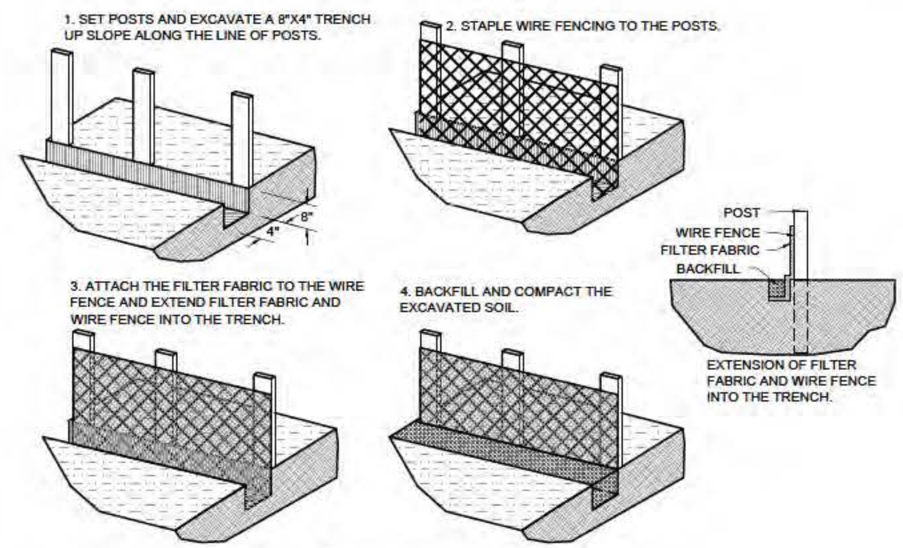
TYPE III OR TYPE IV SILT FENCE PROTECTION AROUND DITCH BOTTOM INLETS.

TYPE III OR TYPE IV SILT FENCE

TYPE III AND IV SILT FENCE

DITCH INSTALLATION AND SPACING FOR TYPE III & TYPE IV FENCE TO BE IN ACCORDANCE WITH SHEET 1 OF 3, OF THE F.D.O.T. INDEX NO. 102

DO NOT DEPLOY IN A MANNER THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.



SILT FENCE INSTALLATION DETAILS

FIGURE C-21
EROSION CONTROL DETAILS
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	21 of 21
DATE	SEPT 2019

SEAL
YEHYA S. SIDDIQUI P.E.#87400
DATE

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

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Longboat Key Residential Canal Maintenance Dredging

SAJ-2000-00050 (SP-RGH)

ATTACHMENT B:

Water Quality Certification

(46 Pages)

FLORIDA DEPARTMENT OF Environmental Protection

Southwest District Office
13051 North Telecom Parkway #101
Temple Terrace, Florida 33637-0926

September 18, 2020

Town of Longboat Key
c/o Isaac Brownman, Public Works Director
600 General Harris Street
Longboat Key, Florida 34228
ibrownman@longboatkey.org

Dear Mr. Brownman:

Enclosed is the Environmental Resource Permit, DEP Project No. 41-0380753-001-EI, issued pursuant to Part IV of Chapter 373, Florida Statutes, and Title 62, Florida Administrative Code.

Appeal rights for you and for any affected third party are described in the text of the permit along with conditions that must be met when authorized activities are undertaken.

You, as the applicant, are responsible for all aspects of permit compliance. You should therefore review this permit document carefully to ensure compliance with the general conditions and specific conditions contained herein.

Please be aware of permit General Condition number 4, which states, "At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the Agency a fully executed Form 62-330.350(1), "Construction Commencement Notice"."

If you have any questions about this document, please contact me at anthony.pidala@dep.state.fl.us or 813-470-5777. Thank you for your participation in the permit process and in managing the natural resources of the State of Florida.

Sincerely,

Anthony Pidala
Environmental Consultant
Permitting and Waste Cleanup Programs
Southwest District

cc: DEP Southwest District; sw_erp@floridadep.gov
U.S. Army Corps of Engineers; tampareg@usace.army.mil
FWC, Imperiled Species Management Section; FWCConservationplanningservices@myfwc.com
Jenna Phillips, Taylor Engineering; dstites@taylorengineering.com
Chris Ellis, Taylor Engineering; cellis@taylorengineering.com
Portia Sapp, DACS; Portia.Sapp@FreshFromFlorida.com
DEP South District, SouthDistrict@dep.state.fl.us

Enclosure: Environmental Resource Permit with Attachments (47 pages)

FLORIDA DEPARTMENT OF
Environmental Protection

Southwest District Office
13051 North Telecom Parkway #101
Temple Terrace, Florida 33637-0926

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

Permittee/Authorized Entity:
Town of Longboat Key
c/o Isaac Brownman, Public Works Director
600 General Harris Street
Longboat Key, Florida 34228

Longboat Key - Canal Dredge and Seagrass Restoration

Authorized Agent:
Taylor Engineering
c/o Jenna Phillips
10199 Southside Blvd., Suite 310
Jacksonville, FL 32256

Individual Environmental Resource Permit

State-owned Submerged Lands Authorization – Approved

U.S. Army Corps of Engineers Authorization – Not Approved

Permit No.: 41-0380753-001-EI

Permit Issuance Date: September 18, 2020
Permit Construction Phase Expiration Date: September 18, 2025

FLORIDA DEPARTMENT OF
Environmental Protection

Southwest District Office
13051 North Telecom Parkway #101
Temple Terrace, Florida 33637-0926

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Noah Valenstein
Secretary

Consolidated Environmental Resource Permit and Sovereignty Submerged Lands Authorization

Permittee: Town of Longboat Key
Permit No: 41-0380753-001-EI

PROJECT LOCATION

The canal dredging activities and seagrass planting activities authorized by this permit and sovereignty submerged lands authorization are located throughout Sarasota Bay, within Longboat Key, Manatee and Sarasota counties, and more specifically shown on the attached project design exhibits.

PROJECT DESCRIPTION

Dredging Activities

The permittee is authorized to dredge a total of approximately 9,000 cubic yards of sediments from 15 different canals throughout Sarasota Bay, a Class II Outstanding Florida Waterbody. The canals will be dredged to a maximum depth of approximately five feet below the mean low water elevation of Sarasota Bay. All but one of the 15 canals qualify as maintenance dredging pursuant to section 403.813(1)(f), F.S., and therefore mitigation is not required for the seagrass impacts associated with those qualifying canals. One canal to be dredged (21A) will be assessed as new dredging. Dredging Canal 21A will result in impacts to approximately 0.21-acres of seagrass (*Halodule wrightii* and *Thalassia testudinum*) (FLUCCS 645), with an associated functional habitat loss of 0.168. These impacts are anticipated to be offset by the seagrass restoration/mitigation activities described below and authorized herein. All dredged material from the 15 canals will be barged to the seagrass mitigation area for creation of suitable seagrass planting conditions. Dredging activities in the canals will result in temporary mangrove trimming impacts for navigational purposes. These mangrove trimming impacts will comply with the criteria in section 403.9327(1)(b), F.S. Further, mangrove trimming will only be conducted within the canals that qualify for maintenance dredging, and the trimming will be within the maintenance dredge footprint; therefore, those impacts are inherently exempt pursuant to section 403.9328(5), F.S. Based on this information, no mangrove mitigation is required.

Seagrass Restoration/Mitigation Activities

The permittee is authorized to create a 2.74-acre seagrass planting site, within a seven-acre area of Sarasota Bay, a Class II Outstanding Florida Waterbody. Creation of the seagrass planting area will include depositing approximately 23,000 cubic yards of clean compatible sediments and transplanting approximately 1.37-acres of seagrass from the 15 canals authorized to be dredged. Transplanted seagrass will be planted in six-inch cores/plugs placed on three-foot centers, spaced three-feet apart. The seagrass planting portion of the project is anticipated to provide 1.171 units of functional lift, thus offsetting the seagrass impacts in Canal 21A, described above. The additional functional gain (1.003) obtained from the seagrass restoration area will not be reserved to offset

future wetland impacts by the Town of Longboat Key. Authorized activities are depicted on the attached exhibits.

AUTHORIZATIONS

Environmental Resource Permit

The Department has determined that the activity qualifies for an Environmental Resource Permit. Therefore, the Environmental Resource Permit is hereby granted, pursuant to Part IV of Chapter 373, Florida Statutes (F.S.), and Chapter 62-330, Florida Administrative Code (F.A.C.).

Sovereignty Submerged Lands Authorization

The activity is located on sovereignty submerged lands owned by the State of Florida. It therefore also requires authorization from the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees), pursuant to Article X, Section 11 of the Florida Constitution, and Section 253.77, F.S. As staff to the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees) under Sections 253.002, F.S., the Department has determined that the activity qualifies for and requires a Letter of Consent, as long as the work performed is located within the boundaries as described and is consistent with the terms and conditions herein.

During the term of this Letter of Consent you shall maintain satisfactory evidence of sufficient upland interest as required by paragraph 18-21.004(3)(b), Florida Administrative Code. If such interest is terminated or the Board of Trustees determines that such interest did not exist on the date of issuance of this Letter of Consent, this Letter of Consent may be terminated by the Board of Trustees at its sole option. If the Board of Trustees terminates this Letter of Consent, you agree not to assert a claim or defense against the Board of Trustees arising out of this Letter of Consent.

Federal Authorization

Your proposed activity as outlined on your application and attached drawings **does not qualify** for Federal authorization pursuant to the State Programmatic General Permit and a **SEPARATE permit** or authorization **shall be required** from the Corps. You must apply separately to the Corps using their APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT, ENG FORM 4345, or alternative as allowed by their regulations. More information on Corps permitting may be found online in the Jacksonville District Regulatory Division Source Book at: https://www.saj.usace.army.mil/Missions/Regulatory/Source-Book.

Authority for review - an agreement with the USACOE entitled “Coordination Agreement Between the U. S. Army Corps of Engineers (Jacksonville District) and the Florida Department of Environmental Protection (or Duly Authorized Designee), State Programmatic General Permit”, Section 10 of the Rivers and Harbor Act of 1899, and Section 404 of the Clean Water Act.

Coastal Zone Management

Issuance of this authorization also constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act.

Water Quality Certification

This permit also constitutes a water quality certification under Section 401 of the Clean Water Act, 33 U.S.C. 1341

Other Authorizations

You are advised that authorizations or permits for this activity may be required by other federal, state, regional, or local entities including but not limited to local governments or municipalities. This permit does not relieve you from the requirements to obtain all other required permits or authorizations.

The activity described may be conducted only in accordance with the terms, conditions and attachments contained in this document. Issuance and granting of the permit and authorizations herein do not infer, nor guarantee, nor imply that future permits, authorizations, or modifications will be granted by the Department.

PERMIT/SOVEREIGNTY SUBMERGED LANDS CONDITIONS

The activities described must be conducted in accordance with:

- **The Specific Conditions**
- **The General Conditions**
- **The Special Consent Conditions**
- **The General Conditions for Sovereignty Submerged Lands Authorization**
- **The limits, conditions and locations of work shown in the attached drawings**
- **The term limits of this authorization**

You are advised to read and understand these conditions and drawings prior to beginning the authorized activities, and to ensure the work is conducted in conformance with all the terms, conditions, and drawings herein. If you are using a contractor, the contractor also should read and understand these conditions and drawings prior to beginning any activity. Failure to comply with these conditions, including any mitigation requirements, shall be grounds for the Department to revoke the permit and authorization and to take appropriate enforcement action. Operation of the facility is not authorized except when determined to be in conformance with all applicable rules and this permit and sovereignty submerged lands authorization, as described.

SPECIFIC CONDITIONS

1. Submittals required herein (e.g., progress reports, as-built drawings, etc.) shall include the permittee's name and permit number 41-0380753-001-EI and shall be directed by e-mail to SW_ERP@dep.state.fl.us with a subject line of "Compliance: permit number 41-0380753-001-EI or by mail to:

   Department of Environmental Protection
   Southwest District
   ATTN: ERP Compliance Assurance
   13051 North Telecom Parkway, Suite 101
   Temple Terrace, FL 33637-0926

2. The work authorized by this permit shall not be placed/conducted on any property, other than that owned by the permittee, without the prior written approval of that property owner.

SPECIFIC CONDITIONS - PRIOR TO ANY CONSTRUCTION

3. Prior to placing any fill material in the seagrass restoration area, that has been obtained from a source other than the canal sediment authorized to be dredged by this permit, the permittee

shall provide the Department with the source and technical specifications of the sediment fill material to be used. This shall include reasonable assurance that the sediment fill material is clean sand, and shall be free of excess silt, clay, organic material and toxic or deleterious substances/contaminants, and has a proportion of clay and silt which does not exceed that of the sediments currently within the project area. No more than 10% of the fill material shall pass through a #200 sieve. If more than 10% of the fill material passes through a #200 sieve, the Permittee shall meet with the Department to determine if further testing or project modifications are necessary, and the project may not commence without written authorization from the Department.

SPECIFIC CONDITIONS – CONSTRUCTION ACTIVITIES

4. Wetland areas or waterbodies that are outside the specific limits of construction authorized by this permit, must be protected from erosion, sedimentation, siltation, scouring, excess turbidity, and/or dewatering. There shall be no discharge in violation of the water quality standards in Chapter 62-302, F.A.C. Turbidity/erosion controls shall be installed prior to clearing, excavation or placement of fill material, shall be maintained until construction is completed, disturbed areas are stabilized, and turbidity levels have fallen to less than ambient background. The turbidity and erosion control devices shall be removed within 14 days once these conditions are met.

5. Dredging shall be limited to day light hours. No dredging activities are authorized to be conducted at night.

6. Areas to be dredged shall be dredged in accordance with the attached permit drawings and shall not exceed the areas and depths indicated on those drawings. Those areas shall be dredged to a maximum depth of five feet below mean low water.

7. Mangrove trimming authorized by this permit shall be limited to lateral navigational trimming and shall be conducted by a certified professional mangrove trimmer.

8. During dredging activities, the permittee shall maintain a minimum of a five-foot buffer between construction equipment and privately owned property, including docks and moored vessels.

9. A floating turbidity apron/curtain shall be installed around the waterward boundary of the construction area prior to construction and shall remain in place until construction is complete and turbidity levels within the work area have returned to background levels.

10. Turbidity levels outside the construction area shall not exceed ambient levels within the Outstanding Florida Waterbody. The following measures shall be taken immediately by the permittee whenever turbidity levels within waters of the State surrounding the project site exceed ambient levels within the Outstanding Florida Waterbody:

    a. Notify the Department at 813-470-5700 at the time the violation is first detected.
    b. Immediately cease all work contributing to the water quality violation.
    c. Modify the work procedures that were responsible for the violation, install more turbidity containment devices, and repair any non-functional turbidity containment devices.

d. As required, perform turbidity monitoring per Specific Conditions 11 and 12.
e. Resume construction activities once turbidity levels outside turbidity curtains fall below ambient levels within the Outstanding Florida Waterbody.

11. Water turbidity levels shall be monitored if a turbidity plume is observed outside the limits of the required turbidity control devices. Samples shall be taken every four hours, one foot above the bottom, mid-depth, and one-foot below the surface at monitoring stations located as follows:
    a. Approximately 100 feet up-current of the work sites and clearly outside the influence of construction activities. (This shall serve as the natural background sample against which other turbidity readings shall be compared.)
    b. Directly outside the turbidity curtains surrounding the work sites and within the densest portion of any visible turbidity plume. (This sample shall serve as the compliance sample.)

12. During dredging activities, the permittee or permittee's contractor shall collect the following turbidity monitoring data at the frequency and water depths directed by Specific Condition 21:
    a. Permit number;
    b. Date and time of sampling event
    c. Turbidity sampling results (background NTUs, compliance NTUs, and the difference between them)
    d. Description of data collection methods
    e. An aerial map indicating the sampling locations
    f. Depth of sample(s)
    g. Weather conditions at times of sampling
    h. Tidal stage and direction of flow

    Data shall be collected in a turbidity log and shall include a statement by the individual responsible for implementation of the sampling program attesting to the authenticity, precision, limits of detection, and accuracy of the data. The turbidity log shall be scanned and sent on a weekly basis to the Department's Environmental Resources Compliance Assurance Program Staff by email at SW_ERP@floridadep.gov. The subject line of the email shall include the project name, permit number, and the title "Turbidity Monitoring Reports."

13. The permittee shall comply with the following QA/QC requirements for each sample collected:
    a. Turbidity analysis shall be performed on instruments that produce results in Nephelometric measurements.
    b. The instrument shall be calibrated each morning and each time the instrument is turned on and recalibrated every four hours thereafter.
    c. Calibrations shall be performed against a blank, and at least one formazin or gel-type standard. The standard value should be in the same range as the sample readings.

14. Measurements must be acquired in adherence to the Department's Standard Operating Procedure (SOP) for field turbidity, available at the website:

www.dep.state.fl.us/labs/qa/sops.htm. More specifically, the instruments used to measure turbidity shall be fully calibrated within one month of the commencement of the project, and at least once a month thereafter during the project. Calibration shall be verified each morning prior to use, and after each time the instrument is turned on, using a turbidity "standard" that is different from the one used during calibration.

15. Watercraft associated with the construction of the permitted structure shall operate within waters of sufficient depth to preclude bottom scouring/prop dredging. There shall be a minimum 12-inch clearance between the deepest draft of the vessel (with the motor in the down position) and the top of submerged resources as measured at mean low water.

16. Storage or stockpiling of tools and materials (i.e., lumber, pilings, debris) within wetlands or other surface waters is prohibited.

17. The permittee shall ensure that no seagrass is dredged or impacted outside the limits of dredge areas and restoration area shown and authorized on the attached exhibits.

18. If dredged material encroaches into adjacent waters of the state beyond the construction site limits identified in the attached permit drawings, the impacted areas shall be restored to their original contours and elevations. If the impacted areas were vegetated, they shall be replanted after recontouring, with vegetation of appropriate size and densities and species as is present in the adjacent areas. The restoration shall be completed within 30 days of completion of the dredging operation and the Department shall be so notified within the same 30-day period. Appropriate turbidity control measures shall be followed during the restoration work.

19. All in-water fill shall be contained within appropriate best management practices to prevent sedimentation or turbid discharges due to the escape of fill material.

20. The permittee shall use PVC pipes to mark 100-foot sections of planted seagrass within the seagrass restoration area. The PVC pipes shall remain in place until the planting portion of construction is complete.

SPECIFIC CONDITIONS – MANATEE

21. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with, and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

19. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels shall follow routes of deep water whenever possible.

20. No nighttime mechanical dredging, such as clamshell, shall occur.

21. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers shall not impede manatee movement.

22. All on-site project personnel are responsible for observing water-related activities for the presence of manatees. All in-water operations, including vessels, shall be shutdown if a manatee comes within 50 feet of the operation. Activities shall not resume until every manatee has moved beyond the 50-foot radius of the project operation, or until 30 minutes has elapsed wherein a manatee has not reappeared within 50 feet of the operation. Animals shall not be herded away or harassed into leaving.

23. Any collision with or injury to a manatee shall be reported immediately to the FWC Hotline at 1-888-404-FWCC. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida.

SPECIFIC CONDITIONS - OTHER LISTED SPECIES

24. This permit does not authorize the permittee to cause any adverse impact to or "take" of state listed species and other regulated species of fish and wildlife. Compliance with state laws regulating the take of fish and wildlife is the responsibility of the owner or applicant associated with this project. Please refer to Chapter 68A-27 of the Florida Administrative Code for definitions of "take" and a list of fish and wildlife species. If listed species are observed onsite, FWC staff are available to provide decision support information or assist in obtaining the appropriate FWC permits. Most marine endangered and threatened species are statutorily protected and a "take" permit cannot be issued. Requests for further information or review can be sent to FWCConservationPlanningServices@MyFWC.com.

SPECIFIC CONDITIONS - CONSTRUCTION COMPLETION

25. The permittee shall submit one set of signed, dated and sealed as-built drawings to the Department via email at SW_ERP@dep.state.fl.us for review and approval within 30 days of completion of construction. (Please contact the Department for files that are too large to email for alternative means of submitting electronically.) The as-built drawings shall be based on the Department permitted construction drawings and any pertinent specific conditions, which should be revised to reflect changes made during construction. Both the original design and constructed elevations must be clearly shown. The plans must be clearly labeled as "as-built" or "record" drawings. Surveyed dimensions and elevations required shall be verified and signed, dated and sealed by a Florida registered professional. *As-builts shall be submitted to the Department regardless of whether deviations are present or not. In addition, the permittee shall submit the "As-Built Certification and Request for Conversion to Operation Phase" form (Ch. 62-330.310(1), F.A.C.); as required in General Condition #6.*

The following information shall be verified on the as-built drawings from the attached engineering drawings, submitted on January 02, 2020.

Plan View/Cross Section Name	Drawing Number(s)
Plan View	Pages 8 to 17, 19, 20
Cross Sections	Page 18

SPECIFIC CONDITIONS – MONITORING/REPORTING REQUIREMENTS

26. A "Time Zero" Monitoring Report shall be submitted within 30 days of completion of planting the seagrass restoration area and shall include the following:

    a. Date the planting was completed;

    b. Color photographs that provide an accurate representation of the planted areas. The photographs shall be numbered and correspond to their respective locations, shown on an associated map.

27. Subsequent Monitoring Reports shall be submitted annually for three years, beginning one year from the date of the "Time Zero" Monitoring Report, and shall include the following:

    a. Date the annual assessment was conducted;

    b. Color photographs that provide an accurate representation of the planted areas. The photographs shall be numbered and correspond to their respective locations, shown on an associated map.

    c. Total percent cover by any planted species.

    d. Plant species composition with estimates of the contribution of each species to percent cover.

    e. Description of the pertinent climatological conditions preceding the monitoring event.

28. The seagrass creation areas shall be deemed successful when the below criteria have been continuously met for a period of at least one (1) year, without intervention in the form of irrigation, removal of undesirable vegetation, or replanting of desirable vegetation:

    a. The seagrass creation area has become established with enough planted and/or recruited seagrass species to offset the 0.21-acre seagrass impact within canal 21A. The permittee shall submit UMAM forms to the Department to verify and document that the planted area has achieved the minimum functional gain required to offset the 0.168 units of functional loss..

    b. Total contribution to percent cover by non-native wetland species and species not listed in 62-340.450, F.A.C. shall be maintained below 5%.

    c. The Department's State Lands and Environmental Resource Program staff has inspected the seagrass creation areas and determined that the project meets the above success criteria.

29. The responsibility to assess if the creation areas are meeting the permit-specified success criteria shall not fall solely on the Department. In the event the permittee becomes aware the project is not meeting the success criteria (based on either site observations or review of

monitoring reports), the permittee, no later than six months before the permit construction phase expiration date, shall submit an alternative habitat creation plan to the Department for review and approval.

30. The permittee shall implement the alternative plan no later than 60 days after receiving Department approval.

31. Failure of the Department to notify the permittee of project failure does not prevent the Department from requiring the permittee to meet the success criteria as defined in specific condition No. 28.

GENERAL CONDITIONS FOR INDIVIDUAL PERMITS

The following general conditions are binding on all individual permits issued under chapter 62-330, F.A.C., except where the conditions are not applicable to the authorized activity, or where the conditions must be modified to accommodate project-specific conditions.

1. All activities shall be implemented following the plans, specifications and performance criteria approved by this permit. Any deviations must be authorized in a permit modification in accordance with Rule 62-330.315, F.A.C. Any deviations that are not so authorized may subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S.

2. A complete copy of this permit shall be kept at the work site of the permitted activity during the construction phase, and shall be available for review at the work site upon request by the Agency staff. The permittee shall require the contractor to review the complete permit prior to beginning construction.

3. Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be installed immediately prior to, and be maintained during and after construction as needed, to prevent adverse impacts to the water resources and adjacent lands. Such practices shall be in accordance with the *State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation June 2007)*, and the *Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008)*, which are both incorporated by reference in subparagraph 62-330.050(9)(b)5., F.A.C., unless a project-specific erosion and sediment control plan is approved or other water quality control measures are required as part of the permit.

4. At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the Agency a fully executed Form 62-330.350(1), "Construction Commencement Notice," [October 1, 2013], which is incorporated by reference in paragraph 62-330.350(1)(d), F.A.C., indicating the expected start and completion dates. A copy of this form may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C. If available, an Agency website that fulfills this notification requirement may be used in lieu of the form.

5. Unless the permit is transferred under Rule 62-330.340, F.A.C., or transferred to an operating entity under Rule 62-330.310, F.A.C., the permittee is liable to comply with the plans, terms and conditions of the permit for the life of the project or activity.

6. Within 30 days after completing construction of the entire project, or any independent portion of the project, the permittee shall provide the following to the Agency, as applicable:
   a. For an individual, private single-family residential dwelling unit, duplex, triplex, or quadruplex – "Construction Completion and Inspection Certification for Activities Associated With a Private Single-Family Dwelling Unit" [Form 62-330.310(3)]; or
   b. For all other activities – "As-Built Certification and Request for Conversion to Operational Phase" [Form 62-330.310(1)].
   c. If available, an Agency website that fulfills this certification requirement may be used in lieu of the form.

7. If the final operation and maintenance entity is a third party:
   a. Prior to sales of any lot or unit served by the activity and within one year of permit issuance, or within 30 days of as- built certification, whichever comes first, the permittee shall submit, as applicable, a copy of the operation and maintenance documents (see sections 12.3 thru 12.3.3 of Volume I) as filed with the Department of State, Division of Corporations and a copy of any easement, plat, or deed restriction needed to operate or maintain the project, as recorded with the Clerk of the Court in the County in which the activity is located.
   b. Within 30 days of submittal of the as- built certification, the permittee shall submit "Request for Transfer of Environmental Resource Permit to the Perpetual Operation Entity" [Form 62-330.310(2)] to transfer the permit to the operation and maintenance entity, along with the documentation requested in the form. If available, an Agency website that fulfills this transfer requirement may be used in lieu of the form.

8. The permittee shall notify the Agency in writing of changes required by any other regulatory agency that require changes to the permitted activity, and any required modification of this permit must be obtained prior to implementing the changes.

9. This permit does not:
   a. Convey to the permittee any property rights or privileges, or any other rights or privileges other than those specified herein or in Chapter 62-330, F.A.C.;
   b. Convey to the permittee or create in the permittee any interest in real property;
   c. Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or
   d. Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.

10. Prior to conducting any activities on state-owned submerged lands or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund, the permittee must receive all necessary approvals and authorizations under Chapters 253 and 258, F.S. Written authorization that requires formal execution by the Board of Trustees of the Internal Improvement Trust Fund shall not be considered received until it has been fully executed.

11. The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities that may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any project authorized by the permit.

12. The permittee shall notify the Agency in writing:

a. Immediately if any previously submitted information is discovered to be inaccurate; and
b. Within 30 days of any conveyance or division of ownership or control of the property or the system, other than conveyance via a long-term lease, and the new owner shall request transfer of the permit in accordance with Rule 62-330.340, F.A.C. This does not apply to the sale of lots or units in residential or commercial subdivisions or condominiums where the stormwater management system has been completed and converted to the operation phase.

13. Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.

14. If prehistoric or historic artifacts, such as pottery or ceramics, projectile points, stone tools, dugout canoes, metal implements, historic building materials, or any other physical remains that could be associated with Native American, early European, or American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the vicinity of the discovery. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance Review Section (DHR), at (850)245-6333, as well as the appropriate permitting agency office. Project activities shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and the proper authorities notified in accordance with section 872.05, F.S. For project activities subject to prior consultation with the DHR and as an alternative to the above requirements, the permittee may follow procedures for unanticipated discoveries as set forth within a cultural resources assessment survey determined complete and sufficient by DHR and included as a specific permit condition herein.

15. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under Rule 62-330.201, F.A.C., provides otherwise.

16. The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris. Removed materials shall be disposed of in a landfill or other uplands in a manner that does not require a permit under Chapter 62-330, F.A.C., or cause violations of state water quality standards.

17. This permit is issued based on the applicant’s submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the Agency will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.

18. A Recorded Notice of Environmental Resource Permit may be recorded in the county public records in accordance with subsection 62-330.090(7), F.A.C. Such notice is not an encumbrance upon the property.

SPECIAL CONSENT CONDITIONS

1. The applicant agrees to indemnify, defend and hold harmless the Board of Trustees and the State of Florida from all claims, actions, lawsuits and demands in any form arising out of the authorization to use sovereignty submerged lands or the applicant's use and construction of structures on sovereignty submerged lands. This duty to indemnify and hold harmless will include any and all liabilities that are associated with the structure or activity including special assessments or taxes that are now or in the future assessed against the structure or activity during the period of the authorization.

2. Failure by the Board of Trustees to enforce any violation of a provision of the authorization or waiver by the Board of Trustees of any provision of the authorization will not invalidate the provision not enforced or waived, nor will the failure to enforce or a waiver prevent the Board of Trustees from enforcing the unenforced or waived provision in the event of a violation of that provision.

3. Applicant binds itself and its successors and assigns to abide by the provisions and conditions set forth in the authorization. If the applicant or its successors or assigns fails or refuses to comply with the provisions and conditions of the authorization, the authorization may be terminated by the Board of Trustees after written notice to the applicant or its successors or assigns. Upon receipt of such notice, the applicant or its successors or assigns will have thirty (30) days in which to correct the violations. Failure to correct the violations within this period will result in the automatic revocation of this authorization.

4. All costs incurred by the Board of Trustees in enforcing the terms and conditions of the authorization will be paid by the applicant. Any notice required by law will be made by certified mail at the address shown on page one of the authorization. The applicant will notify the Board of Trustees in writing of any change of address at least ten days before the change becomes effective.

5. This authorization does not allow any activity prohibited in a conservation easement or restrictive covenant that prohibits the activity.

GENERAL CONDITIONS FOR SOVEREIGNTY SUBMERGED LANDS AUTHORIZATION

Any use of sovereignty submerged lands is subject to the following general conditions are binding upon the applicant and are enforceable under Chapter 253, F.S.

1. Sovereignty submerged lands may be used only for the specified activity or use. Any unauthorized deviation from the specified activity or use and the conditions for undertaking that activity or use will constitute a violation. Violation of the authorization will result in suspension or revocation of the applicant's use of the sovereignty submerged lands unless cured to the satisfaction of the Board of Trustees.

2. Authorization under Rule 18-21.005, F.A.C., conveys no title to sovereignty submerged lands or water column, nor does it constitute recognition or acknowledgment of any other person's title to such land or water.

3. Authorizations under Rule 18-21.005, F.A.C., may be modified, suspended or revoked in accordance with its terms or the remedies provided in Sections 253.04, F.S. and Chapter 18-14, F.A.C.

4. Structures or activities will be constructed and used to avoid or minimize adverse impacts to resources.

5. Construction, use, or operation of the structure or activity will not adversely affect any species which is endangered, threatened or of special concern, as listed in Rules 68A-27.003, 68A-27.004, and 68A-27.005, F.A.C.

6. Structures or activities will not unreasonably interfere with riparian rights. When a court of competent jurisdiction determines that riparian rights have been unlawfully affected, the structure or activity will be modified in accordance with the court's decision.

7. Structures or activities will not create a navigational hazard.

8. Structures will be maintained in a functional condition and will be repaired or removed if they become dilapidated to such an extent that they are no longer functional.

9. Structures or activities will be constructed, operated, and maintained solely for water dependent purposes.

10. The applicant agrees to indemnify, defend and hold harmless the Board of Trustees and the State of Florida from all claims, actions, lawsuits and demands in any form arising out of the authorization to use sovereignty submerged lands or the applicant's use and construction of structures on sovereignty submerged lands. This duty to indemnify and hold harmless will include any and all liabilities that are associated with the structure or activity including special assessments or taxes that are now or in the future assessed against the structure or activity during the period of the authorization.

11. Failure by the Board of Trustees to enforce any violation of a provision of the authorization or waiver by the Board of Trustees of any provision of the authorization will not invalidate the provision not enforced or waived, nor will the failure to enforce or a waiver prevent the Board of Trustees from enforcing the unenforced or waived provision in the event of a violation of that provision.

12. Applicant binds itself and its successors and assigns to abide by the provisions and conditions set forth in the authorization. If the applicant or its successors or assigns fails or refuses to comply with the provisions and conditions of the authorization, the authorization may be terminated by the Board of Trustees after written notice to the applicant or its successors or assigns. Upon receipt of such notice, the applicant or its successors or assigns will have thirty (30) days in which to correct the violations. Failure to correct the violations within this period will result in the automatic revocation of this authorization.

13. All costs incurred by the Board of Trustees in enforcing the terms and conditions of the authorization will be paid by the applicant. Any notice required by law will be made by certified mail at the address shown on page one of the authorization. The applicant will notify the Board of Trustees in writing of any change of address at least ten days before the change becomes effective.

14. This authorization does not allow any activity prohibited in a conservation easement or restrictive covenant that prohibits the activity.

NOTICE OF RIGHTS

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because the administrative hearing process is designed to formulate final agency action, the hearing process may result in a modification of the agency action or even denial of the application.

Petition for Administrative Hearing

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. Pursuant to Rule 28-106.201, F.A.C., a petition for an administrative hearing must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;
(b) The name, address, any email address, any facsimile number, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;
(c) A statement of when and how the petitioner received notice of the agency decision;
(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
(e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;
(f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and
(g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

The petition must be filed (received by the Clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000. Also, a copy of the petition shall be mailed to the applicant at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with Rule 62-110.106(3), F.A.C., petitions for an administrative hearing by the applicant must be filed within 14 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of the notice or within 14 days of receipt of the written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who has asked the Department for notice of agency action may file a petition within 14 days of receipt of such notice,

regardless of the date of publication. The failure to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

Extension of Time

Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Mediation

Mediation is not available in this proceeding.

FLAWAC Review

The applicant, or any party within the meaning of Section 373.114(1)(a) or 373.4275, F.S., may also seek appellate review of this order before the Land and Water Adjudicatory Commission under Section 373.114(1) or 373.4275, F.S. Requests for review before the Land and Water Adjudicatory Commission must be filed with the Secretary of the Commission and served on the Department within 20 days from the date when this order is filed with the Clerk of the Department.

Judicial Review

Once this decision becomes final, any party to this action has the right to seek judicial review pursuant to Section 120.68, F.S., by filing a Notice of Appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, M.S. 35, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this action is filed with the Clerk of the Department.

Executed in Hillsborough County, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Pamala Vazquez
Program Administrator
Permitting/Waste Cleanup Program
FDEP Southwest District

Attachments:
Project Drawings and Design Specs., 21 pages
Construction Commencement Notice/Form 62-330.350(1)

Permit Expiration: September 18, 2025

As-built Certification and Request for Conversion to Operational Phase/ Form 62-330.310(1)
Request for Transfer to the Perpetual Operation Entity/Form 62-330.310(2)
Request to Transfer Permit/Form 62-330.340(1)

Copies furnished to:
DEP Southwest District; sw_erp@floridadep.gov
U.S. Army Corps of Engineers; tampareg@usace.army.mil
FWC, Imperiled Species Management Section; FWCConservationplanningservices@myfwc.com
Jenna Phillips, Taylor Engineering; dstites@taylorengineering.com
Chris Ellis, Taylor Engineering; cellis@taylorengineering.com
Portia Sapp, DACS; Portia.Sapp@FreshFromFlorida.com
DEP South District, SouthDistrict@dep.state.fl.us

CERTIFICATE OF SERVICE

The undersigned hereby certifies that this permit and authorization to use sovereignty submerged lands, including all copies, were mailed before the close of business on **September 18, 2020,** to the above listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, under 120.52(7) of the
Florida Statutes, with the designated Department Clerk,
receipt of which is hereby acknowledged.

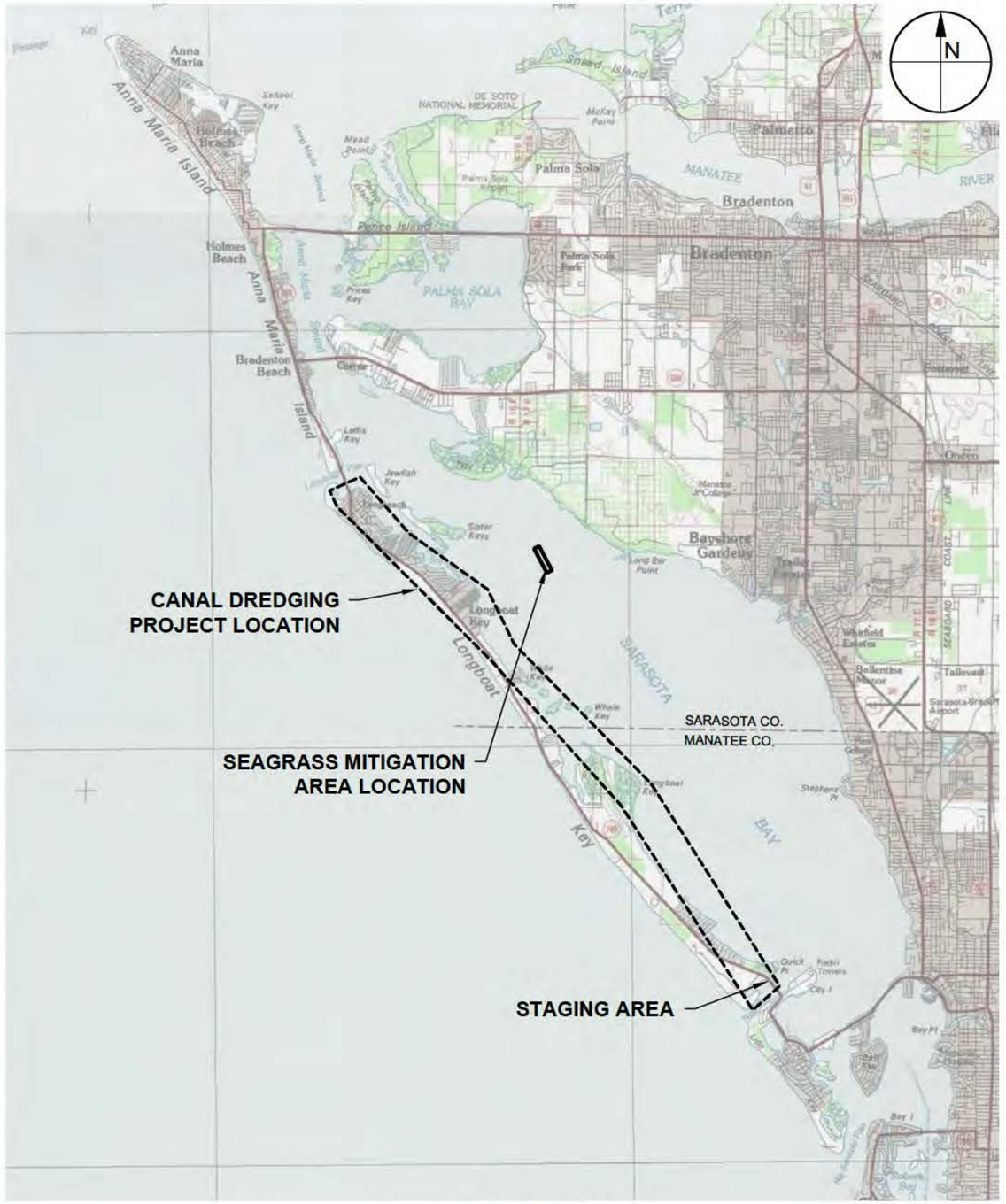
Emily Comaty
Clerk

09/18/2020
Date

LONGBOAT KEY CANAL MAINTENANCE DREDGING

MANATEE & SARASOTA COUNTIES, FLORIDA

DRAWING INDEX



VICNITY MAP

1" = 2 MILES

PROJECT	C2016-006
DRAWN BY	AF
SHEET	1 of 21
DATE	SEPT 2019

SEAL

YESHYA S. SOOKHU P.E.#87400

DATE

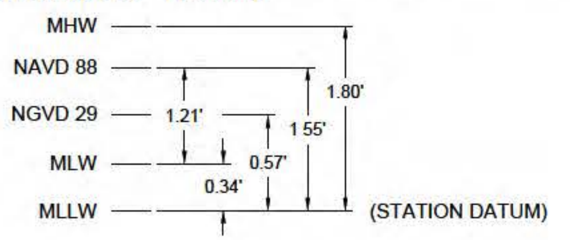
FIGURE C-1
TITLE SHEET
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
REGISTRY # 4815

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

GENERAL NOTES:
1. ELEVATIONS REFERENCE MEAN LOW WATER (MLW) ON ALL SHEETS EXCEPT FOR SHEET C-20 "MITIGATION PLAN AND CROSS-SECTIONS", WHICH REFERENCES NAVD88
2. SURVEY BY HYATT SURVEY INC, AUGUST 2017
3. ALL DREDGE CUTS PROPOSED IN ACCORDANCE WITH REQUIRED DREDGE SUMMARY TABLE SHOWN ON SHEET C-3
4. CONTRACTOR STAGING AREA LOCATED AT OVERLOOK PARK ADJACENT TO THE NEW PASS BRIDGE ABUTMENT IN SOUTH LONGBOAT KEY
5. STAGING AREA MAY BE USED TO STOCKPILE MATERIALS AND EQUIPMENT
6. CHANNEL BOTTOM CUT WITH VARIES
7. CONTRACTOR SHALL PERFORM SPOT DREDGING ONLY AS IDENTIFIED BY CROSS-HATCHED AREAS

TIDAL DATUM REFERENCE (NOAA CORTEZ STATION 8726217):
NOTE: 0 NAVD-88 = +1.21 MLW



SAV IMPACT SUMMARY TABLE

CANAL	IMPACT AREA (SQ. FT.)	IMPACT AREA (ACRES)
1	1654	0.04
18	360	0.01
21A	9341	0.21
21P	23744	0.55
22A	18068	0.41
55	2763	0.06
55A	3945	0.09
TOTAL	59875	1.37

FIGURE C-2
PROJECT OVERVIEW
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT C2016-006
DRAWN BY AF
SHEET 2 of 21
DATE SEPT 2019

SEAL
YEHYA S. SIDDIQUI P.E.#87400
DATE

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
REGISTRY # 4815

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

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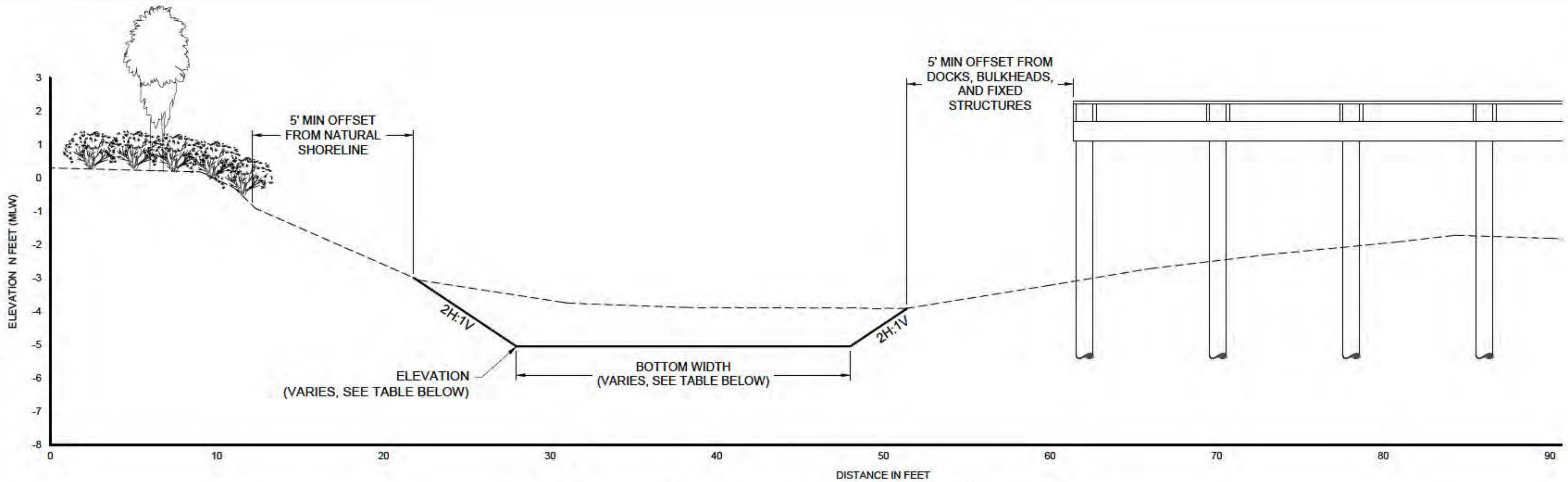

TYPICAL CANAL DREDGING SECTION

NOT TO SCALE

PROPOSED CANAL DREDGING SUMMARY TABLE

CANAL	SEGMENT	STATION START	STATION END	BOTTOM WIDTH	ELEVATION (MLW)	CUT VOLUME (CY)	SEE SHEET
CANAL 01	1	9+14	11+29	20	-4	9	C-8
	2	11+98	13+79	20	-4	24	C-8
	3	14+68	18+08	20	-4	260	C-8
	4	18+74	19+43	20	-4	48	C-8
CANAL 02	1	0+00	3+94	30	-5	1000	C-9
	2	3+94	6+19	3	-5	99	C-9
CANAL 02B	1	0+48	1+75	15	-5	117	C-9
CANAL 03	1	0+00	7+27	2	-4	254	C-10
CANAL 06	1	0+00	4+06	4	-4	92	C-11
	2	4+06	8+96	10	-4	126	C-11
CANAL 18	1	0+00	3+03	0	-3	44	C-12
	2	3+03	18+55	4	-3	218	C-12
CANAL 20P	1	1+61	2+21	15	-5	61	C-13
	2	2+21	3+51	0	-3	37	C-13
	3	3+51	4+44	15	-5	102	C-13
CANAL 21A	1	0+46	2+94	20	-5	363	C-13
	2	6+95	8+94	20	-5	301	C-13
CANAL 21P	1	1+07	9+44	10	-5	1529	C-14
	2	10+64	13+28	10	-5	293	C-14
	3	16+16	16+70	10	-5	42	C-14
	4	16+70	17+44	0	-5	42	C-14
	5	17+44	18+72	10	-5	207	C-14
CANAL 22A	1	1+39	13+81	15	-5	1819	C-15
CANAL 32P	1	45+15	51+56	20	-5	1000	C-16
	2	64+54	67+52	20	-5	453	C-16
CANAL 49	1	0+00	0+95	15	-5	88	C-16
CANAL 55	1	20+30	22+29	15	-5	218	C-17
CANAL 55A	1	1+27	5+80	2	-5	207	C-17
TOTAL						9051	

PROJECT C2016-006
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SHEET 3 of 21
DATE SEPT 2019
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DATE

FIGURE C-3
TYPICAL SECTION AND REQUIRED DREDGING TABLE
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

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TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

FIGURE C-4
CANAL OVERVIEW
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
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SHEET	4 of 21
DATE	SEPT 2019

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FIGURE C-5
CANAL OVERVIEW
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
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SHEET	5 of 21
DATE	SEPT 2019

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SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

FIGURE C-6
CANAL OVERVIEW
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	6 of 21
DATE	SEPT 2019

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SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

FIGURE C-7
CANAL OVERVIEW
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
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SHEET	7 of 21
DATE	SEPT 2019

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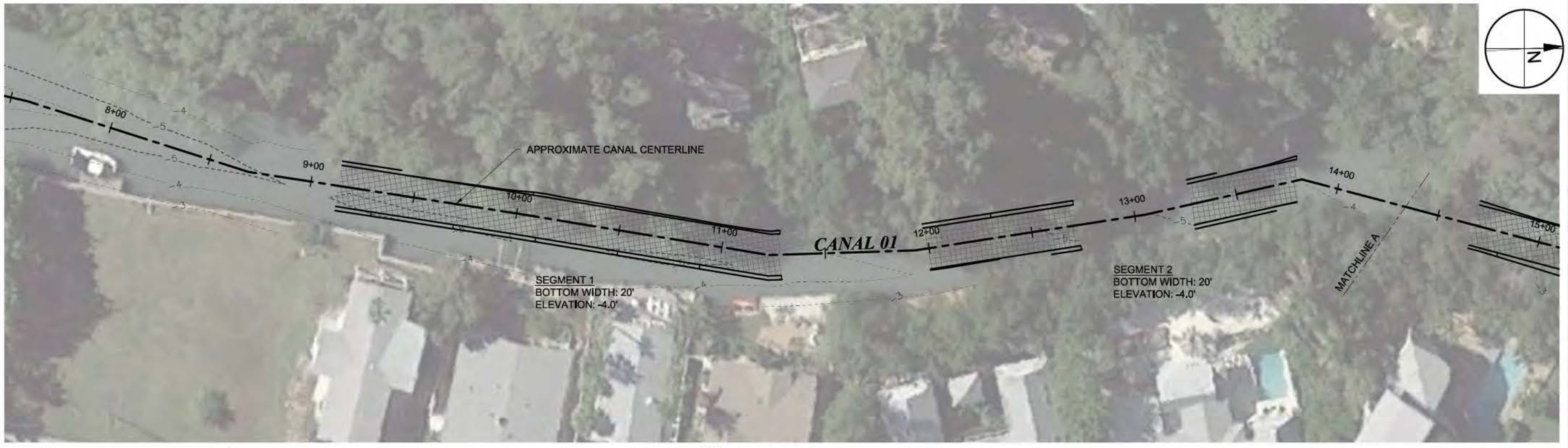

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

P02 C-4 CANAL 01
SCALE: 1" = 50' 0 50'

FIGURE C-8
CANAL 1 DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
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SHEET	8 of 21
DATE	SEPT 2019

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1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

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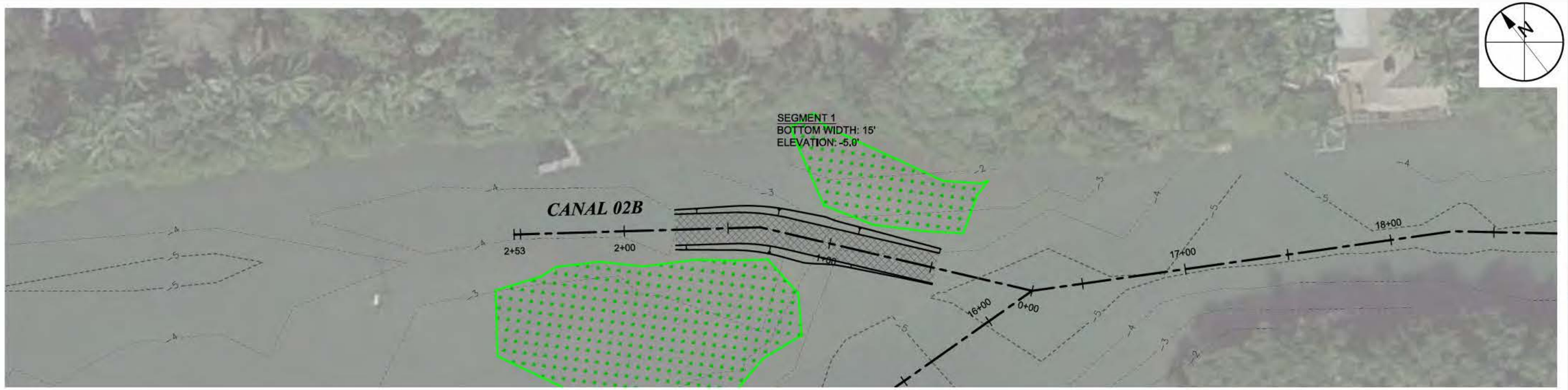
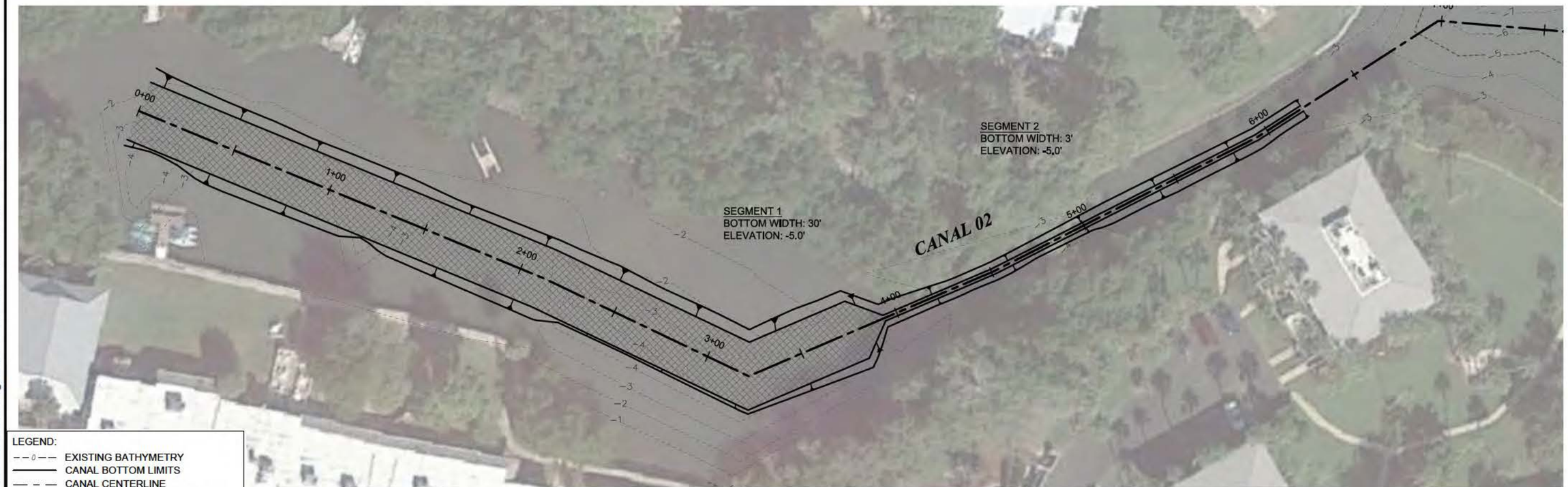


P04 / C-4 CANAL 02B
SCALE: 1" = 50' 0 50'



P03 / C-4 CANAL 02
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-9
CANAL 2 & 2B DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	9 of 21
DATE	SEPT 2019

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P05 / C-4 CANAL 03
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-10
CANAL 3 DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	10 of 21
DATE	SEPT 2019

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CERTIFICATE OF AUTHORIZATION # 4815

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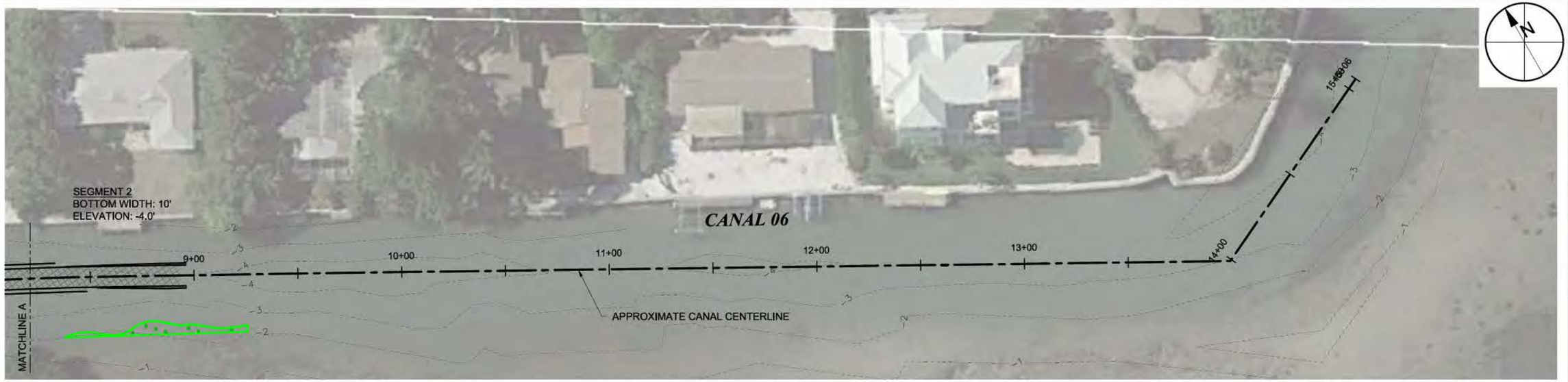

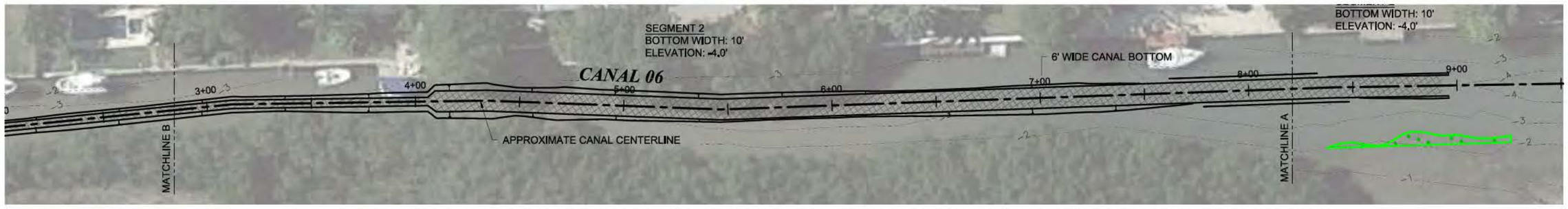

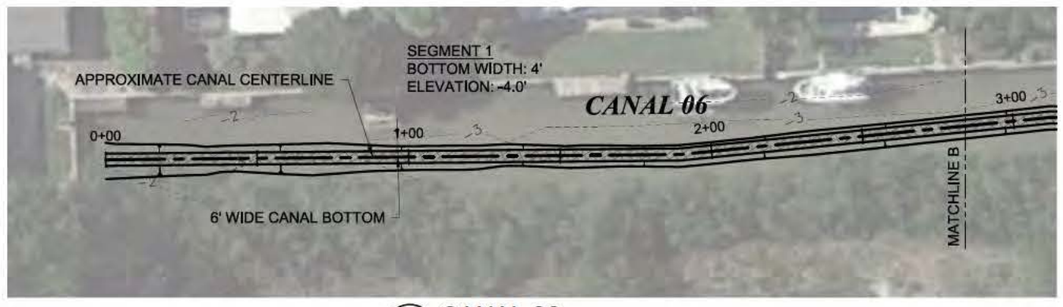

P06 / C-4 CANAL 06
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-11
CANAL 6 DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	11 of 21
DATE	SEPT 2019

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YEHYA S. SOOKUP P.E.#67400
DATE

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1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

P07 / C-5 CANAL 18
SCALE: 1" = 50' 0 50'

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FIGURE C-12
CANAL 18 DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	12 of 21
DATE	SEPT 2019

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CERTIFICATE OF AUTHORIZATION # 4815

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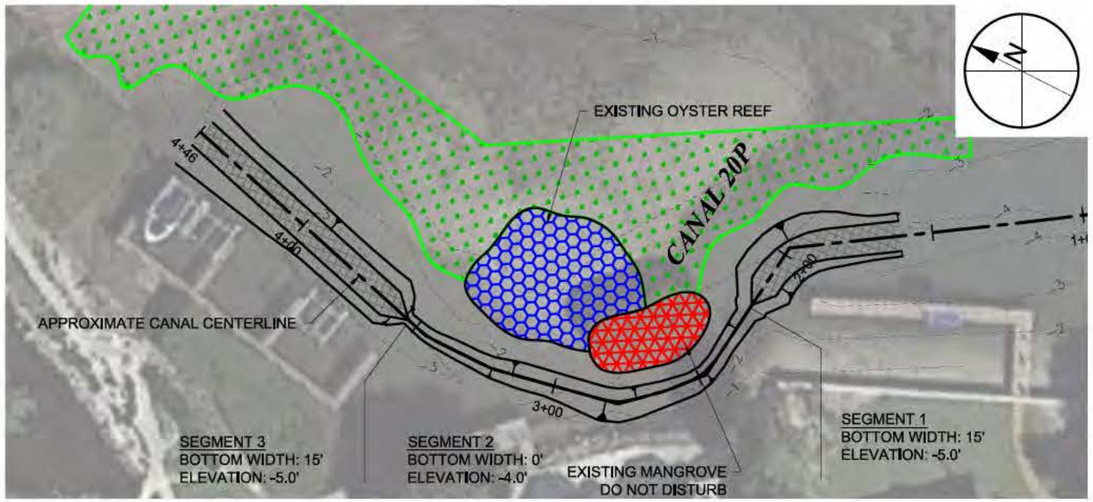
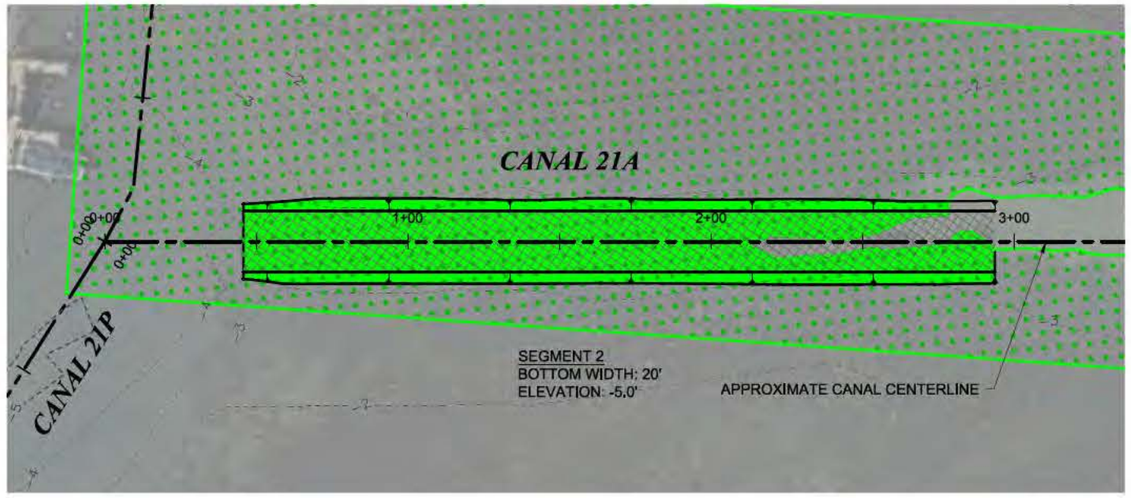
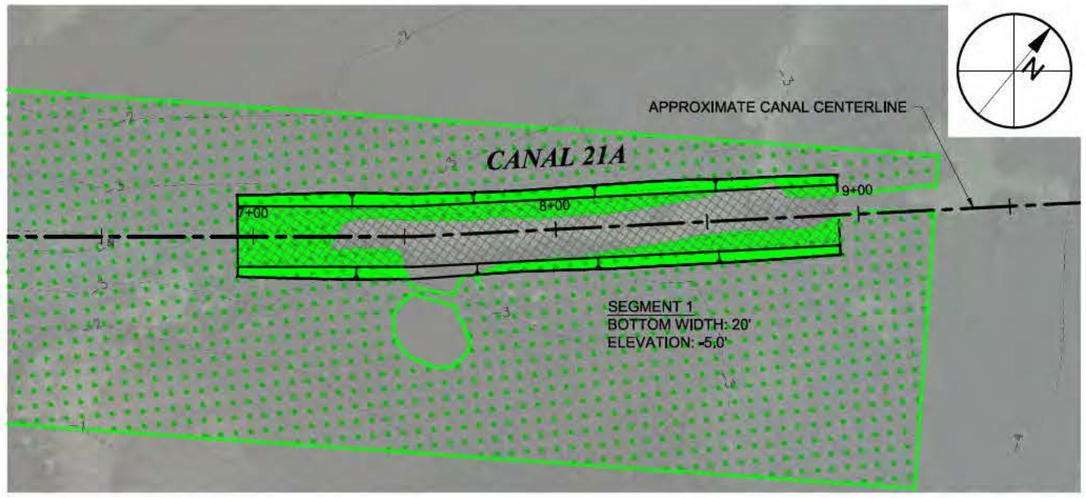


P08 C-5 CANAL 20P
SCALE: 1" = 50' 0 50'





P09 C-5 CANAL 21A
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-13
CANAL 20P & 21A DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

PROJECT	C2016-006	SEAL	
DRAWN BY	AF		
SHEET	13 of 21		
DATE	SEPT 2019	YEHYA S. SIDDIQUI P.E.#57400	DATE

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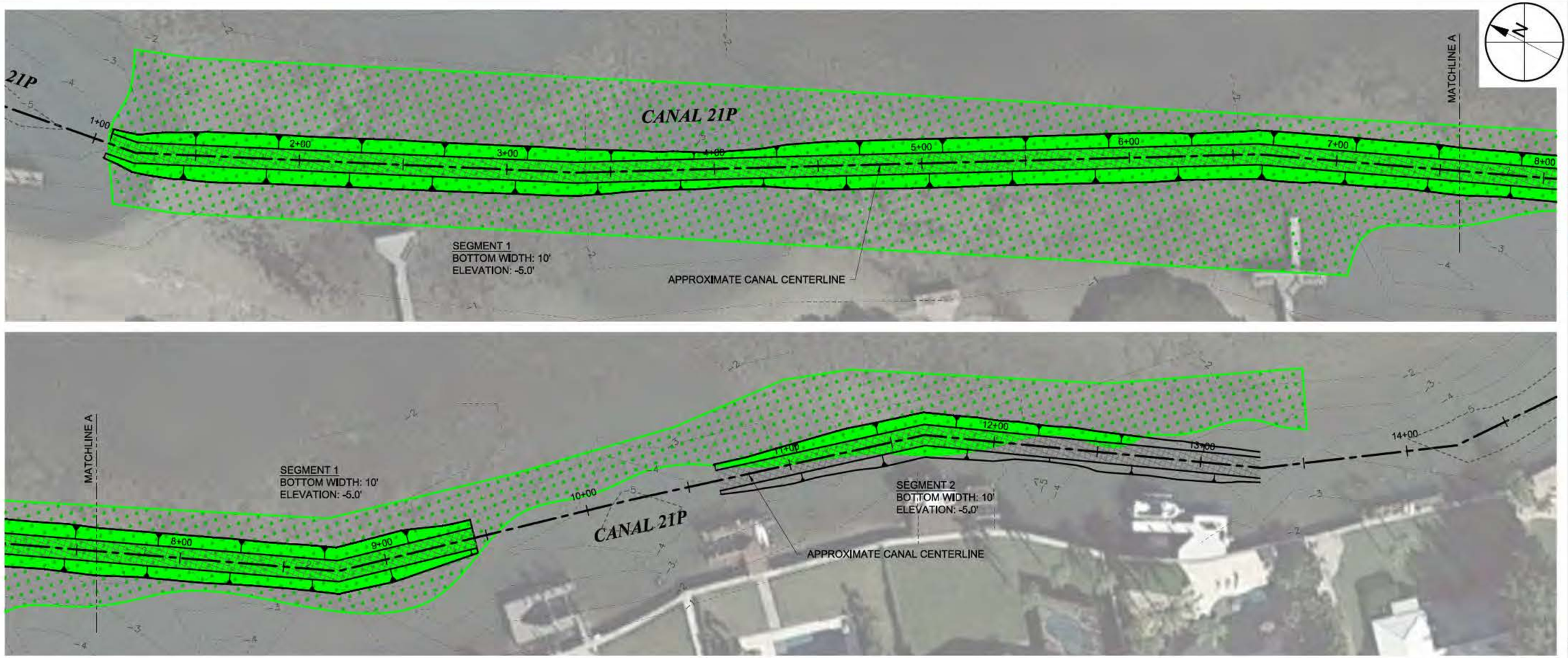

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

P10 / C-5 CANAL 21P
SCALE: 1" = 50' 0 50'

FIGURE C-14
CANAL 21P DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	14 of 21
DATE	SEPT 2019

SEAL
YEHYA S. SOOKUP P.E.#87400
DATE

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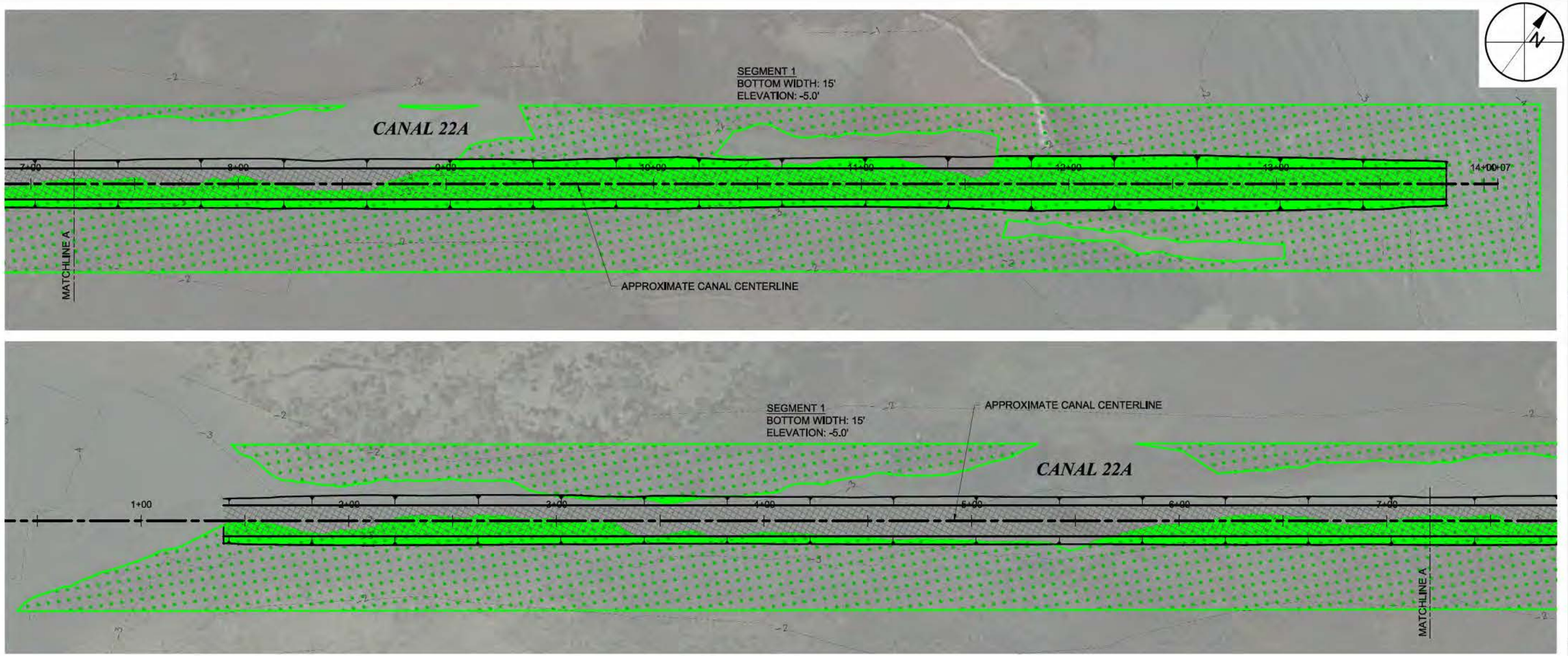
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815



P11 / C-5 CANAL 22A
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-15
CANAL 22A DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	15 of 21
DATE	SEPT 2019

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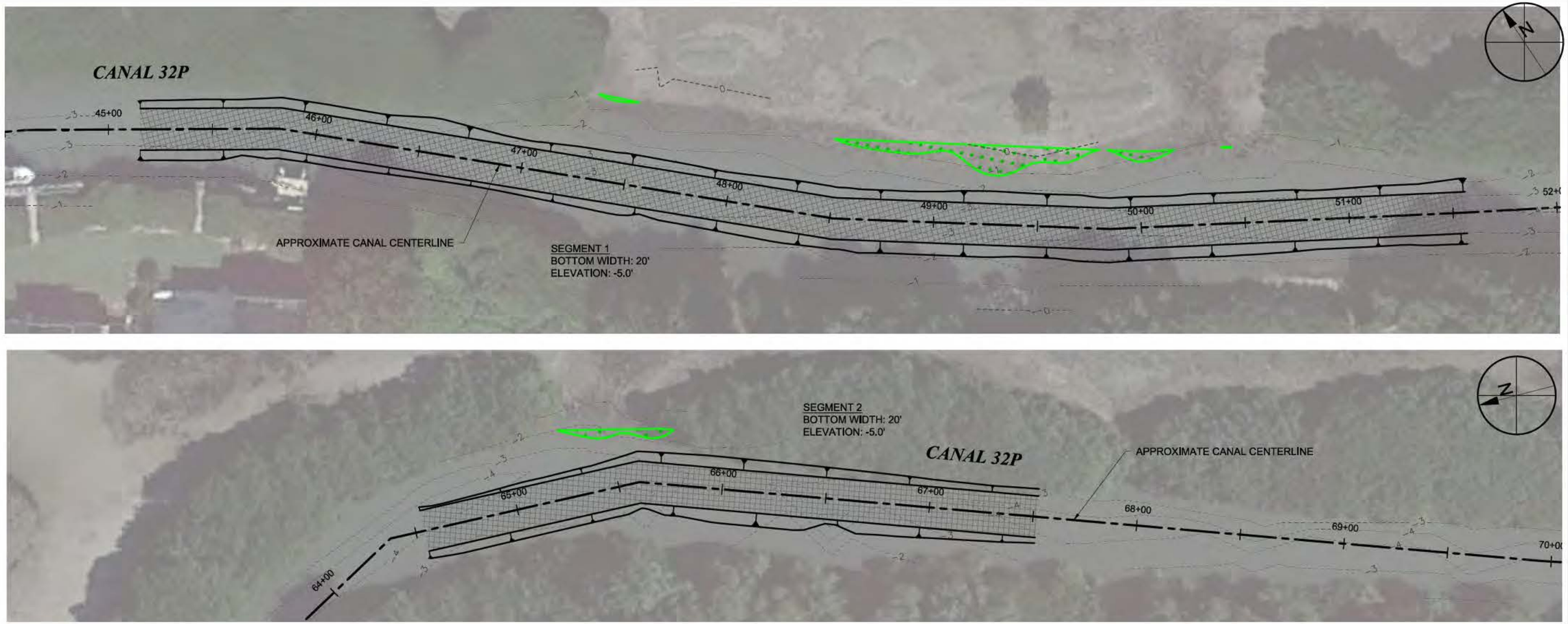
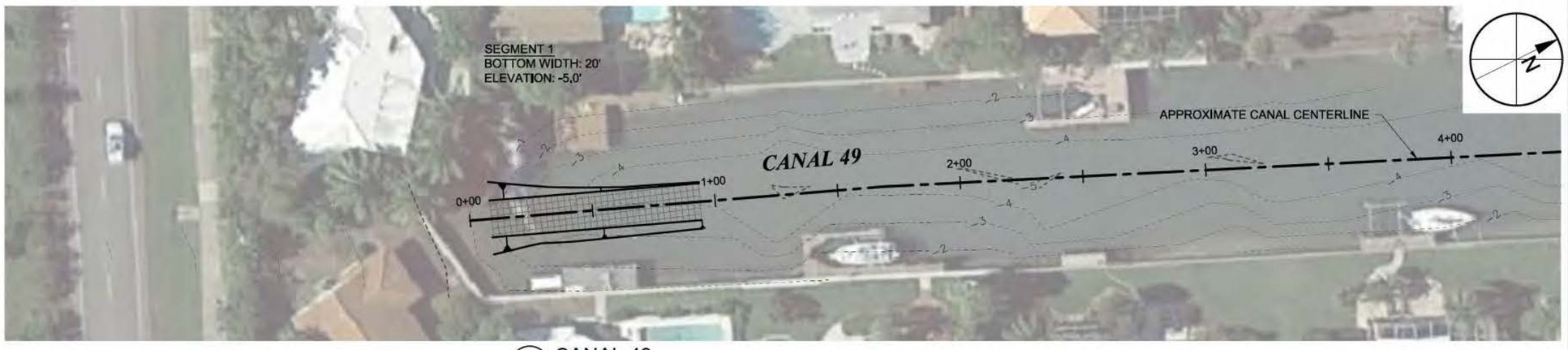
YEHYA S. SIDDIQUI P.E.#67400 DATE

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815



P12 C-6 CANAL 32P
SCALE: 1" = 50' 0 50'



P13 C-7 CANAL 49
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-16
CANAL 32P AND 49 DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	16 of 21
DATE	SEPT 2019

SEAL

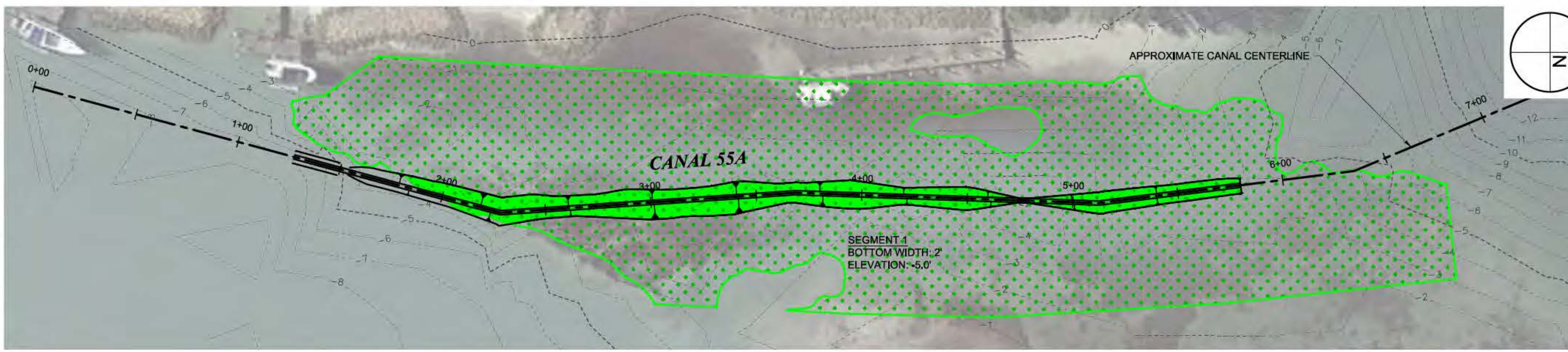
YEHYA S. SODIQUI P.E.#67400 DATE

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

ANTON FLEWELLING X:\SYS\PROJECTS\C2016-006_LONGBOATKEY\PERMITS\C2016-006-P-CANALPLANS.DWG 11/14/2019 9:31:09 AM

P14 / C-7 CANAL 55
SCALE: 1" = 50' 0 50'



P15 / C-7 CANAL 55A
SCALE: 1" = 50' 0 50'

LEGEND:
- EXISTING BATHYMETRY
- CANAL BOTTOM LIMITS
- CANAL CENTERLINE
- APPROXIMATE DREDGING LIMITS
- SAV LIMIT
- SAV IMPACTS
- 2H:1V SIDE SLOPES

AERIAL: GOOGLE EARTH, 2017

FIGURE C-17
CANAL 55 & 55A DREDGING PLAN
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

PROJECT	C2016-006
DRAWN BY	AF
SHEET	17 of 21
DATE	SEPT 2019

SEAL
YEHYA S. SIDDIQUI P.E. #87400
DATE

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

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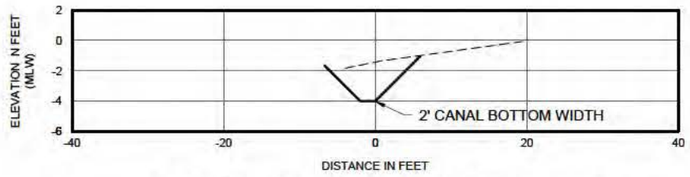
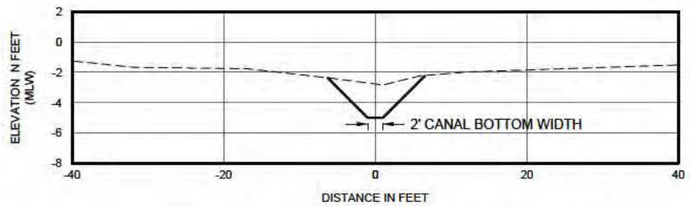
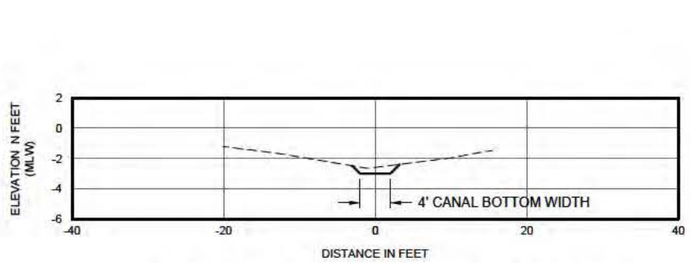


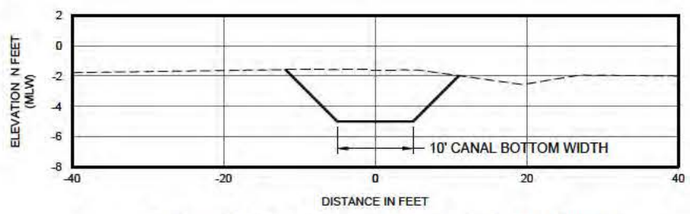
TYPICAL 0-FT CANAL BOTTOM WIDTH
CANAL 03 STA:2+00



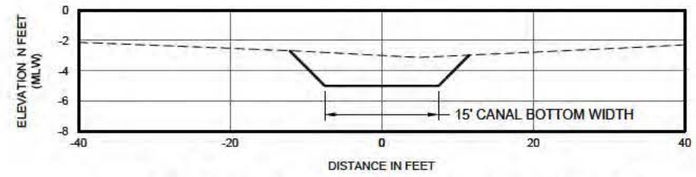
TYPICAL 2-FT CANAL BOTTOM WIDTH
CANAL 55A STA:4+00



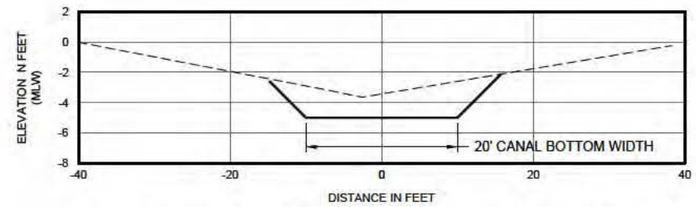
TYPICAL 4-FT CANAL BOTTOM WIDTH
CANAL 18 STA:15+00



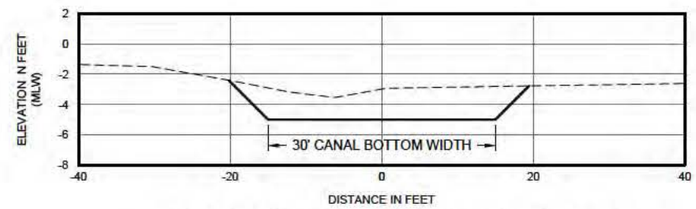
TYPICAL 10-FT CANAL BOTTOM WIDTH
CANAL 21P STA:7+00



TYPICAL 15-FT CANAL BOTTOM WIDTH
CANAL 22A STA:8+00



TYPICAL 20-FT CANAL BOTTOM WIDTH
CANAL 32P STA:49+00



TYPICAL 30-FT CANAL BOTTOM WIDTH
CANAL 2 STA:1+00

LEGEND:
- - - - - EXISTING GRADE
——— PROPOSED GRADE
NOTE: ALL SIDE SLOPES 2H:1V

0 20' 40'
SCALE: 1" = 20'
VERTICAL EXAGGERATION: 2X

FIGURE C-18
TYPICAL CROSS-SECTIONS
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	18 of 21
DATE	SEPT 2019

SEAL
YEHYA S. SOOKLALL P.E.#67400
DATE

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SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

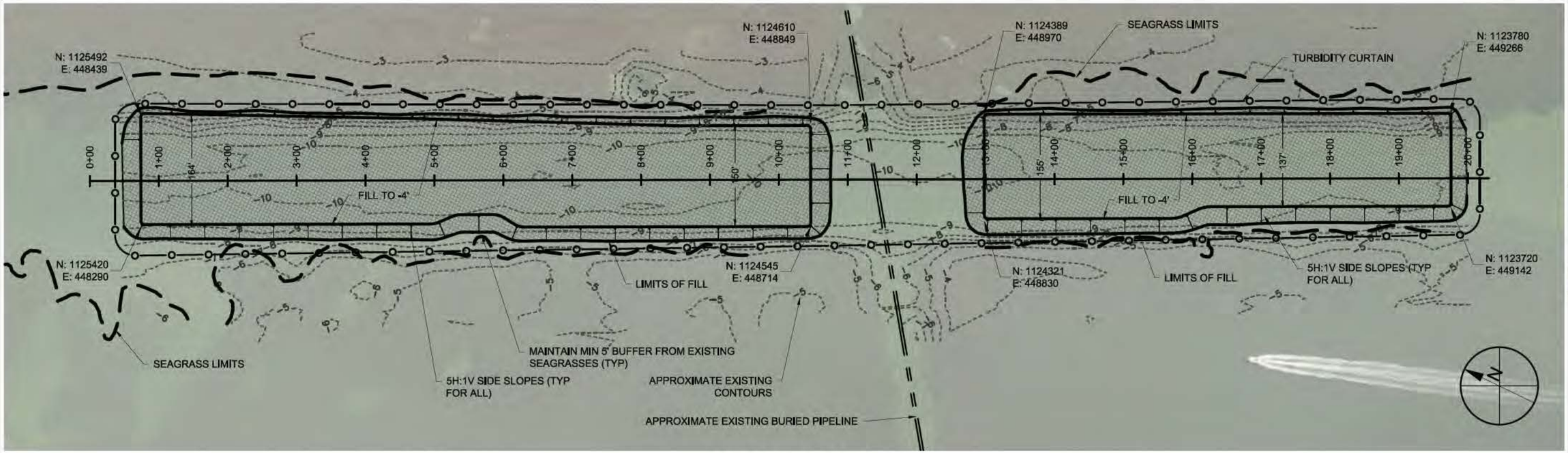
TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

FIGURE C-19
DREDGED MATERIAL AND EQUIPMENT STAGING AREA
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006
DRAWN BY	AF
SHEET	19 of 21
DATE	SEPT 2019

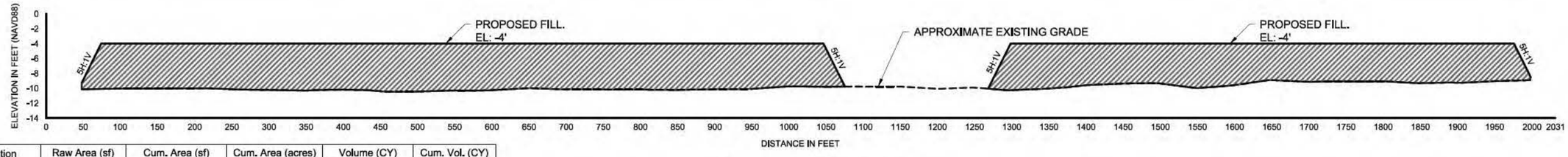
SEAL

YEHYA S. SIDDIQUI P.E.#67400 DATE



MITIGATION PLAN VIEW

SCALE: 1" = 150' 0 150'



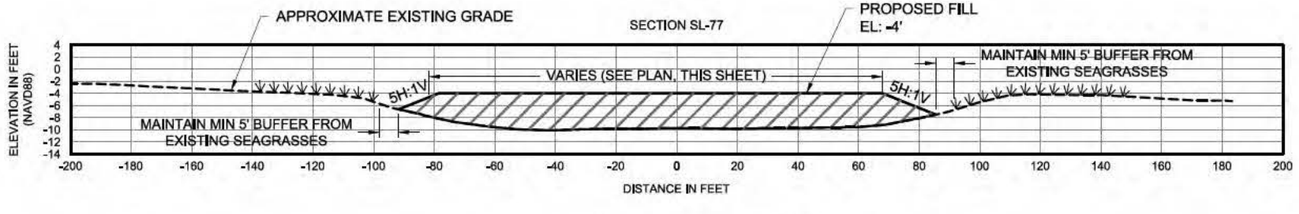
Station	Raw Area (sf)	Cum. Area (sf)	Cum. Area (acres)	Volume (CY)	Cum. Vol. (CY)
0-100	9283	9283	0.21	1729	1729
100-200	18595	27877	0.64	3428	5158
200-300	18575	46453	1.07	3419	8577
300-400	18327	64780	1.49	3463	12040
400-500	18180	82960	1.90	3547	15587
500-600	17999	100959	2.32	3481	19068
600-700	18121	119080	2.73	3421	22489
700-800	17963	137044	3.15	3508	25997
800-900	17872	154916	3.56	3542	29539
900-1000	17796	172712	3.96	3456	32995
1000-1100	12836	185548	4.26	1679	34674
1100-1200	0	185548	4.26	0	34674
1200-1300	4798	190346	4.37	1667	36341
1300-1400	18150	208496	4.79	3232	39573
1400-1500	17969	226466	5.20	3045	42618
1500-1600	17802	244268	5.61	2918	45536
1600-1700	17040	261308	6.00	2760	48296
1700-1800	16587	277896	6.38	2641	50937
1800-1900	16508	294404	6.76	2621	53558
1900-2000	15727	310131	7.12	1301	54860

MITIGATION PLAN AREA AND VOLUME TABLE

MITIGATION PROFILE

SCALE: 1" = 150' 0 150'
VERTICAL EXAGGERATION: 10X

NOTES
1. BATHYMETRIC SURVEY DATA SHOWN ON THIS SHEET REFERENCE TO NAVD-88
2. TOTAL SEAGRASS RESTORATION AREA IS 7.12 ACRES, OF WHICH ONLY 2.74 ACRES TO BE RESTORED FOR THIS PROJECT



TYPICAL MITIGATION SECTION

SCALE: 1" = 50' 0 50'
VERTICAL EXAGGERATION: 2X

FIGURE C-20
MITIGATION PLAN AND CROSS-SECTIONS
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006	SEAL
DRAWN BY	AF	
SHEET	20 of 21	
DATE	SEPT 2019	

YEHYA S. SIDDIQUI P.E.#67400 DATE

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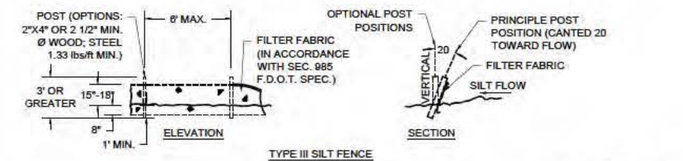
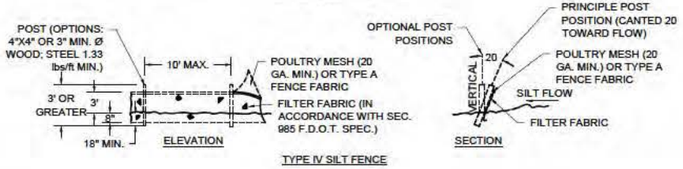
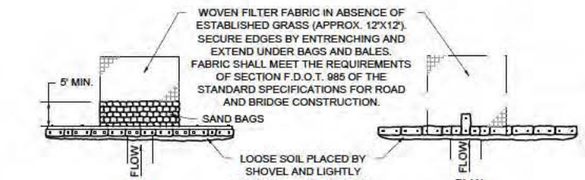
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815



TYPE III SILT FENCE



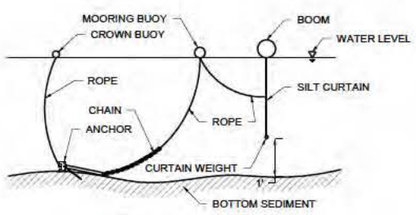
TYPE IV SILT FENCE



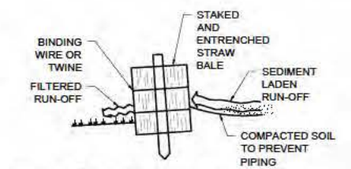
APPLICATION AND SPACING OF TYPES I & TYPES II HAY BALE BARRIERS SALL BE IN ACCORDANCE WITH SHEET 1 OF 3, F.D.O.T. INDEX NO. 102

TYPE II TYPE I

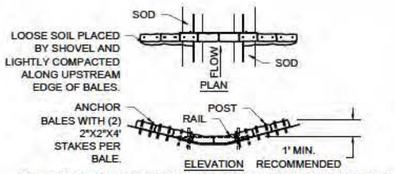
TYPICAL STRAW BALE DETAIL



TURBIDITY CURTAIN DETAIL

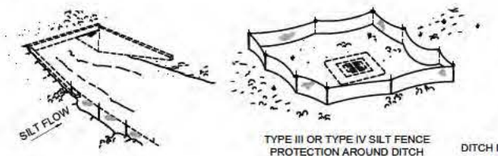


CROSS SECTION OF A PROPERLY INSTALLED STRAW BALE



SPACING: BALE BARRIERS FOR PAVED DITCHES SHOULD BE SPACED IN ACCORDANCE WITH CHART I, SHEET 1 OF 3, INDEX NO. 102 OF THE F.D.O.T. ROADWAY AND TRAFFIC DESIGN STANDARDS.

STRAW BALE BARRIER FOR PAVED DITCH



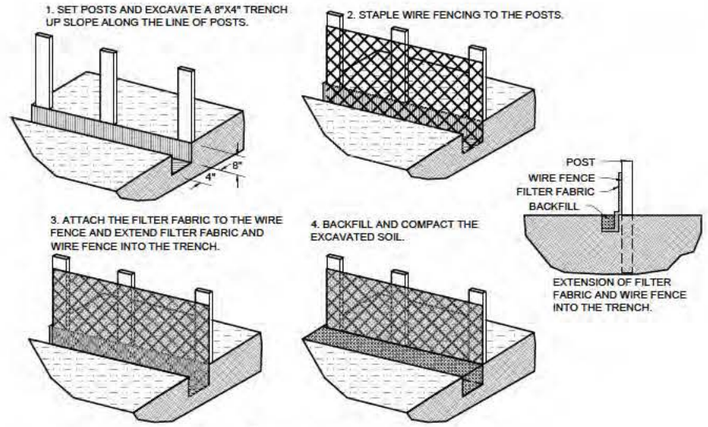
TYPE III OR TYPE IV SILT FENCE

TYPE III OR TYPE IV SILT FENCE PROTECTION AROUND DITCH BOTTOM INLETS.

TYPE III AND IV SILT FENCE

DITCH INSTALLATION AND SPACING FOR TYPE III & TYPE IV FENCE TO BE IN ACCORDANCE WITH SHEET 1 OF 3, OF THE F.D.O.T. INDEX NO. 102

DO NOT DEPLOY IN A MANNER THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.



SILT FENCE INSTALLATION DETAILS

FIGURE C-21
EROSION CONTROL DETAILS
LONGBOAT KEY CANAL MAINTENANCE DREDGING
MANATEE & SARASOTA COUNTIES, FLORIDA

TAYLOR ENGINEERING INC.
1800 2ND STREET
SUITE 714
SARASOTA, FLORIDA 34236
CERTIFICATE OF AUTHORIZATION # 4815

PROJECT	C2016-006
DRAWN BY	AF
SHEET	21 of 21
DATE	SEPT 2019

SEAL

YEHYA S. SOONDALIP E #67400

DATE

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW

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CONSTRUCTION COMMENCEMENT NOTICE

Instructions: In accordance with Chapter 62-330.350(1)(d), F.A.C., complete and submit this form at least 48 hours prior to commencement of activity authorized by permit.

Permit No. _____ Application No. _____

Project Name _____ Phase _____

Construction of the system authorized by the above referenced Environmental Resource Permit and Application, is expected to commence on _____ , 20 _____ and will have an estimated completion date of _____ , 20 _____

PLEASE NOTE: If the actual construction commencement date is not known within 30 days of issuance of the permit, District staff should be so notified in writing. As soon as a construction commencement date is known, the permittee shall submit a completed construction commencement notice form.

Permittee's or Authorized Agent's Signature _____ Company _____

Print Name _____ Title _____ Date _____

E-mail _____ Phone Number _____

As-Built Certification
And Request for Conversion to Operation Phase

Instructions: Complete and submit this page within 30 days of completion of the entire project, or any independent portion of the project, as required by the permit conditions. The operation phase of the permit is effective when the construction certification for the entire permit/application is approved by the Agency. If the final operation and maintenance entity is not the permittee, the permittee shall operate the project, system, works, or other activities temporarily until such time as the transfer to the operation entity is finalized (use Form 62-330.310(2)).

Permit No: Application No: Permittee:

Project Name: Phase or Independent Portion (if applicable):

I HEREBY CERTIFY THAT (please check only one box):

☐ To the best of my knowledge, information, and belief, construction of the project has been completed in substantial conformance with the plans specifications and conditions permitted by the Agency. Any minor deviations will not prevent the project from functioning in compliance with the requirements of Chapter 62-330, F.A.C. Attached are documents to demonstrate satisfaction of the outstanding permit conditions, other than long term monitoring and inspection requirements.

☐ Construction of the project was NOT completed in substantial conformance with the plans and specifications permitted by the Agency. Any deviations or independent phasing will not prevent the project from functioning in compliance with the requirements of Chapter 62-330, F.A.C. (Contact the permitting agency to determine whether a modification of the permit will be required in accordance with Rule 62-330.315, F.A.C.) Attached is a description of substantial deviations, a set of as-built drawings, and documents to demonstrate satisfaction of the outstanding permit conditions, other than long term monitoring and inspection requirements.

☐ Construction of the project was NOT completed in substantial conformance with the plans and specifications permitted by the Agency. There are substantial deviations that prevent the project from functioning in compliance with the requirements of Chapter 62-330, F.A.C. I acknowledge that corrections to the project and/or a modification of the permit will likely be required, and that conversion to the operation phase cannot be approved at this time. As-built or record drawings reflecting the substantial deviations are attached.

For activities that require certification by a registered professional*:*

By: _____ (Print Name) (Fla. Lic. or Reg. No.)
Signature

(Company Name) (Company Address)

(Telephone Number) (Email Address)

AFFIX SEAL

(Date)

For activities that do not require certification by a registered professional:

By: _____ (Print Name)
Signature

(Company Name) (Company Address)

(Telephone Number) (Email Address) (Date)

Drawings and Information Checklist

Following is a list of information that is to be verified and/or submitted by the Registered Professional or Permittee:

1. All surveyed dimensions and elevations shall be certified by a registered Surveyor or Mapper under Chapter 472, F.S.

2. The registered professional's certification shall be based upon on-site observation of construction (scheduled and conducted by the registered professional of record or by a project representative under direct supervision) and review of as-built drawings, with field measurements and verification as needed, for the purpose of determining if the work was completed in accordance with original permitted construction plans, specifications, and conditions.

3. If submitted, the as-built drawings are to be based on the permitted construction drawings revised to reflect any substantial deviations made during construction. Both the original design and constructed condition must be clearly shown. The plans need to be clearly labeled as "as-built" or "record" drawings that clearly highlight (such as through "red lines" or "clouds") any substantial deviations made during construction. As required by law, all surveyed dimensions and elevations required shall be verified and signed, dated, and sealed by an appropriate registered professional. The following information, at a minimum, shall be verified on the as-built drawings, and supplemental documents if needed:

    a. Discharge structures - Locations, dimensions and elevations of all, including weirs, orifices, gates, pumps, pipes, and oil and grease skimmers;
    b. Detention/Retention Area(s) – Identification number, size in acres, side slopes (h:v), dimensions, elevations, contours, or cross-sections of all, sufficient to determine stage-storage relationships of the storage area and the permanent pool depth and volume below the control elevation for normally wet systems,
    c. Side bank and underdrain filters, or exfiltration trenches - locations, dimensions, and elevations of all, including clean-outs, pipes, connections to control structures, and points of discharge to receiving waters;
    d. System grading - dimensions, elevations, contours, final grades, or cross-sections to determine contributing drainage areas, flow directions, and conveyance of runoff to the system discharge point(s);
    e. Conveyance - dimensions, elevations, contours, final grades, or cross-sections of systems utilized to divert off-site runoff around or through the new system;
    f. Benchmark(s) - location and description (minimum of one per major water control structure);
    g. Datum- All elevations should be referenced to a vertical datum clearly identified on the plans, preferably the same datum used in the permit plans.

4. Wetland mitigation or restoration areas - Show the plan view of all areas, depicting a spatial distribution of plantings conducted by zone (if plantings are required by permit), with a list showing all species planted in each zone, numbers of each species, sizes, date(s) planted, and identification of source of material; also provide the dimensions, elevations, contours, and representative cross-sections depicting the construction.

5. A map depicting the phase or independent portion of the project being certified, if all components of the project authorized in the permit are not being certified at this time.

6. Any additional information or outstanding submittals required by permit conditions or to document permit compliance, other than long-term monitoring or inspection requirements.

Request for Transfer of Environmental Resource Permit to the Perpetual Operation and Maintenance Entity

Instructions: Complete this form to transfer ~~to~~ the permit to the operation and maintenance entity. This form can be completed concurrently with, or within 30 days of approval of, the As-Built Certification and Request for Conversion to Operation Phase (Form 62-330.310(1)). Please include all documentation required under Section 12.2.1(b) of Applicant's Handbook Volume I (see checklist below). **Failure to submit the appropriate final documents will result in the permittee remaining liable for operation and maintenance of the permitted activities.**

Permit No.: Application No(s):

Project Name: Phase (if applicable):

A. Request to Transfer: The permittee requests that the permit be transferred to the legal entity responsible for operation and maintenance (O&M).

By: _____ _____
Signature of Permittee — Name and Title

_____ _____
Company Name — Company Address

_____ _____
Phone/email address — City, State, Zip

B. Agreement for System Operation and Maintenance Responsibility: The below-named legal entity agrees to operate and maintain the works or activities in compliance with all permit conditions and provisions of Chapter 62-330, Florida Administrative Code (F.A.C.) and Applicant's Handbook Volumes I and II.

The operation and maintenance entity does not need to sign this form if it is the same entity that was approved for operation and maintenance in the issued permit.

Authorization for any proposed modification to the permitted activities shall be applied for and obtained prior to conducting such modification.

By: _____ _____
Signature of Representative of O&M Entity — Name of Entity for O&M

_____ _____
Name and Title — Address

_____ _____
Email Address — City, State, Zip

_____ _____
Phone — Date

Enclosed are the following documents, as applicable:

☐ Copy of recorded transfer of title to the operating entity for the common areas on which the stormwater management system is located (unless dedicated by plat)
☐ Copy of all recorded plats
☐ Copy of recorded declaration of covenants and restrictions, amendments, and associated exhibits
☐ Copy of filed articles of incorporation (if filed before 1995)
☐ ~~A~~ Completed documentation that the operating entity meets the requirements of Section 12.3 of Environmental Resource Permit Applicant's Handbook Volume I. (Note: this is optional, but aids in processing of this request)

Request to Transfer
Environmental Resource Permit

Instructions: To be completed, executed, and submitted by the new owner to the Agency within 30 days after any transfer of ownership or control of the real property where the permitted activity is located.

Use of this form is not required when a valid permit is in the operation and maintenance phase. In such case, the owner must notify the Agency in writing within 30 days of a change in ownership or control of the entire real property, project, or activity covered by the permit. The notification may be by letter or e-mail, or through use of this form, and must be sent to the office that issued the permit. A processing fee is not required for this notice. The permit shall automatically transfer to the new owner or person in control, except in cases of abandonment, revocation, or modification of a permit as provided in Sections 373.426 and 373.429, F.S. (2013). If a permittee fails to provide written notice to the Agency within 30 days of the change in ownership or control, or if the change does not include the entire real property or activity covered by the permit, then the transfer must be requested using this form.

Permit No: Application No(s).: Acres to be Transferred:

Permitted Project:

Proposed Project Name (if different):

Phase of Project (if applicable):

I hereby notify the Agency that I have acquired ownership or control of the land on which the permitted system is located through the sale or other legal transfer of the land. By signing below, I hereby certify that I have sufficient real property interest or control in the land in accordance with subsection 4.2.3(d) of Applicant's Handbook Volume I; attached is a copy of my title, easement, or other demonstration of ownership or control in the land, including any revised plats, as recorded in the Public Records. I request that the permit be modified to reflect that I agree to be the new permittee. By so doing, I acknowledge that I have examined the permit terms, conditions, and drawings, and agree to accept all rights and obligations as permittee, including agreeing to be liable for compliance with all of the permit terms and conditions, and to be liable for any corrective actions required as a result of any violations of the permit after approval of this modification by the Permitting Agency. Also attached are copies of any recorded restrictive covenants, articles of incorporation, and certificate of incorporation that may have been changed as a result of my assuming ownership or control of the lands. As necessary, I agree to furnish the Agency with demonstration that I have the ability to provide for the operation and maintenance of the system for the duration of the permit in accordance with subsection 12.3 of Applicant's Handbook Volume I.

Name of Proposed Permittee:

Mailing Address:

City: State: Zip:

Telephone: E-mail:

_____ _____

Signature of Proposed Permittee Date:

_____

Name and Title

Enclosures:

☐ Copy of title, easement, or other demonstration of ownership or control in the land, as recorded in the Public Records

☐ Copy of current plat(s) (if any), as recorded in the Public Records

☐ Copy of current recorded restrictive covenants and articles of incorporation (if any)

☐ Other

Longboat Key Residential Canal Maintenance Dredging

SAJ-2000-00050 (SP-RGH)

ATTACHMENT C:

Manatee Standard Manatee Conditions for In-Water Work

(2 Pages)

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8 ½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.

CAUTION: MANATEE HABITAT

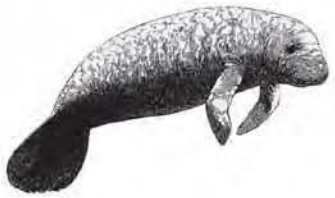
All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:



Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

Longboat Key Residential Canal Maintenance Dredging

SAJ-2000-00050 (SP-RGH)

ATTACHMENT D:

JAXBO Forms

(12 Pages)

U.S. Army Corps of Engineers Jacksonville District's Programmatic Biological Opinion (JaxBO) Project Design Criteria (PDCs) for In-Water Activities

November 20, 2017

1) **(AP.7.) Education and Observation**: The permittee must ensure that all personnel associated with the project are instructed about the potential presence of species protected under the ESA and the Marine Mammal Protection Act (MMPA). All on-site project personnel are responsible for observing water-related activities for the presence of protected species. All personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing ESA-listed species or marine mammals. To determine which species may be found in the project area, please review the relevant Protected Species List at: https://www.fisheries.noaa.gov/southeast/consultations/protected-species-educational-signs

2) **(AP.8.) Reporting** of interactions with protected species:
   a) Any collision(s) with and/or injury to any sea turtle, sawfish, whale, or sturgeon occurring during the construction of a project, shall be reported immediately to NMFS's Protected Resources Division (PRD) at (1-727-824-5312) or by email to takereport.nmfsser@noaa.gov and SAJ-RD-Enforcement@usace.army.mil.
   b) Smalltooth sawfish: Report sightings to 1-844-SAWFISH or email Sawfish@MyFWC.com
   c) Sturgeon: Report dead sturgeon to 1-844-STURG 911 (1-844-788-7491) or email nmfs.ser.sturgeonnetwork@noaa.gov
   d) Sea turtles and marine mammals: Report stranded, injured, or dead animals to 1-877-WHALE HELP (1-877-942-5343).
   e) North Atlantic right whale: Report injured, dead, or entangled right whales to the USCG via VHF Channel 16.

3) **(AP.9.) Vessel Traffic and Construction Equipment**: All vessel operators must watch for and avoid collision with species protected under the ESA and MMPA. Vessel operators must avoid potential interactions with protected species and operate in accordance with the following protective measures:

   a) *Construction Equipment*:
      i) All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while operating in water depths where the draft of the vessel provides less than a 4-foot (ft) clearance from the bottom, and in all depths after a protected species has been observed in and has departed the area.
      ii) All vessels will follow marked channels and/or routes using the maximum water depth whenever possible.
      iii) Operation of any mechanical construction equipment, including vessels, shall cease immediately if a listed species is observed within a 50-ft radius of

construction equipment and shall not resume until the species has departed the area of its own volition.

iv) If the detection of species is not possible during certain weather conditions (e.g., fog, rain, wind), then in-water operations will cease until weather conditions improve and detection is again feasible.

b) *All Vessels*:
   i) Sea turtles: Maintain a minimum distance of 150 ft.
   ii) North Atlantic right whale: Maintain a minimum 1,500-ft distance (500 yards).
   iii) Vessels 65 ft in length or longer must comply with the Right Whale Ship Strike Reduction Rule (50 CFR 224.105) which includes reducing speeds to 10 knots or less in Seasonal Management Areas (http://www.fisheries.noaa.gov/pr/shipstrike/).
   iv) Mariners shall check various communication media for general information regarding avoiding ship strikes and specific information regarding right whale sightings in the area. These include NOAA weather radio, USCG NAVTEX broadcasts, and Notices to Mariners.
   v) Marine mammals (i.e., dolphins, whales [other than North Atlantic right whales], and porpoises): Maintain a minimum distance of 300 ft.
   vi) When these animals are sighted while the vessel is underway (e.g., bow-riding), attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until they have left the area.
   vii) Reduce speed to 10 knots or less when mother/calf pairs or groups of marine mammals are observed, when safety permits.

4) **(AP.10.) Turbidity Control Measures during Construction:** Turbidity must be monitored and controlled. Prior to initiating any of the work covered under this Opinion, the Permittee shall install turbidity curtains as described below. In some instances, the use of turbidity curtains may be waived by the USACE project manager if the project is deemed too minimal to generate turbidity (e.g., certain ATON installation, scientific survey device placement, marine debris removal) or if the current is too strong for the curtains to stay in place. Turbidity curtains specifications:

   a) Install floating turbidity barriers with weighted skirts that extend to within 1 ft of the bottom around all work areas that are in, or adjacent to, surface waters.
   b) Use these turbidity barriers throughout construction to control erosion and siltation and ensure that turbidity levels within the project area do not exceed background conditions.
   c) Position turbidity barriers in a way that does not block species' entry to or exit from designated critical habitat.
   d) Monitor and maintain turbidity barriers in place until the authorized work has been completed and the water quality in the project area has returned to background conditions.
   e) In the range of ESA-listed corals (St. Lucie Inlet, Martin County south to the Dry Tortugas and the U.S. Caribbean) and Johnson's seagrass (Turkey Creek/Palm

Bay south to central Biscayne Bay in the lagoon systems on the east coast of Florida):

i) Projects that include upland earth moving (e.g., grading to install a building or parking lot associated with a dock and seawall project), must install sediment control barriers to prevent any upland sediments from reaching estuarine or marine waters.
ii) The turbidity curtain requirement cannot be waived for any project that moves or removes sediment (e.g., dredging, auger to create a pile, trenching to install a cableline). If turbidity curtains are not feasible in an area based on site conditions such as water current, high wave action, or stormy conditions, the project must undergo individual Section 7 consultation and is not covered under this Programmatic Opinion.

5) **(AP.11.) Entanglement:** All turbidity curtains and other in-water equipment must be properly secured with materials that reduce the risk of entanglement of marine species (described below). Turbidity curtains likewise must be made of materials that reduce the risk of entanglement of marine species.

a) In-water lines (rope, chain, and cable, including the lines to secure turbidity curtains) must be stiff, taut, and non-looping. Examples of such lines are heavy metal chains or heavy cables that do not readily loop and tangle. Flexible in-water lines, such as nylon rope or any lines that could loop or tangle, must be enclosed in a plastic or rubber sleeve/tube to add rigidity and prevent the line from looping and tangling. In all instances, no excess line is allowed in the water.
b) Turbidity curtains and other in-water equipment must be placed in a manner that does not entrap species within the construction area or block access for them to navigate around the construction area.

Project Design Criteria (PDCs) specific to Activity 3 for Maintenance, Minor, and Muck Dredging

A3.1. Activities covered by this Opinion include:

A3.1.1. Maintenance dredging of existing areas such as canals, channels, basins, berths, marinas, boat slips, and areas around intake and discharge structures. Maintenance dredging will be limited to the depth and width previously authorized by the USACE or other regulatory authority such as FDEP or water management districts. There is no size limit for maintenance dredging so long as it meets the previously authorized depth and width. If the previous authorized depth is unknown, dredging is limited to -7.0 ft MLW including any advanced maintenance or overdredge.

A3.1.2. Minor dredging (non-maintenance) dredging as follows:

A3.1.2.1. For dredging to accommodate vessel mooring at boat slips around docks and marinas, the size is limited to the minimum necessary to accommodate vessel mooring, not to exceed 5,000 ft^2. The maximum allowed dredging depth (including overdredge) cannot exceed the depth of the adjacent navigational channel (i.e., controlling depth) or a maximum depth of -7 ft MLW. For projects located adjacent to federal channels (not within the dredged navigational channel), the dredging depth can exceed -7 ft MLW so long as it does not exceed the controlling depth of the federal channel.

A3.1.2.2. For treasure hunting and salvage operations that use blowers, propeller deflectors, and suctioning devices, the size is limited to a total of 5,000 ft^2 and is limited to sandy areas only.

A3.1.2.3. Minor dredging does not include dredging to create new navigational channels.

A3.1.2.4. Minor dredging includes dredging to accommodate the placement of shoreline stabilization, outfall structures; boat ramps; upland cut boat ramps and basins; temporary platforms, fill, and cofferdams; and placement of erosion and scour control-measures. This type of dredging is usually required to embed materials and/or to allow smooth transition of the work to the natural surrounding elevation.

A3.1.3. Muck Dredging, or removing accumulated organic to restore natural habitats and for water quality enhancement, as follows:

A3.1.3.1. Muck dredging cannot be used to increase water depths to support navigation, access, or vessel mooring.

A3.1.3.2. Dredging depths are limited to only that necessary to remove the muck layer down to natural sediments.

The following PDCs apply to all the activities described in PDC A3.1 above:

A3.2. This Opinion does not cover hopper dredging.

A3.3. With respect to the dredged material, all dredged material must be placed in an USACE-verified upland disposal site, EPA or USACE-designated open water disposal site, USACE Dredged Material Management Area, or USACE-approved beneficial use sites for mitigation or restoration, as long as it meets PDC A3.3.1-A3.3.3 below.

A3.3.1. The disposal sites shall employ erosion control measures such as upland erosion control, such as filtration or berms, or in-water turbidity curtains.

A3.3.2. Handling and storage of dredged material must be completed in a manner that prevents sedimentation, erosion, and turbidity during dewatering, overflow, transferring, and storage of the dredged material. For example, the overwater transfer of dredge material should either contain the dredged material and any water to prevent sedimentation or employ other methods, such as turbidity curtains in the marine environment, to ensure that any turbidity generated as the water is returned to the marine environment is contained. If the applicant conducts sediment testing voluntarily or in compliance with other law, and such testing indicates high levels of contaminants in the sediments to be dredged, water from dewatering should not be released back into the marine environment.

A3.3.3. This Opinion does not cover the use of in-water disposal sites (e.g., beneficial use sites or ocean disposal sites) unless the use of the in-water disposal sites has previously undergone ESA-Section 7 consultation with NMFS for disposal of material at these locations. If the applicant is seeking disposal in an in-water disposal location not previously consulted on by NMFS, then the entire project (both dredging and disposal) must be consulted on separately and is not covered under this Opinion.

A3.3.4. This Opinion applies to upland disposal of beach quality sand on beaches if placed above the existing MHW, if the grain size analysis indicates that the dredged sand is compatible with the existing beach sand, and if the sand placement does not change the existing waterward extension of the beach. Placement of beach sand on nesting beaches above MHW that may affect ESA-listed species is under the jurisdiction of the USFWS.

A3.4. This Opinion does not cover dredging within the mapped and authorized federal navigational channels (e.g., ICW, AIWW, GIWW, or harbors [e.g., Port Canaveral]). Dredging outside of the mapped channel in the surrounding waters is covered.

Additional PDCs for Activity 3 applicable in Critical Habitat

A3.5. Smalltooth sawfish critical habitat:

A3.5.1. Maintenance dredging of canals in smalltooth sawfish critical habitat is covered under this Opinion as long as it is within the previously authorized dredge footprint and to the previously USACE authorized depth.

A3.5.2. For minor dredging: If only the shallow euryhaline (MHWL to -3 ft MLLW) water essential feature is present (i.e., no red mangroves), dredged depths are limited to a maximum depth of -3 ft MLLW. If red mangroves are present, dredging, excavation, or disposal is not allowed within 5 ft of all red mangrove prop roots.

A3.5.3. Muck dredging, as defined in PDC A3.1.3, is not allowed in shallow, euryhaline habitat (MHWL to -3 ft MLLW)

A3.5.4. Dredging and disposal activities are not allowed in areas identified as smalltooth sawfish limited exclusion zones, defined in Section 2.1.1.1.

A3.6. Gulf sturgeon critical habitat: No treasure hunting or muck dredging is allowed in Gulf sturgeon critical habitat at any time of year. No maintenance or minor dredging is allowed in Gulf sturgeon critical habitat between September and March, when sturgeon are likely to be present in these areas. When allowed, maintenance and minor dredging activities shall be conducted according to the PDCs above for all dredging activities.

A3.7. *Acropora* critical habitat and the U.S. Caribbean: This Opinion does not cover dredging (maintenance, minor, or muck) and disposal in *Acropora* critical habitat where the essential features are present or within the U.S. Caribbean. This Opinion does not cover projects requiring penetrating or removing underlying hard substrate (e.g., bedrock, hardbottom) using any methods including blasting or fracturing. Treasure hunting is not allowed in *Acropora* critical habitat or the U.S. Caribbean.

A3.8. Johnson's seagrass critical habitat: Treasure hunting is not allowed in waters less than 12 ft (4 m) deep. Muck dredging is not allowed if the essential features are present. All other dredging is covered if conducted according to the PDCs above for all dredging activities.

A3.9. U.S. Caribbean sea turtle critical habitat (hawksbill, leatherback, and the NA DPS of green sea turtle critical habitat) and loggerhead sea turtle critical habitat: Dredging consistent with the PDCs above can occur in these critical habitat areas.

Project Design Criteria (PDCs) Specific to Activity 7 for Aquatic Habitat Enhancement, Establishment, and Restoration Activities

A7.1. Only native plant species can be planted.

Additional Conditions for living shoreline and oyster habitat on unvegetated bottom in tidal waters:

A7.2. Oyster reef materials shall be placed and constructed in a manner that ensures that materials will remain stable and that prevents movement of materials to surrounding areas (e.g., oysters will be contained in bags or attached to mats and loose cultch must be surrounded by contained bagged oysters or another stabilizing feature).

A7.3. Oyster reef materials must be placed in designated locations only (i.e., the materials shall not be indiscriminately or randomly dumped or allowed to spread outside of the reef structure).

A7.4. Living shorelines can only be constructed in unvegetated, nearshore water along shorelines to create tidal marshes or mangrove habitat for the purpose of shoreline erosion control or aquatic habitat enhancement. Native plants can be placed along the shoreline or between the shoreline and the living shoreline structure.

A7.5. Living shoreline structures and permanent wave attenuation structures can only be constructed out of the following materials: oyster breakwaters (described above in the project description and A7.2), clean limestone boulders or stone (sometimes contained in metal baskets or cages to contain the material), small mangrove islands, biologs, coir, rock sills, and pre-fabricated structures made of concrete and rebar that are designed in a manner so that they do not trap sea turtles, smalltooth sawfish, or sturgeon. Reef balls or similar structures that are not open on the bottom, open-bottom structures with a top opening of at least 4 ft, and reef discs stacked on a pile are pre-fabricated structures are designed in a manner so that they do not trap sea turtles. Other materials may be used for living shorelines if pre-approved by NMFS to ensure that they are stable and not an entanglement risk to listed species. The approval process to use other materials is described in the Section 2.3 (Project-Specific Review).

A7.6. Both living shoreline and oyster reefs must have 5 ft gaps at least every 75 ft in length, as measured parallel to the shoreline and at the sea floor, to allow for tidal flushing and species movement.

Additional Conditions for the establishment or restoration of submerged aquatic vegetation:

A7.7. The placement of loose or bagged sediment suitable for the project site in blowholes/dredge holes or in prop scars, and berm redistribution or sod replacement in excavations, must be to an elevation level with or otherwise consistent with the adjacent area.

A7.8. This Opinion covers leveling submerged spoil piles or berms if necessary to level the restoration area to match the elevation of adjacent seagrass beds.

A7.9. Exclusion cages may be used around seagrass restoration areas if necessary to allow the seagrass beds to establish themselves to the point where they are sustainable after the cages are removed. Exclusion cages can only be used on a temporary basis, for a period not to exceed 4 months. Each exclusion cage must be securely fastened to the substrate so that it does not become detached. All cages must be constructed of firm, taut materials and cannot include any loose mesh, thin twistable wire, or rope that could twist or become entangled or present an entanglement risk to species.

A7.10. Seagrass transplantation and harvesting from the donor site may occur only by hand. Donor sites could include (i) upland seagrass farms, (ii) areas with seagrasses that would be impacted by another project, or (iii) existing seagrass beds, as long as the seagrass is removed in a manner that is not detrimental to the existing seagrass bed. Transplantation methods may include, but are not limited to, plugging devices, manual transplant, peat pellets, peat pots, and coconut fiber mats. No in-water machinery (e.g., marsh buggies, track hoe) may be used in harvesting or transplanting the seagrasses.
The selection of and harvesting from seagrass donor sites shall be coordinated with NMFS Habitat Conservation Division. This Opinion does not cover transplantation of the invasive seagrasses (e.g., *Halophila stipulacea*).

A7.11. In Florida, this Opinion covers installation of stakes to attract birds, if necessary or appropriate for the project. Bird stakes should not be used in areas where additional nutrients may be detrimental to the seagrass. Bird stakes are not authorized in the U.S. Caribbean.

A7.12. This Opinion covers installation of signage (supported on piles or anchored) if the signs are necessary to prevent motorized boats from entering the area and anchoring. Signs must be sized and placed in a manner that prevents the loss of native seagrasses from sign shading.

<u>Additional conditions for the installation of artificial reefs from the placement of man-made materials:</u>

A7.13. Artificial reef materials shall be clean and free from asphalt, creosote, petroleum, other hydrocarbons and toxic residues, loose free-floating material, or other deleterious substances.

A7.14. New reef sections are limited to 1 reef section measuring ¼- by ¼-nmi area (40 ac)

in size with a distance of 500 ft between each section. Offshore reefs shall maintain a minimum vertical clearance of twice the height of the structure from the top of the deployed material relative to the MLW at all times.

A7.15. Reauthorization of existing reefs is limited to the previously permitted size. Approved materials defined in PDC A7.19 can be added to the existing reef area.

A7.16. No artificial reef materials shall be deployed until a benthic assessment of the bottom conditions has been accomplished by diver or submersible video camera. The inspection of the deployment area may occur at the time of deployment but no more than 1 year prior to deployment. The permittee shall maintain a deployment buffer of at least 200 ft from any submerged aquatic resources, including seagrasses, macroalgae, hard or soft coral (including coral reefs), sponges, oysters, or hard bottom when placed in areas of sand. If materials are off-loaded from a barge or placed in areas that may generate turbidity (e.g., areas with fines or muck), a 500 ft buffer is required.

A7.17. This Opinion does not cover the use of mid-water fish aggregation devices.

A7.18. All reefs must be cleaned annually to remove marine debris and derelict fishing line in areas safely accessible to recreational SCUBA divers. Cleanup efforts shall follow the PDCs for Activity 9, marine debris removal, and all pertinent general PDCs.

<u>Additional conditions for reef materials:</u>

A7.19. Individual reef units or modules must weigh at least 500 pounds. Reef materials shall be clean and free from asphalt, petroleum, other hydrocarbons, and toxic residues, as well as loose, free-floating material, or other deleterious substances. All artificial reef materials and/or structures will be selected, designed, constructed, and deployed to create stable and durable marine habitat. Only the following reef materials may be used under this Opinion:

A7.19.1. Prefabricated artificial reef modules composed of ferrous and/or aluminum- alloy metals, concrete, rock, or a combination of these materials.

A7.19.2. Natural rock boulders and pre-cast concrete material, such as culverts, stormwater junction boxes, power poles, railroad ties, jersey barriers, or other similar concrete material.

A7.19.3. Clean steel and concrete bridge or large building demolition materials such as slabs or piles with all steel reinforcement rods cut at the base of the concrete so no rebar or metal protrudes from the concrete.

A7.20. Reef structures, materials, and installation methods shall be designed and deployed to prevent entanglement and entrapment of listed species. Open-bottom pre-fabricated reef modules may not be used unless the module also has a top opening sufficiently large to allow a turtle to escape. Approved open-bottom modules include:

A7.20.1. Three-sided modules where each side of the tope opening is at least 36-in in length along its edge.

A7.20.2. Four or more sided modules where each side of the top opening is at least 40-in in length along its edge.

A7.20.3. Modules with a round opening with a diameter of at least 40-in (oval openings are not allowed unless a 40-in diameter circle space can fit within the oval).

A7.20.4. Modules that are approved by the FWS Artificial Reef Program as being turtle friendly. FWS is currently working on developing this list.

No open-bottom modules are allowed that include additional modules, discs, or other materials stacked or placed on or immediately adjacent to the top opening, as they may prevent turtles from easily escaping.

A7.21. This Opinion does not cover projects that use explosives to deploy reef material.

A7.22. If pile placement is required in the construction of a reef, such placement must comply with the PDCs for Activity 2, pile-supported structures, and all applicable general PDCs.

<u>Fill to restore natural contours or improve water quality:</u>

A7.23. Fill of scars or ruts caused by vessel groundings or similar activities must match the surrounding natural elevation.

A7.24. This Opinion covers fill of deep holes or canal bottoms that are determined to be hypoxic (i.e., that have critically low dissolved oxygen levels).

Additional PDCs Specific to Activity 7 if in Critical Habitat

A7.25. Smalltooth sawfish critical habitat: Oyster reefs, living shorelines, and artificial reefs cannot be placed in waters containing the shallow, euryhaline essential feature. Fill to restore natural contours or improve water quality and seagrass restoration can occur in waters containing the shallow, euryhaline essential feature, as long as the activity meets the PDCs for Activity 7 and all pertinent general PDCs. No aquatic habitat enhancement, establishment, or restoration activities are allowed in areas identified as smalltooth sawfish limited exclusion zones (Section 2.1.1.1).

A7.26. Gulf sturgeon critical habitat: Oyster reefs, living shorelines, and seagrass restoration in Gulf sturgeon critical habitat are restricted to areas that are in water depths shallower than -6 ft (-2 m) MHW (i.e., between the shoreline and -6 ft deep). Artificial reef structures cannot be placed in Gulf sturgeon critical habitat. Fill to restore natural contours or improve water quality can occur in Gulf sturgeon critical habitat, regardless of project depth. Living shorelines, oyster reefs, and artificial reefs cannot be placed in Gulf sturgeon critical habitat migratory restriction zones, defined in Section 2.1.1.2.

A7.27. North Atlantic right whale critical habitat: All artificial reefs must meet specifications below. Oyster reefs, living shorelines, seagrass restoration, and fill to restore natural contours or improve water quality can occur in North Atlantic right whale critical habitat, as long as those activities meet the PDCs for Activity 7 and any pertinent general PDCs, as described above.

A7.27.1. No artificial reefs can be placed in water shallower than 30 ft deep

A7.27.2. The maximum reef height off the sea floor is 20 ft

A7.27.3. The maximum footprint of new reefs shall be 1 nmi^2. If a new reef is added to an existing artificial reef, the total footprint of the combined reefs must not exceed 1 nmi^2.

A7.27.4. Density of newly permitted reefs shall not exceed 2 reefs (old or new) per 10 nmi^2

A7.27.5. All effort should be made to avoid placing reef material during North Atlantic right whale calving season (November 15 through April 15). If reef material has to be placed during North Atlantic right whale calving season, then the following additional measures are required:

- The maximum speed for all vessels involved in placing the reef material is 10 knots.
- Deployments cannot be conducted at any time when lighting or weather or sea conditions (e.g., darkness, rain, fog, sea state) prevent visual monitoring of the project area.
- Deployment activities will not commence until the protected species observer reports that no marine mammals or sea turtles have been sighted for at least 60 minutes.
- Deployment activities will cease immediately if sea turtles or marine mammals are sighted within the project area.
- Deployment activities will not recommence until the protected species observer reports that no marine mammals or sea turtles have been sighted for at least 60 minutes.

A7.28. *Acropora* critical habitat: This Opinion does not cover any aquatic habitat enhancement, establishment, or restoration activities in *Acropora* critical habitat where the essential feature is present.

A7.29. Johnson's seagrass critical habitat: Living shorelines, oyster reefs, and artificial reefs cannot be placed in waters shallower than -13 ft MHW within the geographic boundaries of Johnson's seagrass critical habitat. Seagrass restoration and fill to restore natural contours or improve water quality can occur in Johnson's seagrass critical habitat regardless of depth, as long as those activities meet the PDCs for Activity 7 and any pertinent general PDCs, as described above.

A7.30. Loggerhead critical habitat: Living shorelines, oyster reefs, and artificial reefs cannot be placed in nearshore reproductive habitat of loggerhead critical habitat. Seagrass restoration and fill to restore natural contours or improve water quality can occur in nearshore reproductive habitat of loggerhead critical habitat, as long as those activities meet the PDCs for Activity 7 and any pertinent general PDCs, as described above.

A7.31. U.S. Caribbean Sea Turtle Critical Habitat (NA DPS of green, Hawksbill, and Leatherback Sea Turtle Critical Habitat): No aquatic enhancement activities (living shorelines, oyster reefs, artificial reefs, seagrass restoration, and fill to restore natural contours or improve water quality) can occur within sea turtle critical habitat in the U.S. Caribbean.

Longboat Key Residential Canal Maintenance Dredging

SAJ-2000-00050 (SP-RGH)

ATTACHMENT E:

As-Built Certification Form

(2 Pages)

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

*Within sixty (60) days of completion of the authorized work, submit this form and one set of as-built engineering drawings via electronic mail to saj-rd-enforcement@usace.army.mil (preferred, but not to exceed 15 MB) **or** by standard mail to U.S. Army Corps of Engineers, Enforcement Section, P.O. Box 4970, Jacksonville, FL 32232-0019. If you have questions regarding this requirement, please contact the Enforcement Branch at 904-232-3131.*

1. Department of the Army Permit Number: SAJ-2000-00050 (SP-RGH)

2. Permittee Information:

Name: _____

Address: _____

_____

3. Project Site Identification (physical location/address):

_____

_____

_____

4. As-Built Certification: I hereby certify that the authorized work, including any mitigation required by Special Conditions to the permit, has been accomplished in accordance with the Department of the Army permit with any deviations noted below. This determination is based upon on-site observation, scheduled and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

_____ _____

Signature of Engineer Name (*Please type*)

_____ _____

(FL, PR, or VI) Reg. Number Company Name

_____ _____ _____

City State ZIP

(Affix Seal)

_____ _____

Date Telephone Number

Date Work Started:_____ Date Work Completed:_____

Identify any deviations from the approved permit drawings and/or special conditions (attach additional pages if necessary):

_____

_____

_____

_____

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_____

_____

_____

_____

_____

_____

Longboat Key Residential Canal Maintenance Dredging

SAJ-2000-00050 (SP-RGH)

ATTACHMENT F:

Commencement Notice

(1 Pages)

COMMENCEMENT NOTIFICATION

Within ten (10) days of initiating the authorized work, submit this form via electronic mail to saj-rd-enforcement@usace.army.mil (preferred, not to exceed 15 MB) ***or*** *by standard mail to U.S. Army Corps of Engineers, Enforcement Section, P.O. Box 4970, Jacksonville, FL 32232-0019.*

1. **Department of the Army Permit Number**: SAJ-2000-00050 (SP-RGH)

2. **Permittee Information**:

   Name: _____

   Email: _____

   Address: _____

   _____

   Phone: _____

3. **Construction Start Date**: _____

4. **Contact to Schedule Inspection**:

   Name: _____

   Email: _____

   Phone: _____

_____
Signature of Permittee

_____
Printed Name of Permittee

_____
Date

Longboat Key Residential Canal Maintenance Dredging

SAJ-2000-00050 (SP-RGH)

ATTACHMENT F:

Notice of Permit

(2 Pages)

Prepared by:

Permittee: _____

Address: _____

_____

Phone:_____

NOTICE OF DEPARTMENT OF THE ARMY AUTHORIZATION

TAKE NOTICE the United States Army Corps of Engineers (Corps) has issued a permit or verification SAJ-2000-00050 to Town of Longboat Key (Permittee) on April 19, 2021, authorizing work in navigable waters of the United States in accordance with Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C 403) within and an abandoned navigation channel in Sarasota Bay and 14 residential canals (01, 02, 02B, 03, 06, 18, 20P, 21A, 21P, 22A, 32P, 49, 55, 55A) located at several locations within Longboat Key, in Sections 15, 22, 23, 24, 25, & 36, Township 35 South, Range 16 East; Sections 5, 8, 21, 22, & 27, Township 36 South, Range 17 East, Longboat Key, Manatee and Sarasota Counties, Florida.

Within 30 days of any transfer of interest or control of said property, the Permittee must notify the Corps in writing of the property transfer by submitting the completed permit transfer page included with the issued permit or verification. The subject permit or verification concerns only that portion of the property determined to fall within the jurisdiction of the Corps and this notice is applicable only to those portions of the subject property in, over, under, or affecting navigable waters of the United States.

Conditions of the Permit/Verification: The permit or verification is subject to General Conditions and Special Conditions which may affect the use of the work authorized in Longboat Key canals and Sarasota Bay. Accordingly, interested parties should closely examine the entire permit or verification, all associated applications, and any subsequent modifications.

To obtain a copy of the authorization in its entirety submit a written request to:
U.S. Army Corps of Engineers
Regulatory Division - Special Projects & Enforcement Branch
Post Office Box 4970
Jacksonville, Florida 32232-0019

Questions regarding compliance with these conditions should be directed to:
U.S. Army Corps of Engineers
Enforcement Section
Post Office Box 4970
Jacksonville, Florida 32232-0019

Conflict Between Notice and Permit
This Notice of Authorization is not a complete summary of the issued permit or verification. Provisions in this Notice of Permit shall not be used in interpreting the permit or verification provisions. In the event of conflict between this Notice of Permit and the permit or verification, the permit or verification shall control.

This Notice is Not an Encumbrance
This Notice is for informational purposes only. It is not intended to be a lien, encumbrance, or cloud on the title of the premises.

Release
This Notice may not be released or removed from the public records without the prior written consent of the Corps.

This Notice of Authorization is executed on this _____ day of _____, _____. This document is being submitted for recordation in the Public Records of Sarasota County and Manatee County, Florida as part of the requirement imposed by the authorization SAJ-2000-00050 issued by Corps.

Permittee:

_____

Address:

_____

_____

Phone:_____

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____day of _____, 20____, by _____, who is personally known to me or has produced _____ as identification.

_____
Notary Public

(seal)

_____
Print

My Commission Expires_____

Longboat Key Residential Canal Maintenance Dredging

SAJ-2000-00050 (SP-RGH)

ATTACHMENT H:

Mitigation Package

(92 Pages)

LONGBOAT KEY CANAL MAINTENANCE DREDGING

Seagrass Mitigation Plan

Prepared for
Taylor Engineering, Inc. and Town of Longboat Key

September 2019

TABLE OF CONTENTS

Longboat Key Canal Maintenance Dredging

Page

Appendices

Page

List of Figures

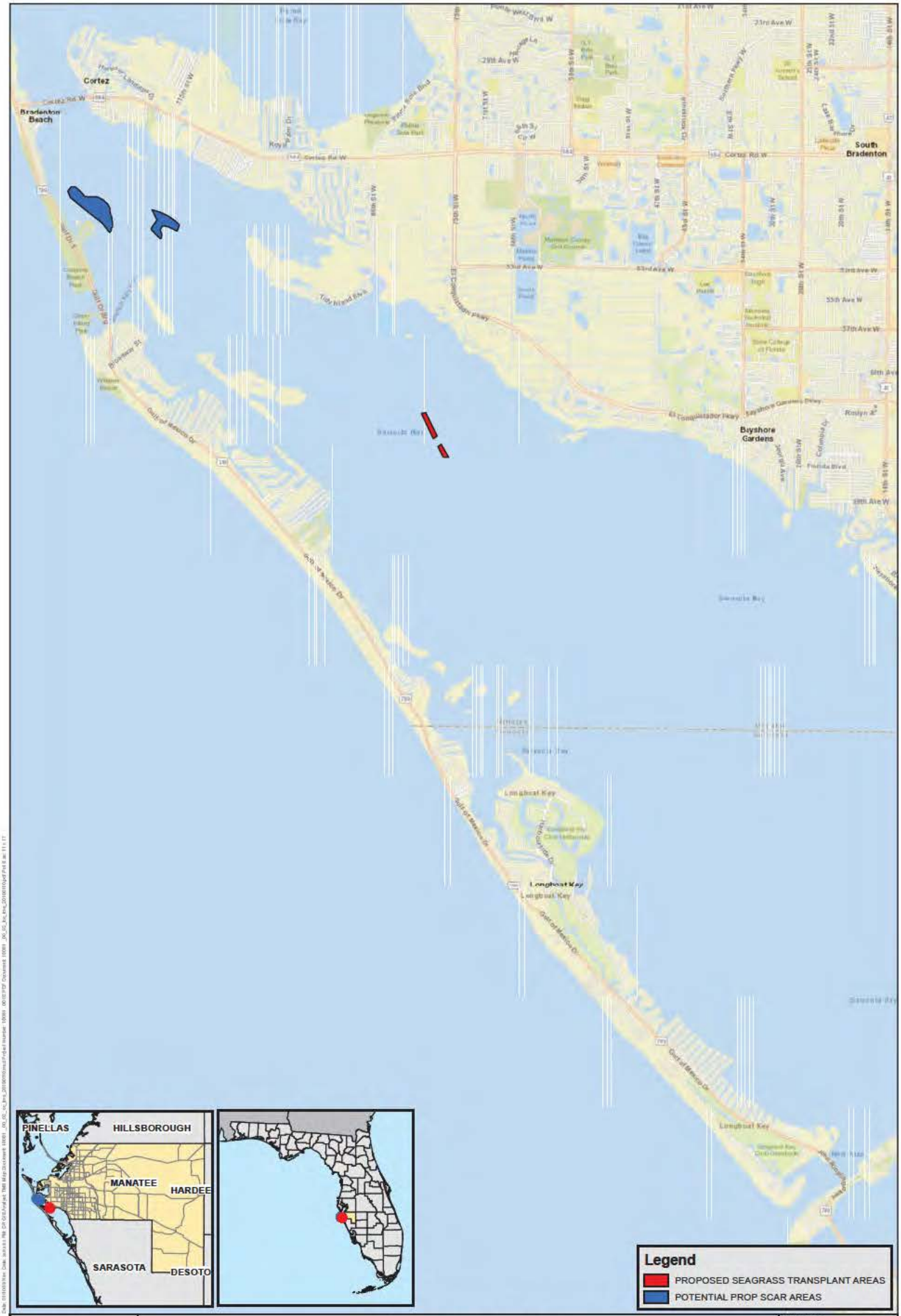
List of Tables

SECTION 1
Purpose of the Document

Longboat Key is an offshore barrier island running north to south. The west side of the island consists of white sand beaches on the Gulf of Mexico. The eastern side contains dense mangroves and residential canals that connect to Sarasota Bay. Longboat Key is almost equally divided between Manatee and Sarasota Counties **Figure 1**). Many of the canals have silted in and require maintenance dredging in order to keep the canals open for navigation and access to the Intracoastal Waterway (ICW) and Sarasota Bay.

A previous permit issued by the US Army Corps of Engineers USACE) (June, 2002 #200000050 IP-MN) authorized dredging sand and silt from up to 53 canals. Since that time water quality conditions in the area has improved. Manatee and Sarasota County's Stormwater and Wastewater utilities partnered with the Sarasota Bay Estuary Program SBEP and Southwest Florida Water Management District (SWFWMD to launch an historic initiative to reduce stormwater and wastewater pollution entering the bay. Today, due to improved water quality, Sarasota Bay has over 40% more seagrasses than it had in 1950 which equates to a 13,000-acre increase (Sarasota County Water Atlas). The increase in seagrass cover and density is evidenced in recruitment and expansion in the canals on Longboat Key. Therefore, in order to provide navigational access to the ICW and access to Sarasota Bay, the proposed maintenance dredging project will include some unavoidable impacts to seagrasses that were not previously mitigated in the 2002 USACE permit.

The purpose of this report is to summarize the results of a mitigation analysis performed by Environmental Science Associates ESA for the proposed maintenance dredging of multiple canals within the Town of Longboat Key to provide access to Sarasota Bay and provide a mitigation plan that will compensate for the proposed unavoidable seagrass impacts. The analysis was based on the most recent dredge template provided by Taylor Engineering (Taylor) in June 2019 (Appendix A). Seagrass impacts were minimized by adjusting the dredging widths within the canals as well as adjusting the proposed dredging footprint to avoid seagrass impacts as much as practical.



ESA

Figure 1 - Project Location Map

Longboat Key Canal Seagrass Mitigation
Manatee County, Florida

0 4,000 8,000 12,000 Feet

Data Source
- ESA
Imagery Source
- ESRI Streets

Coordinate System
NAD 1983 Florida
State Plane West

N

SECTION 2
Dredging Impacts Avoidance and Minimization

2.1 Proposed Impacts

The Town of Longboat Key Town proposes to perform maintenance dredging to remove nearly 9,000 cubic yards of material from fourteen 14 existing residential canals, located along the length of the Key. The Town of Longboat Key is split in half between Sarasota and Manatee counties. The residential canals will be dredged to a maximum depth of – 5ft mean low water MLW with bottom cut widths ranging from zero to 30 feet depending on the existing channel alignment, available space and presence of natural resources. Natural resources were identified within the project area, including seagrasses and oyster reefs. In order to avoid and minimize impacts to those resources to the extent practicable, the dredge template has been refined to reflect a range of bottom cut widths. However, some areas of seagrasses could not be avoided while maintaining safe navigation. Seven of the 14 canals may result in seagrass impacts totaling approximately 1.37 acres Table 1).

Subsequent to reviewing pertinent and readily available data, biologists from Taylor and ESA conducted seagrass surveys within the 14 canals targeted for potential dredging, of which 7 canals will result in unavoidable seagrass impacts. The methodologies and results are documented in two attached Seagrass Survey Reports Appendix B).

Table 1 outlines the estimated unavoidable impacts to seagrass, per canal, based on the seagrass surveys conducted in the Fall of 2017. Final impact areas will be defined in a required pre-construction survey.

TABLE 1
ESTIMATED UNAVOIDABLE IMPACTS TO SEAGRASS BASED ON FALL 2017 SURVEY

Canal	Seagrass Impact Area sf)	Impact Area acre)
1	1,654	0.04
18	360	0.01
21A	9,341	0.21
21P	23,744	0.55
22A	18,068	0.41
55	2,763	0.06
55A	3,945	0.09
Total:	75,162.1	**1.37**

Potential seagrass mitigation options were identified via a desktop review utilizing high resolution aerial imagery, coupled with institutional knowledge from previous seagrass reconnaissance work in the project vicinity. Once identified, these potential seagrass mitigation options were then further assessed in the field.

2.2 Avoidance and Minimization Measures

The Town contracted with Taylor to complete an in-depth canal dredging feasibility study to assess existing canal bottom conditions including bathymetry, sediment characteristics and shoreline types/conditions. Seventy (70 canals were evaluated as part of the initial feasibility study to identify canals with ample, limited or restricted navigable depths. To facilitate planning and design, the Town Commission established a minimum 'level of service' depth which serves as a threshold for potential dredging. Therefore 16 of the 70 canals were identified as priority canals with depth equal to or less than the established threshold, indicative of limited or restricted navigable access. A detailed bathymetric survey was performed for the 16 priorty canals. Following receipt of the detailed survey and field investigations, two of the canals appeared to have substantial seagrass cover. In order to avoid impacts to seagrasses within those canals which still had limited navigable depth, these canals were eliminated from the dredging plan. Secondly, in order to minimize impacts to resources to the greatest extent possible, the preliminary design includes minimal bottom widths. Currently the Town is proposing to dredge 14 of its bayside canals, 7 of which have some level of seagrass impacts. The proposed maintenance depth is a maximum 5 feet below mean low water MLW), but varies by canal based on available width, presence of natural resources and previous dredging authorizations. The estimated volume of material to be removed is approximately 9,000 cubic yards.

2.3 Agency Coordination

A pre-application meeting was held with Candice Wheelahan USACE) and Taylor staff on July 19, 2018 at the USACE Tampa Regulatory office. Ms. Wheelahan stated that only new impacts, not previously mitigated impacts, would require mitigation. She also stated than in most instances the generally accepted mitigation ratio for maintenance dredging, as a rule of thumb, is 2:1. Ms. Wheelahan recommended contacting Mark Sramek with the National Marine Fisheries Service (NMFS) Habitat Conservation Division to review preliminary seagrass maintenance dredging impacts and potential mitigation sites prior to the permit application submittal. A pre-application meeting was held in Mr. Sramek's office in St. Petersburg on November 28, 2018. The attached Meeting Minutes provide a list of attendees and items discussed (Appendix C). Mr. Sramek conducted a field review with the project team on July 19, 2019 to assess the canals that are proposed for dredging and the potential seagrass mitigation transplantation area. Assuming the seagrass impacts associated with dredging the 7 canals is approximately 1.37 acres, then the proposed abandoned historical channel would provide ample area ~7 acres for the 2.74 acres needed for seagrass transplantation.

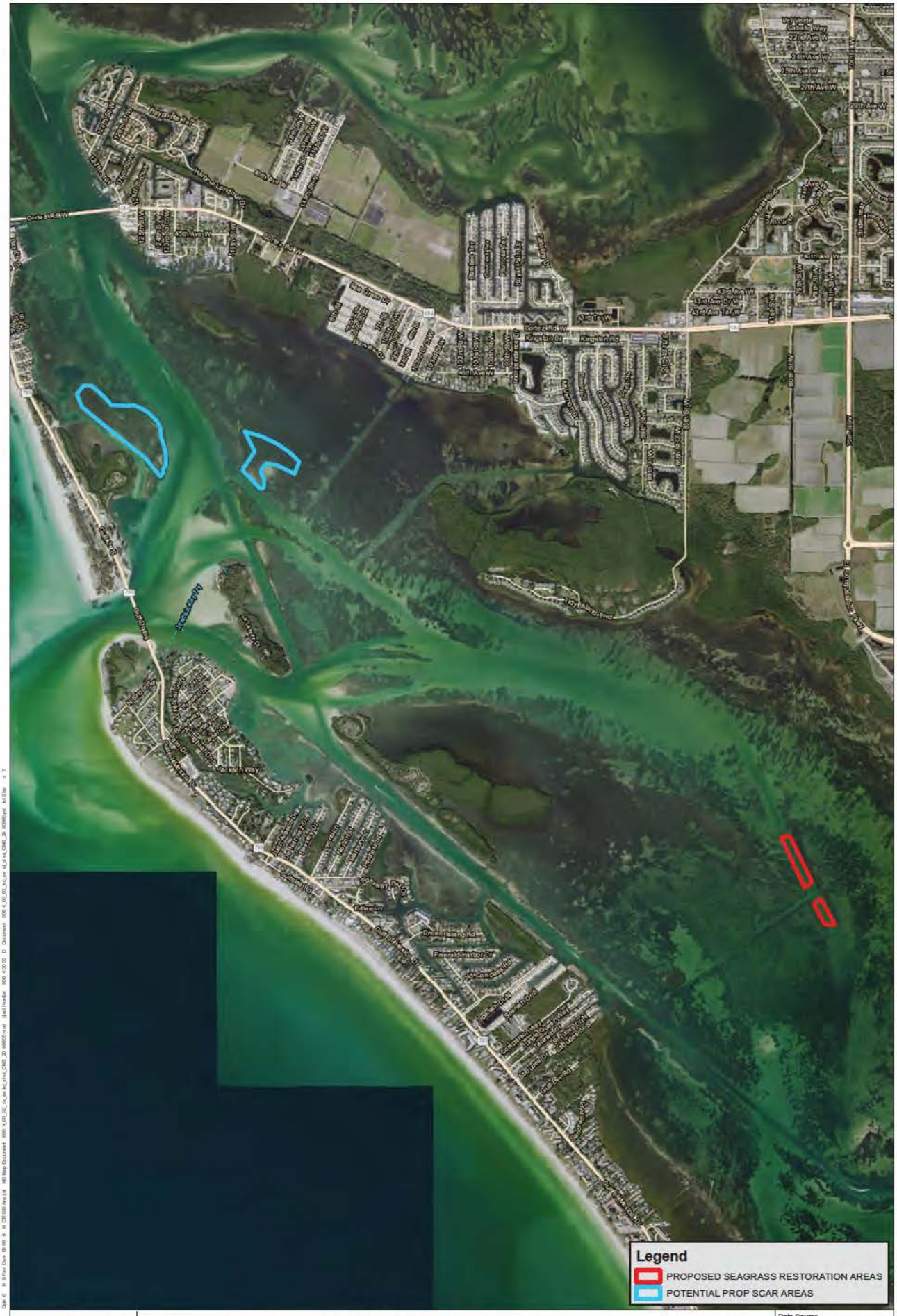
SECTION 3
Proposed Seagrass Mitigation

The objective of the mitigation is to provide appropriate and sufficient compensation for the unavoidable impacts to seagrass and seagrass habitat associated with the proposed maintenance dredging activities. The Taylor team has extensive experience in seagrass mapping and mitigation. Members of the ESA component of the team, Thomas Ries and Brad Young, each have over 30 years of experience working on marine and estuarine restoration projects in southwest Florida. Based on pre-application meeting discussions with the USACE Regulatory staff and NMFS staff, we understand that a 2:1 mitigation ratio will be applied. To accommodate the required 2.74 acres of mitigation, the Town has identified an abandoned channel located along the east side of Sarasota Bay off the north end of Longboat Key **Figure 2**). The proposed mitigation site is approximately 7 acres in size, nearly 10 feet deep 5-6 ft below the surrounding bay bottom), about 2,000 feet long and 150 to 200 feet wide. The dredged canal sediments will be used to fill the mitigation site sufficient to meet the surrounding grade prior to seagrass transplantation.

3.1 Proposed Mitigation Site Selection and Suitability

Field Review

Based on methodology established by the FWC and USACE/NMFS regarding the timing of Submerged Aquatic Vegetation SAV surveys to capture maximum extents within the growing season for any particular area. The USACE/NMFS guidance specifies a narrow statewide SAV survey window of June 1st thru September 31st based on the applicability of freshwater, estuarine, and marine SAV growth requirements. However, a wider survey range of April 1st thru October 31st is recommended by FWC for this geographic region due to the longer growing season for this latitude. Due to safety concerns associated with the intense red tide conditions in Sarasota Bay, the initial field survey to assess the proposed mitigation area was conducted a week later than the usual recommended seagrass survey period (April 1 - October 31 ; however, there were no major cold fronts or other conditions that would have altered the presence or absence of seagrass populations during, or prior, to this one-week period. A team of three ESA staff, consisting of a boat captain/scientist and two experienced seagrass scientists, conducted the initial field survey on November 6, 2018. The weather conditions were conducive for surveying with wind speeds less than 5 mph, clear skies, temperature of 78 degrees and 4-foot average water clarity. Real time and recording subaqueous video cameras on a towable sled were employed to directly observe the conditions within and adjacent to the historical channel identified as a potential seagrass habitat restoration area.



ESA

Figure 2 - Potential Mitigation Sites Map

Longboat Key Canal Seagrass Mitigation
Manatee County, Florida

0 2,000 4,000 6,000 Feet

Data Source
- ESA
Imagery Source
- ESRI Aerial Imagery

Coordinate System
NAD 1983 Florida
State Plane West

N

A second pre-construction seagrass survey was conducted on April 12, 2019 to define existing seagrass limits and conditions as a baseline for subsequent monitoring of mitigation implementation and establishment.

The Braun- Blanquet scale **Table 2** describes species densities based on observed percent coverage estimates. In addition, estimated blade length, epiphyte load, and surface sediment conditions were also noted as the video feed was observed in real time during transect passage. Representative photos were taken as these are useful for additional observations of benthic conditions. Positions of observed environmental conditions were recorded utilizing a Trimble GPS, stationed on board the research boat.

TABLE 2
BRAUN-BLANQUET TECHNIQUE

Score	Cover by Species
0.0	Species/functional group absent from quadrat
0.1	Solitary short shoot or individual, < 5% cover
0.5	Few with small cover
1	numerous but < 5% cover
2	5-25% cover
3	26-50% cover
4	51-75% cover
5	>75% cover

SOURCE: Table from Braun-Blanquet, J. 1932

Subsequently, a bathymetric survey was conducted and sediments were collected for analysis (Appendix D). These data will be used to develop the final engineering design plans.

Results

The initial field review (November, 2018) confirmed what was apparent from the aerial interpretation. The abandoned historical channel located east of the official ICW and northeast of Durant Park is currently void of seagrasses on the channel banks and bottom. The channel does not appear to be utilized by boats since all navigational aids are absent and the marked and maintained channel is located >5,000 feet to the west of the abandoned channel. There is an existing buried waste water main that runs perpendicular to the historical channel. In order to avoid any potential impacts or conflict with the pipeline, the two proposed transplant area polygons are set back 150 ft. to the north and south of the pipeline. Assuming that the mitigation required for the maintenance dredging of the canals will be 2.74 acres; there is approximately 7 acres depicted in the mitigation polygons, which is sufficient to satisfactorily mitigate for these impacts. Thus, there is additional area for mitigation available, within the historical channel, for other Town of Longboat Key project mitigation needs, if necessary.

The approximate depth of the abandoned channel is -10 NAVD and at this depth, the area is devoid of seagrasses. The upper most banks of the channel contained limited, sparse shoal grass *Halodule wrightii* , while the adjacent un-dredged areas had extensive seagrass coverage with an average depth of -3 to-5 ft-NAVD feet. The substrate in the channel consists primarily of sand with shell fragments. The seagrass areas external to the channel contained 30-40% coverage of turtle grass *Thalassia testudinum* .

The northern mitigation area polygon is 4.24 acres and the southern mitigation area polygon is 2.86 acres **Figure 3**). Figure 3 also shows the transects and observed limits of turtle grass external to the historic channel. Included are photo-interpreted seagrass limits based on the field observations. The existing conditions are very similar in both mitigation area polygons. Data collected during the 2017 seagrass survey, within the canals that are proposed for dredging, indicated that the seagrasses species (primarily shoal grass would be suitable for transplantation.

April, 2019 Field Review

The field day weather was conducive to performing the work, with clear skies, warm air and 78°F degree water temperature. Winds were light and the seas were calm. Water visibility was acceptable at 3 to 4 feet.

Once onsite, each transect endpoint was located and marked with a weighted float. Four 1-meter square quadrats were randomly placed along each transect; specifically, two were placed on each side of the un-vegetated channel. The PVC quadrat was divided with visible cord into 100 equal sections. When placed on the seafloor, percent cover of each seagrass species present was recorded utilizing the Braun-Blanquet scoring system. Also recorded was the number of sections that contained any of the seagrass species. This measure of occupancy gives a measure of the patchy distribution compared to density, which the BB scale measures. Additional data collected for each quadrant was average blade length, percent cover of drift algae, epiphyte cover, and sediment composition. Representative photographs were taken of several quadrats. **Table 3** presents the quadrant data.

At each transect terminus, the extent of the seagrass present was marked and the GPS location was recorded. Utilizing these limits established while diving, the existing seagrass limits were defined and recorded on the GPS unit from the boat. Questionable SAV signatures and limits were frequently confirmed by diving and direct observation. These data were utilized to produce the seagrass limits shown on **Figure 3.** The transects can function in the future as monitoring transects for base zero and subsequent success monitoring after the seagrass transplantation effort.

ESA

Figure 3 - Proposed Seagrass Tranplantation Location Map

Longboat Key Canal Seagrass Mitigation
Manatee County, Florida

0 150 300 450 Feet

Data Source
- ESA
Imagery Source
- ESRI Aerial Imagery

Coordinate System
NAD 1983 Florida
State Plane West

N

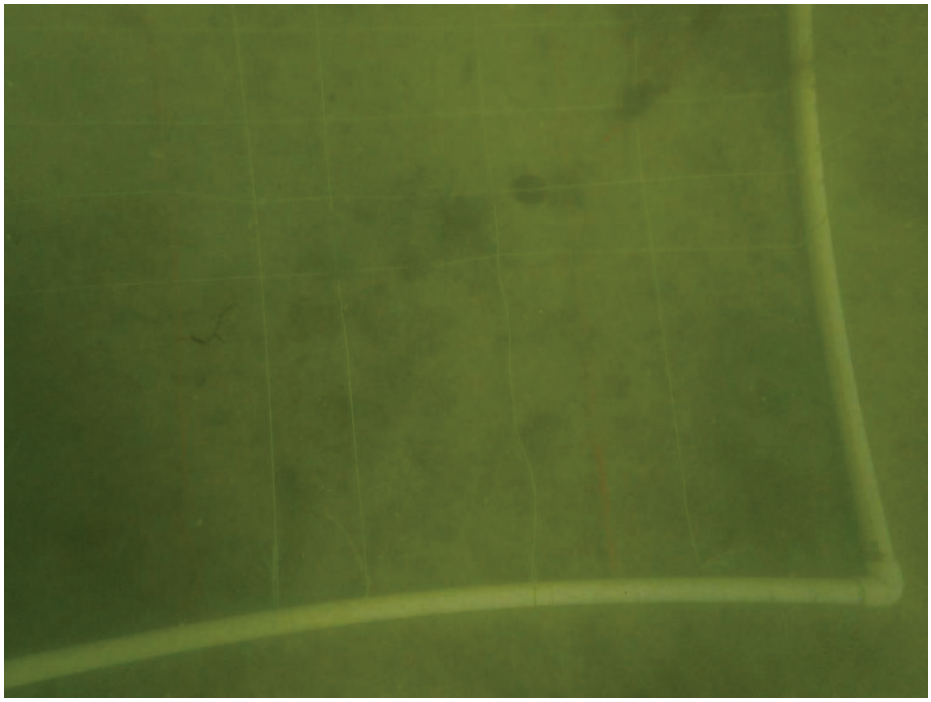
TABLE 3
SEAGRASS QUADRANT DATA

Transect	Quadrat	Seagrass Species	BB	Occurrence/100	Blade Length	Notes
T1W	1	Bare				
	2	Bare				
T1E	1	Bare/DA				100% DA
	2	Bare/DA				30% DA
T2W	1	Thalassia	2	20/100	18"	
	2	Halodule	1	4/100	4"	
T2E	1	Bare				
	2	Bare				
T3W	1	Thalassia	2	30/100		75% DA
	2	Thalassia	3	37/100	18 - 24"	70% DA
T3E	1	Thalassia	1	4/100		
	2	Bare				
T4W	1	Thalassia	3	28/100	12 - 18"	
	2	Thalassia	2	23/100	12 - 18"	
T4E	1	Bare				
	2	Bare				
T5W	1	Bare				
	2	Bare				
T5E	1	Bare				
	2	Bare				
T6W	1	Bare				
	2	Bare				
T6E	1	Bare				
	2	Bare				
T7W	1	Thalassia	2	26/100	18 = 24"	Isolated seagrass patch with 40% DA
	2	Bare				
T7E	1	Bare				
	2	Bare				

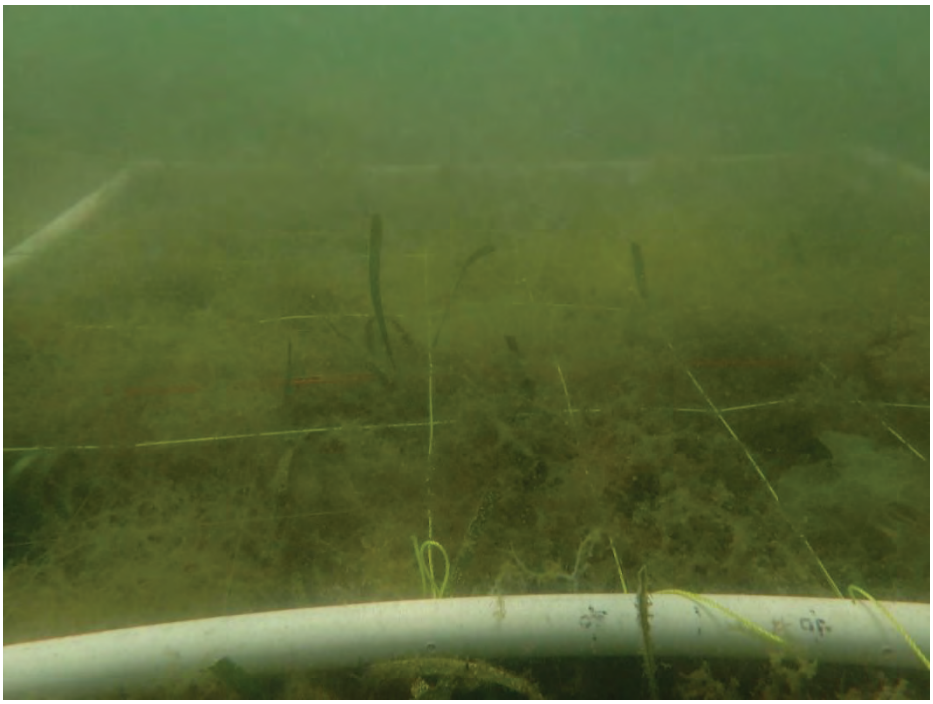
DA = Drift Algae
Bare = No seagrass coverage- bare sand/shell sediment with or without drift algae coverage

The abandoned channel was inspected along each transect. There were no observations of exposed rock or hard bottom communities. Sediment samples were previously collected and found to consist of sand with shell. There was minimal non-benthic macro fauna observed in the channel, without using further sampling techniques other than cursory observation. The species observed included the upside-down jellyfish *Cassiopeia* sp.), scaled sardine *Harengula jaguana*), and sand dollars *Leodia sexiesperforata*). A local commercial fisherman had deployed a blue crab trap line along both slopes of the channel.. A cursory observation of one trap while diving revealed that it contained several blue crabs.

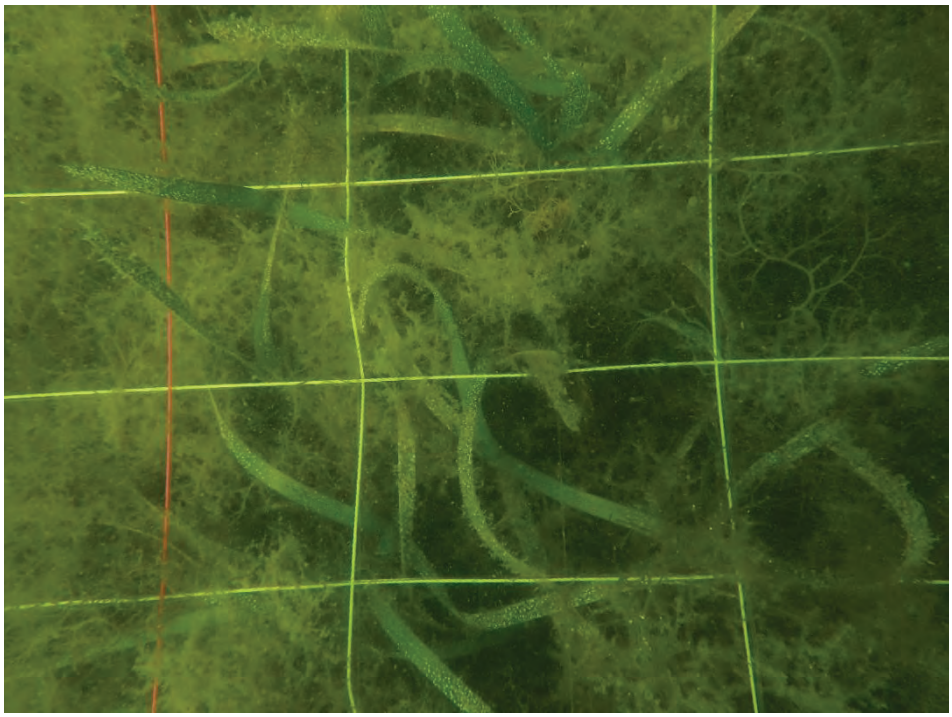
Representative Photographs:



Transect T1W Quadrat 1. Bare sand with shell fragments. April 12, 2019



Transect T3W Quadrat 1. *Thalassia* with heavy drift algae cover. April 12, 2019



Transect T4W Quadrat 1. *Thalassia* with drift algae. April 12, 2019

3.2 Seagrass Mitigation Design

In addition to the biological data collection described above, bathymetric and geotechnical data were also utilized to develop the mitigation plan.

Sediment Analysis

Taylor conducted geotechnical and laboratory investigations to support the design and permitting of the subject mitigation plan, and is is described in detail in the Longboat Key Canals Dredging Feasibility Study Geotechnical Exploration Report **Appendix D)**.

Taylor Engineering subcontracted with AMDrill, Inc. (Amdrill), to collect vibracore core borings from the selected canals most in need of maintenance dredging for continued safe navigation. They also collected six surface grab samples using a petite Ponar sampler for sediment chemistry analysis. The table below is a summary of the sediments collected in the canals.

TABLE 4
SUMMARY OF LONGBOAT KEY CANALS SEDIMENT SAMPLE GRADATION CHARACTERISTICS

Core	Depth	USCS	Dry Munsell Color	Retained #4 %	Passing #200 %	Mean mm)	Median mm)	Sorting φ)
Canal 1	1.4	SP	2.5Y 7/1	0.10	0.24	0.24	0.20	0.95
Canal 1	3.4	SW	2.5Y 8/1	0.09	0	0.23	0.21	0.81
Canal 2	2.3	SW	2.5Y 8/1	1.37	0.08	0.24	0.21	1.13
Canal 3	1.3	SP	2.5Y 4/1	1.84	0.98	0.23	0.19	1.17
Canal 3	2.3	SW	2.5Y 8/1	0.55	0	0.23	0.21	0.88
Canal 6	2.6	SP	2.5Y 5/1	0.31	1.32	0.26	0.20	1.19
Canal 6	4.1	SP	2.5Y 8/1	2.99	0.05	0.30	0.21	1.45
Canal 18	2.5	SP	2.5Y 6/1	1.83	1.47	0.27	0.18	1.50
Canal 20P	1.5	SP	2.5Y 5/1	3.51	2.45	0.31	0.18	1.76
Canal 20P	5	SW	2.5Y 8/1	0.00	3.36	0.18	0.15	1.18
Canal 21A	1	SW	2.5Y 7/1	0.00	1.25	0.18	0.15	0.90
Canal 21A	3.5	SW	2.5Y 6/1	0.00	1.61	0.20	0.16	1.02
Canal 21P	2	SW	2.5Y 7/1	2.23	1.47	0.26	0.17	1.60
Canal 22A	2.0	SP	2.5Y 8/1	5.16	0.64	0.44	0.25	1.86
Canal 32P-2	1.8	SP	2.5Y 5/1	1.67	0.8	0.25	0.18	1.37
Canal 32P-2	3.5	SP	2.5Y 8/1	0.31	0	0.21	0.19	0.81
Canal 32P-3	1.2	SP	2.5Y 5/1	6.52	0.63	0.51	0.27	1.95
Canal 32P-3	4	SP	2.5Y 6/1	0.16	0.58	0.20	0.17	0.90
Canal 32P-4	1	SP	2.5Y 4/1	2.54	1.93	0.40	0.28	1.67
Canal 32P-4	3.5	SW	2.5Y 8/1	0.65	2.45	0.21	0.20	0.84
Canal 49	1	SP	2.5Y 5/1	2.44	1.91	0.28	0.17	1.59
Canal 49	3	SP	2.5Y 8/1	1.01	0.1	0.21	0.17	1.07
Canal 55A	2	SW	2.5Y 8/1	0.00	1.92	0.15	0.14	0.65
Min				**0.00**	**0.00**	**0.15**	**0.14**	**0.65**
Max				**15.42**	**3.36**	**0.74**	**0.49**	**2.28**
Average				**2.55**	**1.05**	**0.29**	**0.21**	**1.32**

The Town has identified a potential sediment source located in Charlotte County that may be beneficially reused under regional cooperation in the seagrass mitigation site. Charlotte County has completed dredging a portion of the Myakka River, consisting of nearly 20,000 CY which is currently stored in a dredged material management area adjacent to Gulf Cove. In order to determine compatibility and suitability of this material for use at the seagrass mitigation site,

geotechnical data was collected from the Charlotte County DMMA for comparison to the Longboat Key canal sediments (proposed for dredging , and the sediment grab samples taken within and adjacent to the proposed mitigation area.

The table below describes the sediment gradation from samples taken in the proposed mitigation area and the Charlotte County DMMA material in the event this material will be used. Should the Town identify an alternate more appropriate source, a similar analysis will be performed to confirm suitability at the site.

TABLE 5
MITIGATION AREA IN SITU AND CHARLOTTE COUNTY STOCKPILE GRADATION DATA COMPARISON

Sample	Depth	USCS	Dry Munsell Color	Retained #4 %	Passing #200 %	Mean mm)	Median mm)	Sorting φ)
LBK-2	Surface Grab	SP	5Y6/2	0.00	3.52	0.16	2.74	0.43
LBK-5	Surface Grab	SP-SM	5Y6/2	4.02	6.81	0.18	2.78	1.00
LBK-6	Surface Grab	SP-SM	2.5Y6/2	0.56	5.20	0.16	2.78	0.70
LBK-8	Surface Grab	SW	5Y6/2	1.61	3.96	0.17	2.74	0.87
In Situ Mitigation Site Averages				1.55	4.87	0.16	2.76	0.75
LBK-M-1	Surface Grab	SP-SM	2.5Y5/2	0.16	9.62	0.20	2.51	0.73
LBK-M-2	Surface Grab	SM	5Y4/1	0.13	16.70	0.20	2.59	0.73
LBK-M-3	Surface Grab	SM	5Y4/1	1.83	15.93	0.23	2.51	1.09
LBK-M-Dike	Surface Grab	SM	7.5YR4/2	0.26	15.50	0.22	2.50	0.82
Charlotte County Stockpile Averages				0.59	14.44	0.21	2.53	0.84
			Min	0.00	3.52	0.16	2.50	0.43
Averages of Both Sites' Data			Max	4.02	16.70	0.23	2.78	1.09
			Average	1.07	9.66	0.19	2.64	0.80

Geotechnical Summary

In general, in situ sediments from the proposed mitigation area are coarser and contain fewer fines than the sediments from the Charlotte County stockpiles while average mean grain size median grain size, and sorting coefficients are very similar between the two groups of sediments.

Compared to the sediments proposed for dredging from the selected Longboat Key canals, the mitigation area in situ and Charlotte County stockpile sediment samples were generally finer grained, with less gravel. These differences, however, were relatively minor with respect to consideration of the compatibility of the proposed dredged sediments and Charlotte County stockpiled sediments for use as backfill at the proposed mitigation areas.

Should the Town use the Charlotte County stockpiled sediments as backfill in the mitigation areas, we recommend placing the stockpile finer) sediments first, then covering the Charlotte County sediments with coarser sediments dredged from from the Longboat Key canals. The

Longboat Key canal sediments contain a lower fraction of fines and more closely compare to the mitigation area sediments.

The results of sediment chemistry laboratory testing indicate that the sediments from the Longboat Key canals were clean and met cleanup standards (except for arsenic in one of the two composite samples). Arsenic levels in SED4-6, (2.2 mg/kg) when averaged with arsenic in SED1-3 (1.3 mg/kg) falls well below the FDEP residential Soil Cleanup Target Level SCTL) for arsenic (2.1 mg/kg . This mixing will occur during dredging and dewatering, resulting in a dewatered sediment acceptable for general upland disposal and beneficial use.

Bathymetry

The bathymetry data was used to prepare existing and proposed plan views and cross sections as seen in **Figure 4**. Taylor calculated the volume of fill necessary to bring the bottom elevation of the historical channel up to the surrounding bathymetry (-4 feet NAVD). This will be at an acceptable grade for seagrass establishment as shown by the existing adjacent seagrass habitat.

Transplant Methodology

Based on rough preliminary estimates, the mitigation site requires approximately 23,000 CY of fill to achieve the required 2.74 acres of mitigation. The canal maintenance dredging will produce approximately 9,000 cubic yards of fill. To supply the additional +/- 14,000 cubic yards of volume needed to fill the site, the Town will identify additional sediment sources; the source proposed at this time for the plan is dredged sediment from Charlotte's County's Myakka River dredging project. Charlotte County has approximately 20,000 CY of material currently stored in a DMMA which may be available for the Town's use. As was previously mentioned, sediment sampling of the Charlotte County dredged material, the Longboat Key canals, and the proposed seagrass mitigation site has been performed to evaluate material compatibility. The results of this analysis can be found in the attached Geotechnical Report **Appendix D** .

The material will be truck-hauled from the DMMA to a designated stockpile area located at Overlook Park on the south end of Longboat Key. Overlook Park is within an FDOT right of way, situated on the northwest side of the New Pass Bridge abutment. The contractor will store Charlotte County DMMA material on the upland at Overlook Park and transfer the material from that location to the mitigation site. As Overlook Park can hold only a portion of the necessary volume, the contractor will be moving material to the park and from the park to the mitigation site over much of the project period. All Charlotte County DMMA material will be offloaded from Overlook Park for placement in the mitigation site first then subsequently covered with dredged material from the Longboat Key residential canals. Once the mitigation site has been filled to match the surrounding grade and allowed to settle to a final elevation of -4 feet to – 5ft NAVD the contractor will begin seagrass transplanting. Detailed construction plans are included in **Appendix E**.

Seagrass Transplant

Seagrass mitigation will consist of transplanting seagrass harvested from the nearby canals that are in need of maintenance dredging to sustain access to Sarasota Bay.

A modified shovel method using plugs would be utilized. This method uses a 6-inch diameter coring device, similar to a cylinder punch, to extract and hold a sediment and seagrass plug (photo below . The plug will be extracted from the surrounding sediment by tilting the device and holding the plug in place by a combination of suction and securing the plug by hand. These plugs will be transferred to transport PVC cylinders, temporarily placed in seawater filled trays, and transported to the prepared mitigation site to be installed the same day as extraction.

The mitigation area will be planted using 6-inch cores placed on 3-foot centers.Units will be installed in staggered rows at 3-foot spacing using a PVC planting spacer photo below). The crew will be marking 100-foot sections using PVC pipes and will be able to report weekly the amount of planting units installed within the planting area as well as be able to show exactly where plantings occurred each week.

Seagrass Core Device

Seagrass Planting Spacer

HYDROGRAPHIC SURVEY
LONGBOAT KEY DREDGED MATERIAL DISPOSAL AREA
MANATEE COUNTY, FLORIDA

GENERAL NOTES

1. THE FOLLOWING FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION VERTICAL CONTROL MONUMENTS WERE RECOVERED AND UTILIZED FOR THE ELEVATIONS INDICATED HEREIN:

   DESIGNATION "13-84-B09", NAVD 88 ELEV.=3.43'
   DESIGNATION "13-84-B12", NAVD 88 ELEV.=7.83'

2. HORIZONTAL CONTROL SET BY TRIMBLE VIRTUAL REFERENCE STATION DOUBLE OBSERVATIONS.
2. THIS SURVEY IS REFERENCED TO A PROJECTION OF THE FLORIDA STATE PLANE COORDINATE SYSTEM (WEST ZONE NAD 1983/2011 ADJUSTMENT).
3. ELEVATIONS SHOWN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
4. HYDROGRAPHIC DEPTHS COLLECTED WITH AN ODOM CVM ECHOSOUNDER AND HIGH FREQUENCY TRANSDUCER OPERATING AT 200 KHZ. REAL TIME KINEMATIC GPS (RTK GPS) TIDES WERE APPLIED DURING THE SURVEY. RTK GPS WAS USED FOR THE HORIZONTAL POSITIONING OF VESSEL.
5. DATE OF FIELD WORK: DECEMBER 18, 2018.
6. ELEVATIONS SHOWN HEREON ARE REPRESENTATIVE OF CONDITIONS AT THE TIME THE FIELD WORK WAS COMPLETED.
7. THIS IS NOT A BOUNDARY SURVEY. TITLE WORK WAS NOT PROVIDED.
8. THIS SURVEY IS SUBJECT TO PERTINENT EASEMENTS, RIGHTS-OF-WAY AND RESTRICTIONS OF RECORD, IF ANY.
9. RIGHT-OF-WAY LINES INDICATED HEREIN ARE BASED ON AVAILABLE PUBLIC RECORD INFORMATION TOGETHER WITH FOUND BOUNDARY MONUMENTATION.
10. THIS SURVEY DRAWING WAS PREPARED FOR THE EXCLUSIVE USE OF THE PARTY OR PARTIES CERTIFIED TO BELOW FOR THE EXPRESS PURPOSE STATED HEREON AND/OR CONTAINED IN THE CONTRACT BETWEEN HYATT SURVEY SERVICES, INC. AND THE CLIENT FOR THIS PROJECT. COPYING, DISTRIBUTING AND/OR USING THIS DRAWING, IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN ORIGINALLY INTENDED WITHOUT WRITTEN CONSENT FROM HYATT SURVEY SERVICES, INC. IS STRICTLY PROHIBITED AND RENDERS THE SURVEYOR'S CERTIFICATION, SIGNATURE AND SEAL NULL AND VOID. ANY QUESTIONS CONCERNING THE CONTENT OR PURPOSE OF THIS DRAWING SHOULD BE DIRECTED TO HYATT SURVEY SERVICES, INC.
11. THIS SURVEY IS CERTIFIED TO TAYLOR ENGINEERING.

LEGEND

BOS	BOTTOM OF STRUCTURE
CO	COUNTY
CP	CONTROL POINT
CPP	CORRUGATED PLASTIC PIPE
DBH	DIAMETER AT BREAST HEIGHT
DIP	DUCTILE IRON PIPE
DL	DRIP LINE (RADIUS)
EL	ELEVATION
ELEV	ELEVATION
EM	ELECTRIC METER
GIS	GEOGRAPHIC INFORMATION SYSTEM
INC	INCORPORATED
INV	INVERT
IRS	IRON ROD SET
LB	LICENSED BUSINESS
NAVD	NORTH AMERICAN VERTICAL DATUM
NDS	NAIL & DISK SET
NGS	NATIONAL GEODETIC SURVEY
NO	NUMBER
PID	PARCEL IDENTIFICATION NUMBER
PSM	PROFESSIONAL SURVEYOR & MAPPER
PVC	POLYVINYL CHLORIDE
R/W	RIGHT-OF-WAY
RCP	REINFORCED CONCRETE PIPE
RNG	RANGE
SIRC	SET IRON ROD & CAP
TWN	TOWNSHIP
#	NUMBER

— — 1' — — 1-FOOT CONTOURS

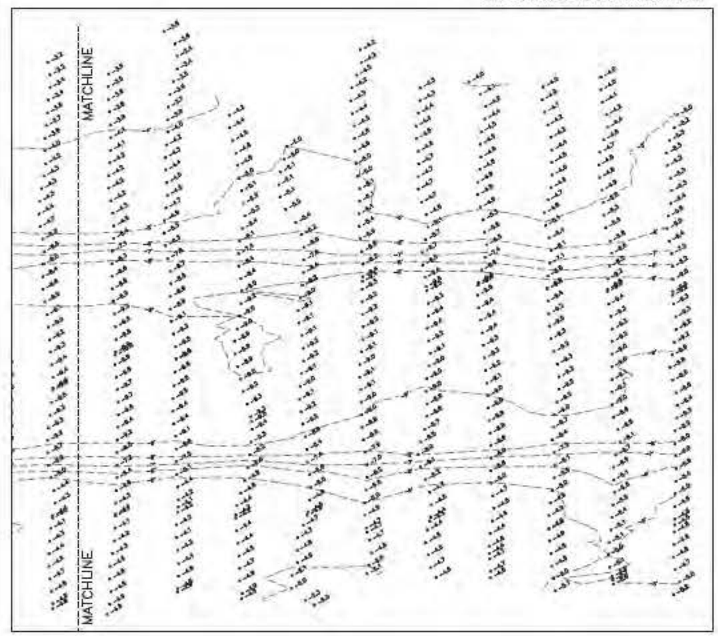
× X.X' SPOT ELEVATION (SOFT)

× X.XX' SPOT ELEVATION (HARD)

VICINITY MAP (NOT TO SCALE)

Control Table				
Point #	Northing	Easting	Elevation	Description
1	[illegible]	[illegible]	3.43	13-84-B09
2	[illegible]	[illegible]	7.83	13-84-B12

SEE SHEET 2 FOR CONTINUATION

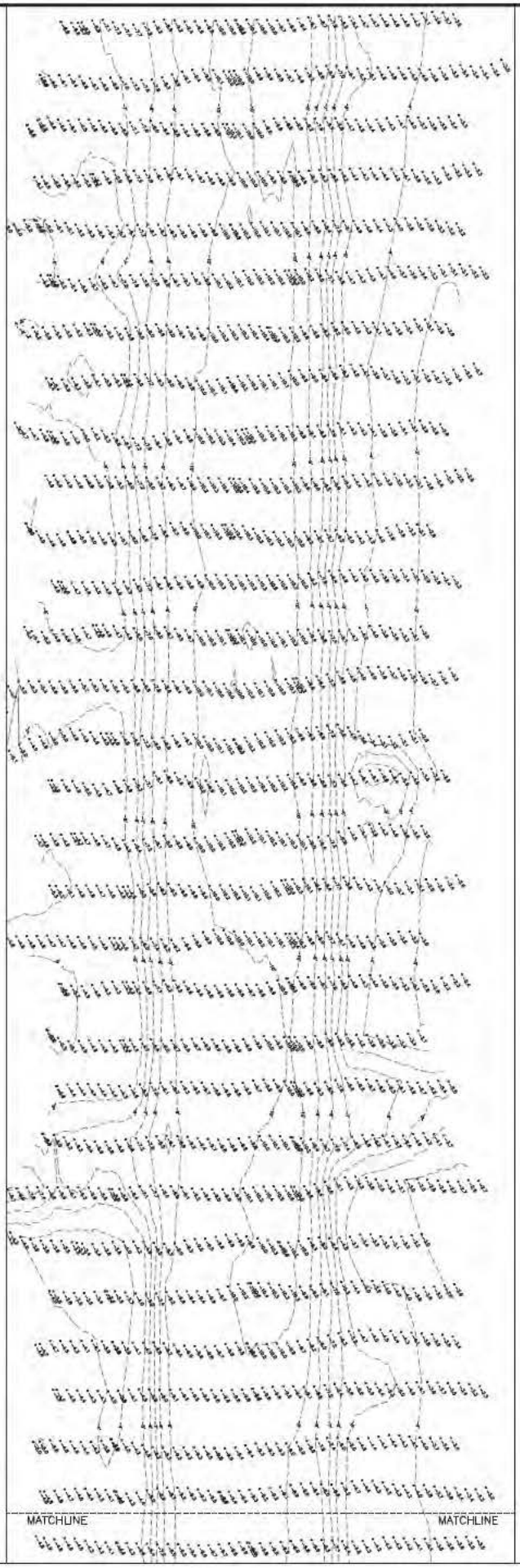


THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

SHANE ALAN CHRISTY, PSM
FLORIDA SURVEYORS REGISTRATION NO. 7160

Hyatt Survey Services, Inc.
LB No.: 7203 Geographic Data Specialists
11007 8th Avenue East Bradenton, Florida 34212
Phone: (941) 748-4693 Fax: (941) 744-1643

PROJECT #	18-2315	
SURVEY #	18-2315	
SECTION TWN RNG	N/A	
SCALE	1" = 50'	
SURVEYED	HYATT	12/2018
DESIGNED		
DRAWN	SC	12/2018
CHECKED	RH	12/2018



SEE SHEET 1 FOR SURVEY NOTES

PROJECT #	18-2315
SURVEY #	18-2315
SECTION TWN, RNG	N/A
SCALE	1" = 50'
SURVEYED	12/2018
DESIGNED	
DRAWN	SC 12/2018
CHECKED	RH 12/2018

SHEET 2 OF 2

HYDROGRAPHIC SURVEY
LONGBOAT KEY DREDGED MATERIAL DISPOSAL AREA
MANATEE COUNTY, FLORIDA

Based on the initial seagrass surveys conducted in the canals to be dredged, the primary habitat impacted consists of shoal grass or a mix of shoal grass with some limited amounts of turtle grass. Typically, the survey results found the shoal grass to be impacted was growing at higher relative density than the turtle grass. Where impacted and present in sufficient density, both species will be available for salvage and transplanting. At the proposed unit size and 3 foot on center spacing, the mitigation area would initially be vegetated with 5% cover of seagrass units. It is expected that the transplanted plugs will expand colonize the seagrass mitigation areas to ultimately mimic the natural seagrass densities adjacent to the mitigation area.

Mitigation Construction Schedule

The sequence of dredging of the canals and actual duration will be determined by the project engineer with knowledge of the dredging techniques and fill quantities available. Below are some items that will be considered when scheduling the transplanting effort:

1. Seagrass growing season is April through October.Ideally, the transplanting should occur as early as possible in the growing season.
2. Salvaged and transplanted seagrasses will require daily collection and planting. Therefore, preparation of a stable mitigation site is critical.
3. Prior to initial canal dredging, the impacted seagrass must be transplanted to a prepared mitigation site. The sequence of construction will require that at a minimum, one of the two mitigation polygons be filled to design grade in order to receive the initial transplant units. Once the first mitigation area is prepared and the units of seagrass removed from the initial canal to be dredged, than the dredged material is available to fill the second mitigation polygon. Alternatively, canal dredging material produced in canals where no impacts are proposed can occur initially to provide mitigation fill material. Priority sequencing of canal dredging will necessitate the dredging or otherwise off-site sourcing of the fill material for one of the two separate mitigation site areas prior to impacting seagrass. Undesirable material such as rock may be allowed for the base fill of the abandoned channel, however a stable top layer of sand of a minimum thickness of 12-18 -inches should be specified as a growing medium. Using an alternate base material for the fill cross-section must consider shrinkage or settling in order to ensure that the finished grade is stable and at the design elevation.
4. Turbidity control will be installed around the mitigation areas during construction.
5. Provide the fill necessary to bring the first polygon to design mitigation grade, whether from dredging the canals without SAV impacts, or sourcing the material from another location such as Charlotte County.
6. Once the first area is at grade, the transplant crew can begin harvesting and transplanting the seagrass, concentrating on dredge sites closest to the mitigation area or otherwise by harvesting and clearing canals that may be priority for dredging and fill placement. A cost savings can be achieved by limiting the number of donor sites and limiting the distance to the transplant receiver site, however quality of the source material is paramount for transplant success. The donor material should be limited to seagrass of medium to high stem density in sandy substrate. Substrates of rocky rubble or silty fines should be avoided.

7. An experienced crew typically can transplant about 750 units per day. However, this figure may change once the contractor determines the canal locations and travel distance.

8. Each planting unit is a 6-inch core. Units are to be placed at 3' on-center spacing. Therefore, a 2.74-acre mitigation are will require 16,745 transplant units. Transplanting extra units is recommended to account for any units that do not survive.

9. During the transplant operation for the first mitigation area, the turbidity control installation, canal dredging and placement of fill for the second mitigation area will proceed.

10. Transplanting seagrass to the second mitigation area can proceed only after the second area is brought to grade and stable. Placing seagrass units during fill operations is to be avoided due to turbidity. The planting operation will most likely require two separate mobilizations and field efforts.

11. Because the project plans include sequential and intertwined dredging, fill, and planting activities, it may be necessary at some point in the project to stockpile seagrasses. If this is necessary, the Town will consult with the regulatory agencies to obtain the necessary approvals.

3.3 Adaptive Management Plan

The Town understands that the project includes the possibility that the mitigation efforts may require modification during or after constrution to achieve the project goals. As the construction project proceeds, construction monitoring may reveal the need to to adjust for schedule changes due to environmental conditions that affect the rate at which the mitigation site is constructed, or the availability of sufficient sand, or other unanticipated conditions.

Possible adaptive management changes could include but are not limited to use of sand sources other than the Charlotte County material, the need to stockpile seagrasses (for reasons identified above); use of a donor site to augument seagrass collected from canals where dredging will occur; prop scar / blowout hole rehabilitation to complete the required mitigation see Figure 2: nearby areas in Sarasota Bay with the potential for prop scar rehabilitation or other areas with blowout holes and prop scars suitable for mitigation. If one or more conditions occur that require the Town to adjust the project, the state and federal regulatory agencies will be consulted as part of the management plan revisions; both to help identify the best approach and to complete any necessary permit modifications.

SECTION 4
Seagrass Mitigation Monitoring

4.1 Monitoring Methodology

Field Seagrass Monitoring

Once the seagrass has been transplanted within the mitigation area, underwater field survey monitoring will be conducted during the Florida growing season (April - October). It is assumed that the permit will stipulate the following monitoring schedule: Base zero, semi-annual monitoring with annual reports for Year 1 and Year 2, and annual monitoring with reports for Year 3 through Year 5.

The limits of the mitigation area will be clearly identified in the field using PVC pipes in addition to a GPS coordinates. Transects will be established perpendicular to the historic channel and extend 50 feet. on either side of the former channel bank. Transects will be on 50-foot intervals. A 1-meter^2 PVC quadrat divided into 100 sub-sections will be placed at 10-foot interval along the transects and each 1-meter^2 quadrat will be evaluated for percent cover for each seagrass species present using the Blaun Blanquet scale. In addition to the species density, qualitative data of existing conditions, i.e. presence of macroalgae, epiphytes, and general health will be recorded. Representative photographs will be taken of representative quadrat locations and any other observed marine fauna and/or flora will be noted. Water depths will be measured and corrected for tidal stage and atmospheric conditions will be documented. Any conditions observed which appear to have an effect on the transplant success will be noted.

Report Summary

Monitoring reports will summarize the results of the seagrass monitoring effort. The report will include a map showing transect locations This map will also be made available in digital format for use in any subsequent CAD drawings. In addition, all photographs will be provided to the client electronically.

4.2 Mitigation Success Criteria

The overall goal of the mitigation is to provide appropriate and sufficient compensation for the unavoidable impacts associated with the proposed maintenance dredging of the canals. By raising the elevation of the historic channel to match the surrounding area with viable seagrass communities, it is assumed that the transplanted seagrasses will coalesce and mimic the natural adjacent seagrass beds.

Seagrass mitigation success criteria are based on the standard monitoring and evaluating success guidelines from Fonseca et al. 1998. BB scores will be calculated using the pre-construction seagrass survey data. Those scores will provide the standard against to evaluate the mitigation area performance. Comparison of the BB scores from the preconstruction survey and the post construction seagrass monitoring data, and the total mitigation area achieved will be utilized to demonstrate that sufficient mitigation has been achieved and that the project is a success.

SECTION 5
References

Braun-Blanquet, J. 1932. Plant sociology: the study of plant communities. Koeltz Scientific Books, Koenigstein, Germany.

Fonseca, M.S., W.J. Kenworthy, and G.W. Thayer. 1998. Guidelines for the conservation and restoration of seagrass in the United States and adjacent waters. NOAA COP/Decision Analysis Series. 222 pp.

Appendix A
Canal Resource Survey Limits

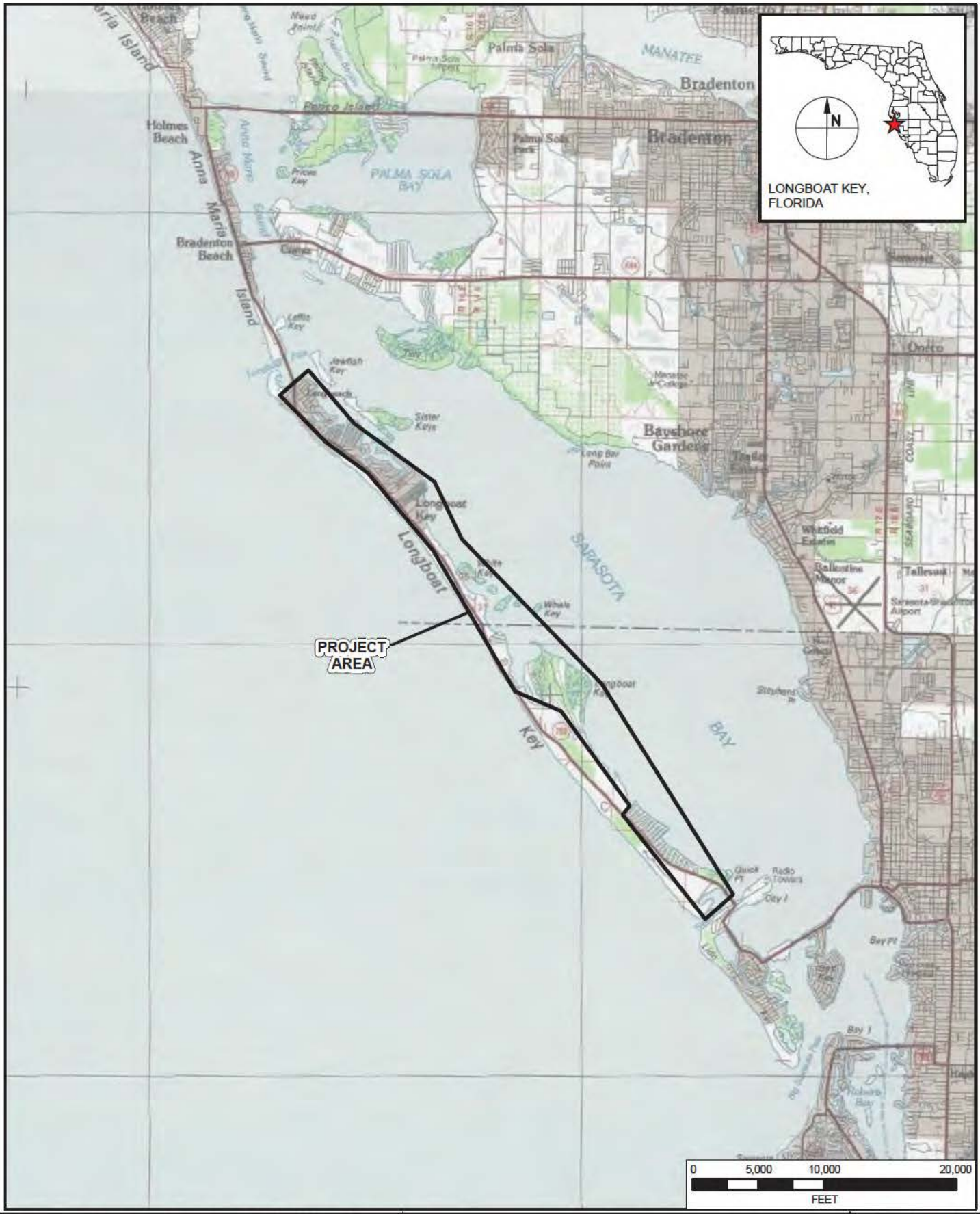


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FIGURE 1
LOCATION MAP
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006-01
DRAWN BY	KM
SHEET	
DATE	JANUARY 2018

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FIGURE 2
RESOURCE SURVEY MAP
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

PROJECT	C2016-006-01
DRAWN BY	KM
SHEET	
DATE	JANUARY 2018

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FIGURE 3
RESOURCE MAP - CANAL 1
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017
3. RESOURCE SURVEY (ESA SCHEDA) COMPLETED: NOVEMBER 01, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
SHEET	
DATE	JANUARY 2018

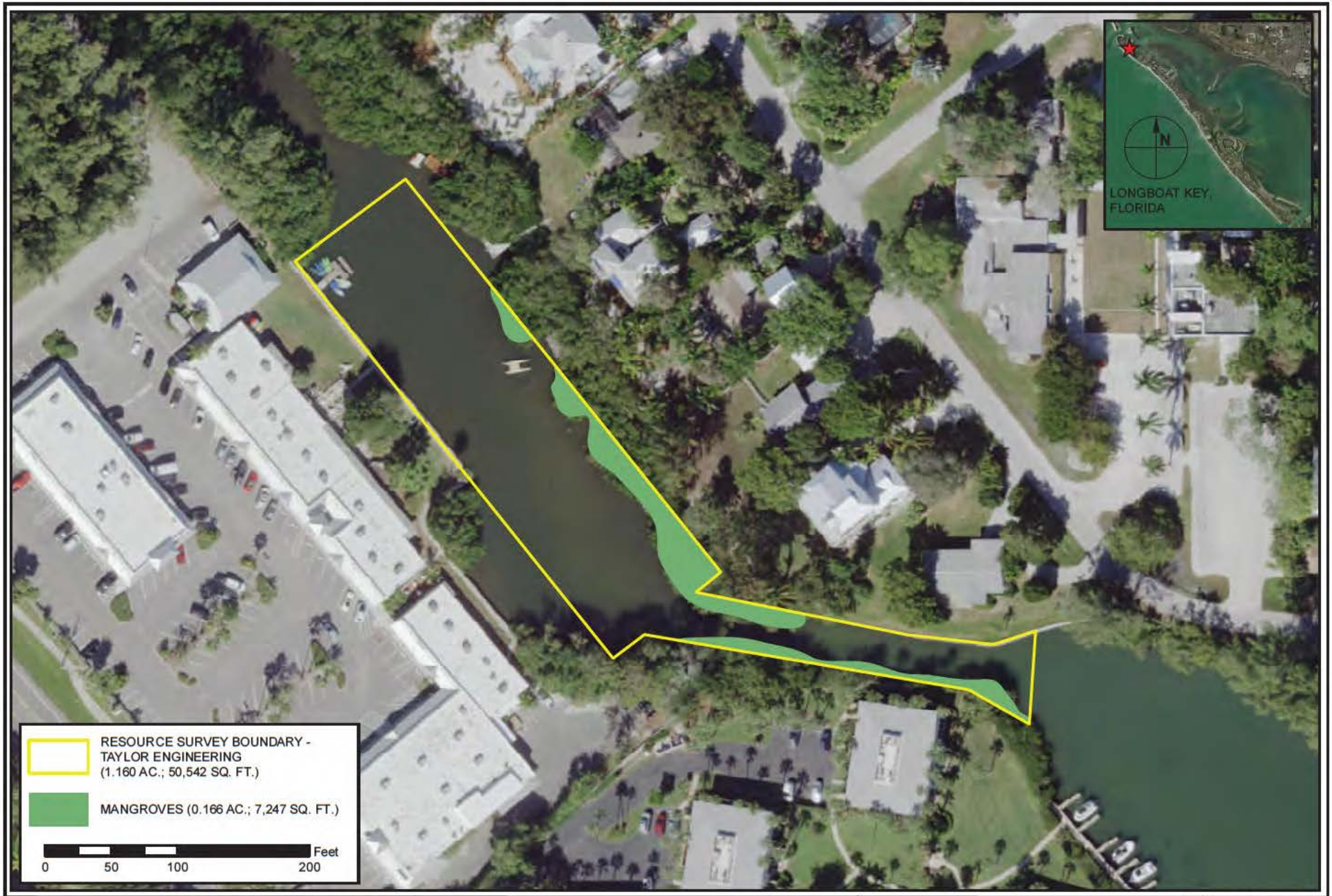

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FIGURE 4
RESOURCE MAP - CANAL 2
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
SHEET	
DATE	JANUARY 2018

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FIGURE 5
RESOURCE MAP - CANAL 3
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
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DATE	JANUARY 2018

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FIGURE 6
RESOURCE MAP - CANAL 6
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
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DATE	JANUARY 2018

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FIGURE 7
RESOURCE MAP - CANAL 18
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
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DATE	JANUARY 2018

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FIGURE 8
RESOURCE MAP - CANAL 20P
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
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DATE	JANUARY 2018

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FIGURE 9
RESOURCE MAP - CANAL 21P (NORTH)
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
SHEET	
DATE	JANUARY 2018

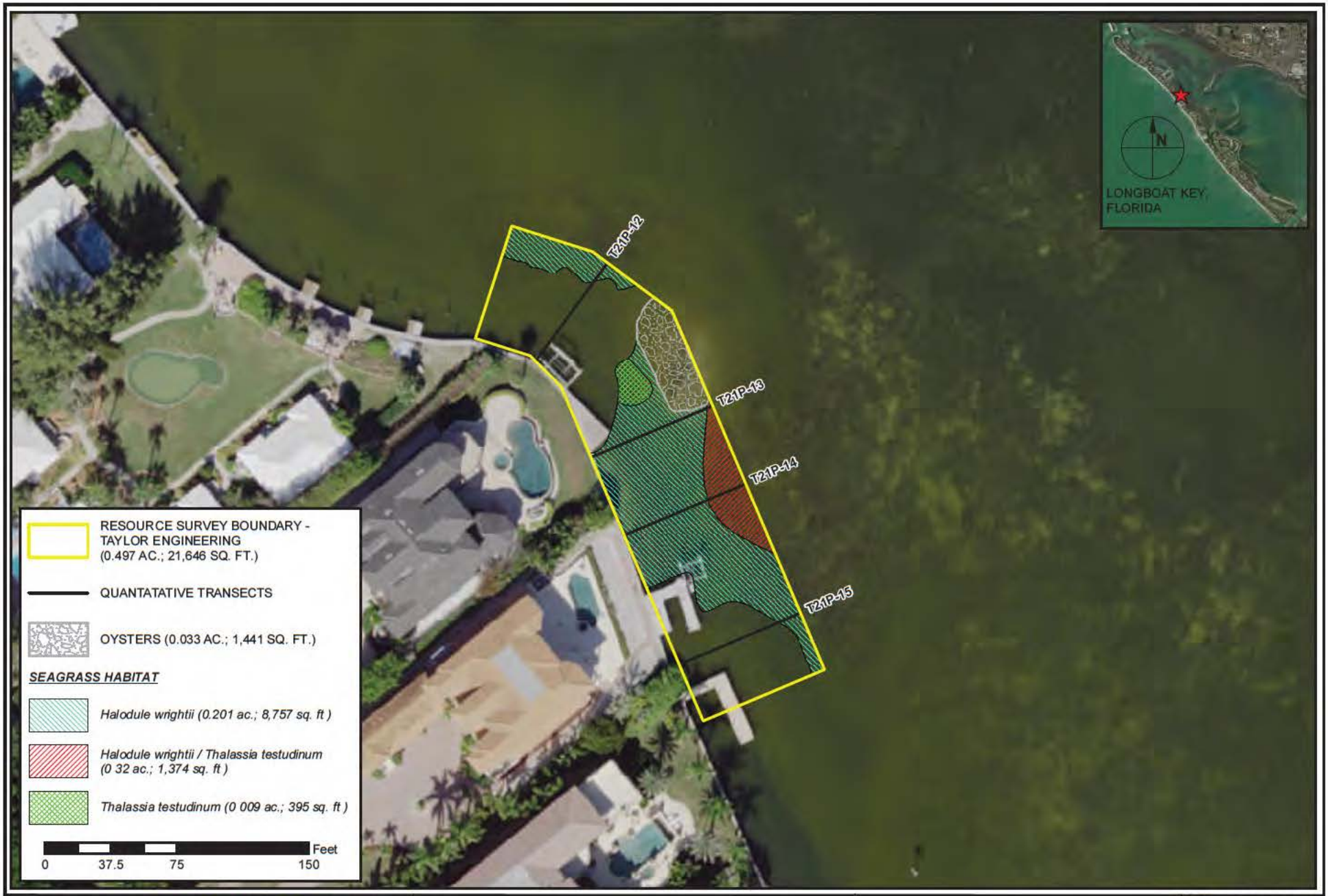

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FIGURE 10
RESOURCE MAP - CANAL 21P (SOUTH)
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
SHEET	
DATE	JANUARY 2018

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FIGURE 11
RESOURCE MAP - CANAL 31D
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
SHEET	
DATE	JANUARY 2018

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FIGURE 12
RESOURCE MAP - CANAL 32P (NORTH)
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
SHEET	
DATE	JANUARY 2018

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FIGURE 13
RESOURCE MAP - CANAL 32P (SOUTH)
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
SHEET	
DATE	JANUARY 2018

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FIGURE 14
RESOURCE MAP - CANAL 49
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017

PROJECT	C2016-006-01
DRAWN BY	KM
SHEET	
DATE	JANUARY 2018

Appendix B

Seagrass Surveys Reports

Report 1: Taylor Engineering

TAYLOR ENGINEERING, INC.

Seagrass Survey

Longboat Key Canal Maintenance Dredging
Manatee and Sarasota Counties, Florida
January 2018

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Seagrass Survey
Longboat Key Canal Maintenance Dredging
Manatee and Sarasota Counties, Florida

Prepared for

Town of Longboat Key

by

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1800 2nd Street, Suite 714
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C2016-006-01

January 2018

TABLE OF CONTENTS

LIST OF FIGURES

1.0 INTRODUCTION

The Town of Longboat Key is proposing to maintenance dredge up to 16 residential and access canals serving residential properties within Sarasota Bay in Manatee and Sarasota Counties, Florida. Figure 1 shows the general project location. Under contract to the Town of Longboat Key, Taylor Engineering completed seagrass surveys for ten of the canals including Canals 1, 2, 3, 6, 18, 20P, 21P, 31D, 32P, and 49 (ordered from north to south; Figure 2). The survey aimed to map and characterize seagrass and other sensitive submerged resources (e.g., oysters) within and adjacent to the proposed dredging areas. Data collected during the survey will support the planning, design, and permitting phases of the proposed project including resource impact analysis and mitigation planning for unavoidable impacts. This report documents the results of the seagrass survey.

2.0 SITE DESCRIPTION

The ten canals surveyed span approximately nine miles along the bayside portion of Longboat Key (Figure 2). Canal 1, the northernmost canal surveyed, occurs just south of Longboat Pass while Canal 49, the southernmost canal surveyed, occurs just north of New Pass. The seagrass survey focused on the areas where shoaling exists and where maintenance dredging will likely occur. Within these areas, the survey included the channel boundary and an adequate buffer outside of the channel to account for all potential direct and secondary impact areas.

3.0 TECHNICAL APPROACH

3.1 Survey Methodology

The survey included a preliminary visual reconnaissance of the study area followed by intensive sampling within areas identified as seagrass habitat. The following subsections detail the field survey approach.

3.1.1 Preliminary Visual Reconnaissance

Taylor Engineering environmental staff performed a preliminary in-water visual reconnaissance to determine the general occurrence and distribution of seagrasses within the survey areas. The in-water reconnaissance generally consisted of a Taylor Engineering biologist snorkeling along sinuous transects

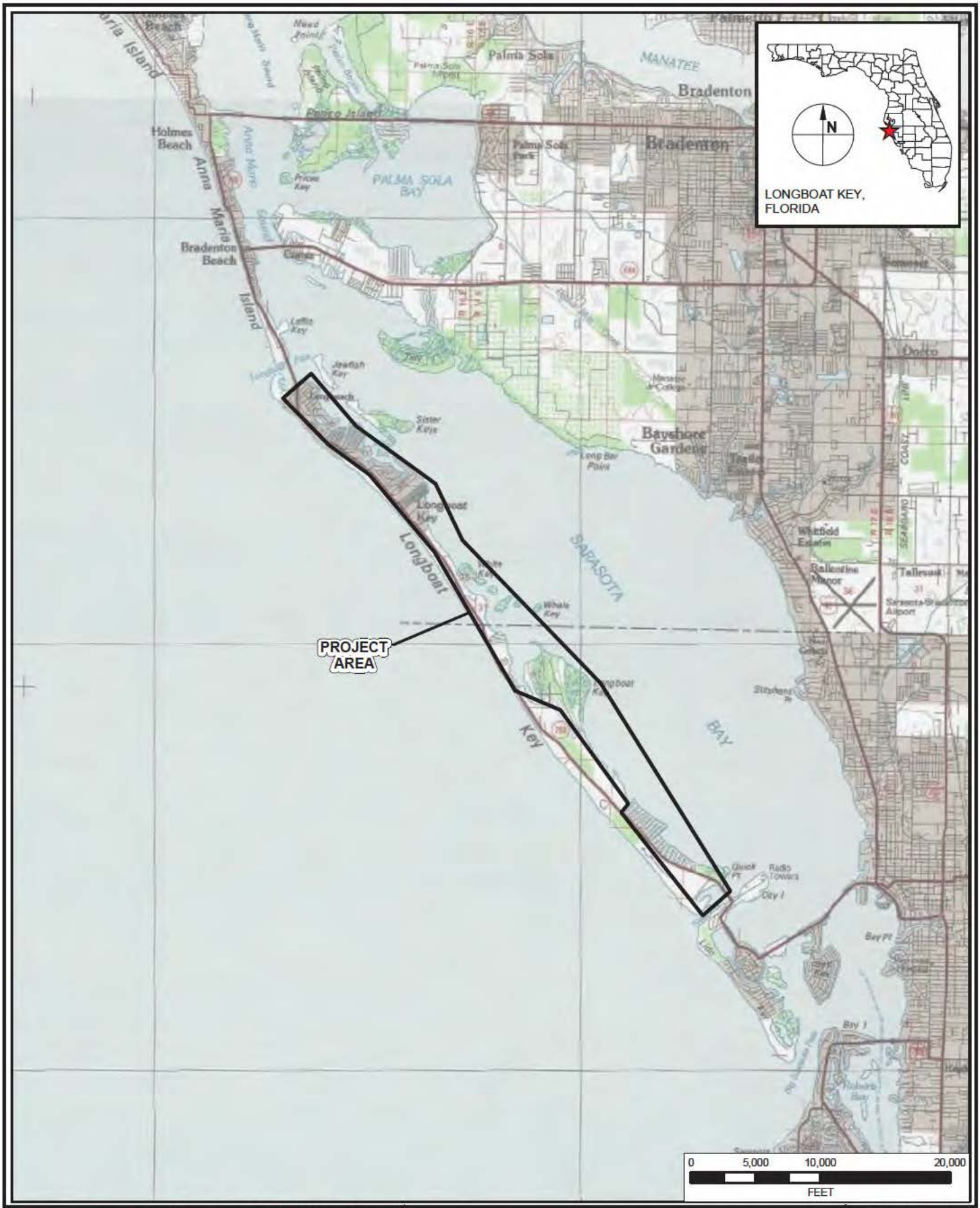

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FIGURE 1
LOCATION MAP
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

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FIGURE 2
RESOURCE SURVEY MAP
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

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spaced approximately 50 feet apart covering the survey areas. The biologist used markers (bamboo stakes or buoys) to delineate the extent of seagrass habitat or the location of other sensitive submerged resources encountered during the preliminary assessment. A Trimble™ differentially-corrected global positioning system (DGPS) providing sub-meter accuracy recorded the horizontal location of the markers.

3.1.2 Detailed Sampling

For the detailed portion of the survey, Taylor Engineering environmental staff followed one of two sampling methods. For areas containing larger seagrass habitat areas — Canals 21P (North and South) and 31D — Taylor Engineering established a series channel-perpendicular transects through the mapped seagrass habitat. Transect spacing varied depending on the extent of habitat within the survey area. Field staff used the DGPS to navigate to each transect endpoint. Flagged bamboo stakes or weighted buoys marked the transect endpoints. A weighted nylon line marked in one meter increments extended along the submerged bottom between the transect endpoints to establish the transect line. A field biologist swam along each transect and deployed a 1-m^2 quadrat subdivided into 100 sub-units at the 0 point and at 5-meter intervals along each transect. For the remaining survey areas that generally contained smaller areas of seagrass habitat, Taylor Engineering deployed multiple 1-m^2 quadrats haphazardly (semi-random approach) to sufficiently characterize seagrass occurrence and abundance. At each quadrat location (along transect or haphazardly deployed), a field biologist collected data for each seagrass species present including the number of sub-units containing at least one seagrass shoot, the average cover abundance score (Braun-Blanquet, 1965), and additional information (e.g., water depth, substrate conditions) as appropriate. For each quadrat, field staff assigned a cover abundance score for each species present based on the following cover scale values (Braun-Blanquet scale):

0.1 = Solitary shoot
0.5 = Few shoots with less than 5% cover
1.0 = Numerous shoots but less than 5% cover
2.0 = Any number of shoots with 5 – 25% cover
3.0 = Any number of shoots with 25 – 50% cover
4.0 = Any number of shoots with 50 – 75% cover
5.0 = Any number of shoots with greater than 75% cover

3.2 Seagrass Data Analysis

Following data collection, Taylor Engineering staff used the quadrat data to calculate the mean Braun-Blanquet (B-B) score, associated percent cover, and frequency of occurrence for each species present within each survey area. Interpolation of the B-B cover abundance scale midpoint was used to determine the associated percent cover. Frequency of occurrence, expressed as a percentage, is calculated by dividing the total number of quadrat sub-units containing seagrass by the total number of sub-units, then multiplied by 100.

4.0 RESULTS AND DISCUSSION

Taylor Engineering environmental staff conducted the survey on October 10 – 11 and 25 – 26, 2017. Taylor Engineering secured authorization from the U.S. Army Corps of Engineers (Ms. Angela Ryan; Chief, Tampa Permits Section) and National Marine Fisheries Service (Mr. Mark Sramek), to complete the survey outside of the recommended annual survey window (June 1 – September 30) due to the water quality effects of Hurricane Irma. Weather during the October 10 – 11 survey included partly cloudy skies 80 to 90-degree temperatures, and light to moderate (~5 to 15 mph) east to northeast winds. Weather during the October 25 – 26 survey included fair skies, 60 to 75-degree temperatures, and light to moderate (~5 to 18 mph) winds. In general, underwater visibility ranged from about two to five feet. Shallow water depths ranging from approximately one to six feet allowed the use of snorkeling equipment to complete the survey.

4.1 Canals 1 – 3

The survey areas for Canals 1, 2, and 3 totaled 1.121 acres, 1.160 acres, and 0.680 acres, respectively. Taylor Engineering did not identify any seagrasses or other sensitive submerged resources within these survey areas. Water depths generally ranged from two to six feet. Sediment conditions ranged from fine sand to sandy silt (finest sediments occurred near canal ends), often overlain with vegetation detritus. Mixed mangroves, primarily red mangroves (*Rhizophora mangle*), occurred along portions of the canal boundaries (Figures 3 – 5). The mangrove root biomass was generally restricted to the canal edges. Some overhanging mangrove branches encroached into the canal channel.

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FIGURE 3
RESOURCE MAP - CANAL 1
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

Notes:
1. AERIAL REFERENCE: FDOT 2017
2. RESOURCE SURVEY (TAYLOR ENG.) COMPLETED: OCTOBER 10-11 & 25-26, 2017
3. RESOURCE SURVEY (ESA SCHEDA) COMPLETED: NOVEMBER 01, 2017

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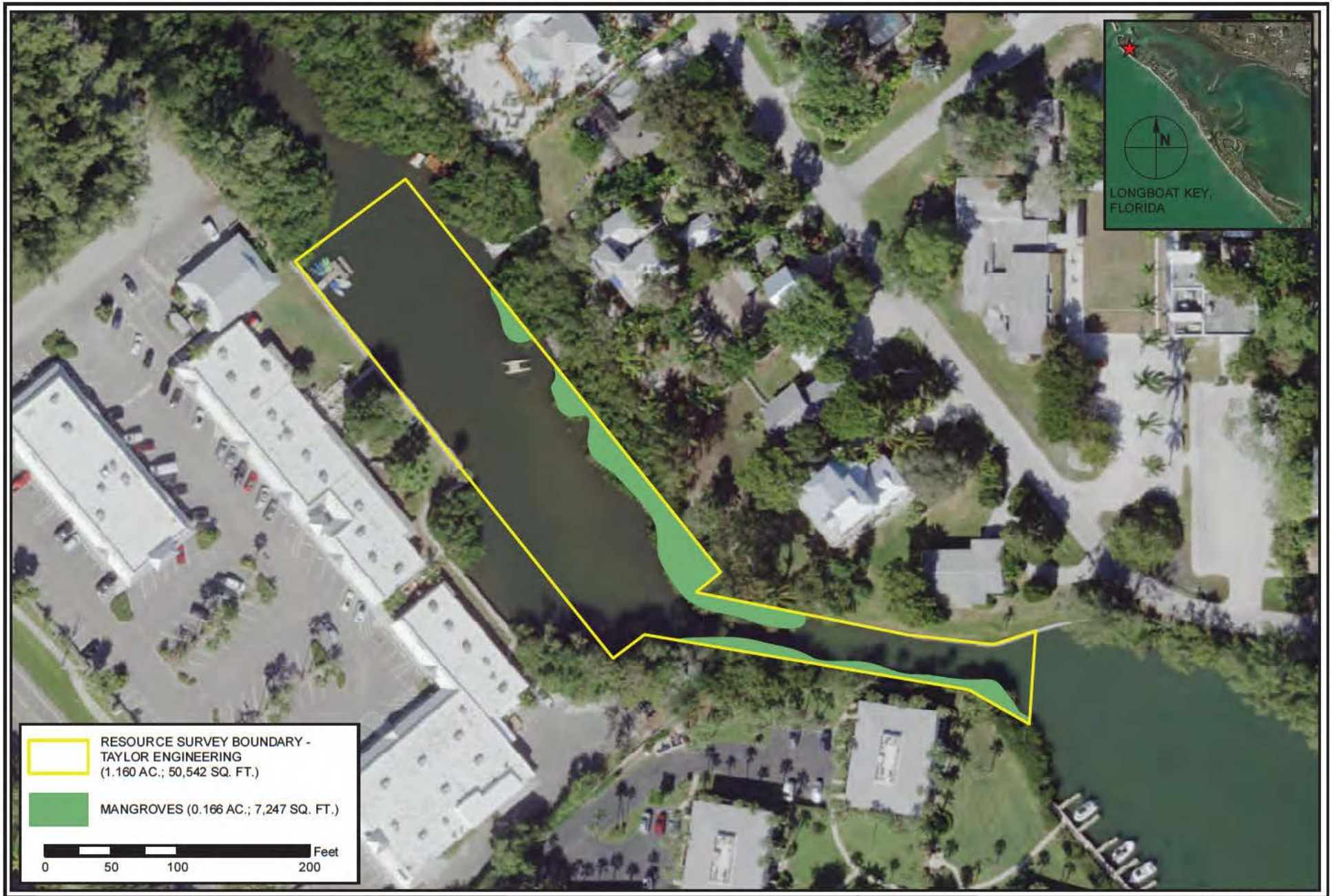

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FIGURE 4
RESOURCE MAP - CANAL 2
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MANATEE AND SARASOTA COUNTIES, FLORIDA

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FIGURE 5
RESOURCE MAP - CANAL 3
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4.2 Canal 6

Canal 6 contained approximately 0.006 acre of seagrass habitat within the 1.094-acre survey boundary (Figure 6). The seagrass habitat consisted of low-density shoal grass (*Halodule wrightii*) located in the northeast corner of the survey area. The mapped habitat comprised a small portion of a larger seagrass bed that occurred east of the north end of Canal 6. Taylor Engineering haphazardly (semi-random) deployed five 1-m^2 quadrats to assess seagrass occurrence and abundance. *H. wrightii* had a mean Braun-Blanquet score of 1.7 and mean frequency of occurrence of 25.4%. Through midpoint interpolation of the Braun-Blanquet cover abundance scale (see Section 3.1.2), a Braun-Blanquet score of 1.7 corresponds to a percent cover value of 11.3%. Seagrass blades contained heavy loads of epiphytic algae resulting in a relatively low-quality condition. Mangroves, primarily red mangroves, grew along portions of the canal edges with some overhanging branches encroaching into the canal.

4.3 Canal 18

The Canal 18 survey area totaled 1.500 acres and contained 0.090 acre of seagrass habitat (Figure 7). The seagrass habitat comprised a narrow band of low-density *H. wrightii* located along the base of the northern bulkhead near the canal opening. Most of the Canal 18 shoreline is hardened with bulkheads. Taylor Engineering haphazardly deployed 19 1-m^2 quadrats to quantify seagrass occurrence and abundance. *H. wrightii* had a mean Braun-Blanquet cover score of 1.7 and a mean frequency of occurrence of 22.6%. Through interpolation, a Braun-Blanquet cover score corresponds to a percent cover of 11.3%. Seagrass contained a low to moderate level of epiphytic algae cover. Mangroves, primarily red mangroves, occupied the southern canal shoreline near the canal terminus. Overhanging red mangrove branches encroached into the canal channel.

4.4 Canal 20P

Totaling 0.726 acre, the Canal 20P survey area contained seagrass, oyster, and mangrove resources (Figure 8). Approximately 0.222 acre of seagrass habitat occurred along the eastern boundary of the survey area. The seagrass primarily consisted of *H. wrightii*. A small patch (260 square feet) in the southeast corner of the survey area contained *H. wrightii* intermixed with turtle grass (*Thalassia testudinum*). The seagrass habitat comprised a small portion of the extensive seagrass community that occurs north and east of the survey area. Taylor Engineering haphazardly deployed 10 1-m^2 quadrats to quantitatively assess seagrass occurrence and abundance. *H. wrightii* had a mean B-B score of 2.5 which corresponds to a percent cover

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FIGURE 6
RESOURCE MAP - CANAL 6
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FIGURE 7
RESOURCE MAP - CANAL 18
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FIGURE 8
RESOURCE MAP - CANAL 20P
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MANATEE AND SARASOTA COUNTIES, FLORIDA

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of 26.3%. *T. testudinum* occurred in one quadrat and had a mean B-B score of 0.2 (converted percent cover = 1.0%) over the survey area. *H. wrightii* and *T. testudinum* had mean frequency of occurrence values of 42.4% and 1.0%, respectively. Overall, epiphytic algae cover was low, and the seagrass habitat was moderate to high quality.

A small red mangrove island (0.057 acre) and eastern oyster (*Crassostrea virginica*) bar (0.043 acre) occurred adjacent to the central portion of the mapped seagrass habitat. Some living oysters occupied the oyster bar; however, most of the oysters were dead at the time of the survey. A small patch of red mangroves also occurred in the northwestern corner of the survey area. These mangroves were trimmed, presumably to maintain the water view of the adjacent landowners.

4.5 Canal 21P (North)

The Canal 21P (North) survey area totaled 2.165 acres and contained 1.538 acres of seagrass habitat (Figure 9). Seagrass habitat primarily consisted of mixed species beds containing *H. wrightii* and *T. testudinum*. A small single species bed containing *H. wrightii* occurred at the north end of the survey area. Seagrass habitat occupied nearly the entire northern half of the survey area and about half of southern portion of the survey area. In the southern portion, seagrass was generally restricted to the eastern side of the survey area. Taylor Engineering established 11 channel-perpendicular transects along the length of the Canal 21P (North) survey area (Figure 9). Along each transect, field biologists deployed a 1-m^2 quadrat at five-meter intervals to assess seagrass occurrence and abundance. Mean B-B score values for *H. wrightii* and *T. testudinum* were 2.6 (converted percent cover = 28.5%) and 2.0 (converted percent cover = 15.0%), respectively. *H. wrightii* had a higher frequency of occurrence (42.6%) compared to *T. testudinum* (28.4%). Overall, seagrass habitat within the Canal 21P (North) survey area was moderate to high-quality habitat.

4.6 Canal 21P (South)

The 0.497-acre Canal 21P (South) survey area contained both seagrass and oyster resources (Figure 10). Seagrass habitat totaled 0.530 acre and mostly concentrated in the central portion of the survey area. The dominant seagrass community type consisted of single-species beds containing *H. wrightii*. A small patch (395 square feet) of *T. testudinum* occurred at the north end of the larger *H. wrightii* seagrass bed. A multi-species seagrass bed including *H. wrightii* and *T. testudinum* occurred along the eastern boundary of the survey area. This seagrass bed comprised a portion of the extensive multi-species seagrass habitat east of the survey area. Taylor Engineering established four channel-perpendicular transects along the length of

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FIGURE 9
RESOURCE MAP - CANAL 21P (NORTH)
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MANATEE AND SARASOTA COUNTIES, FLORIDA

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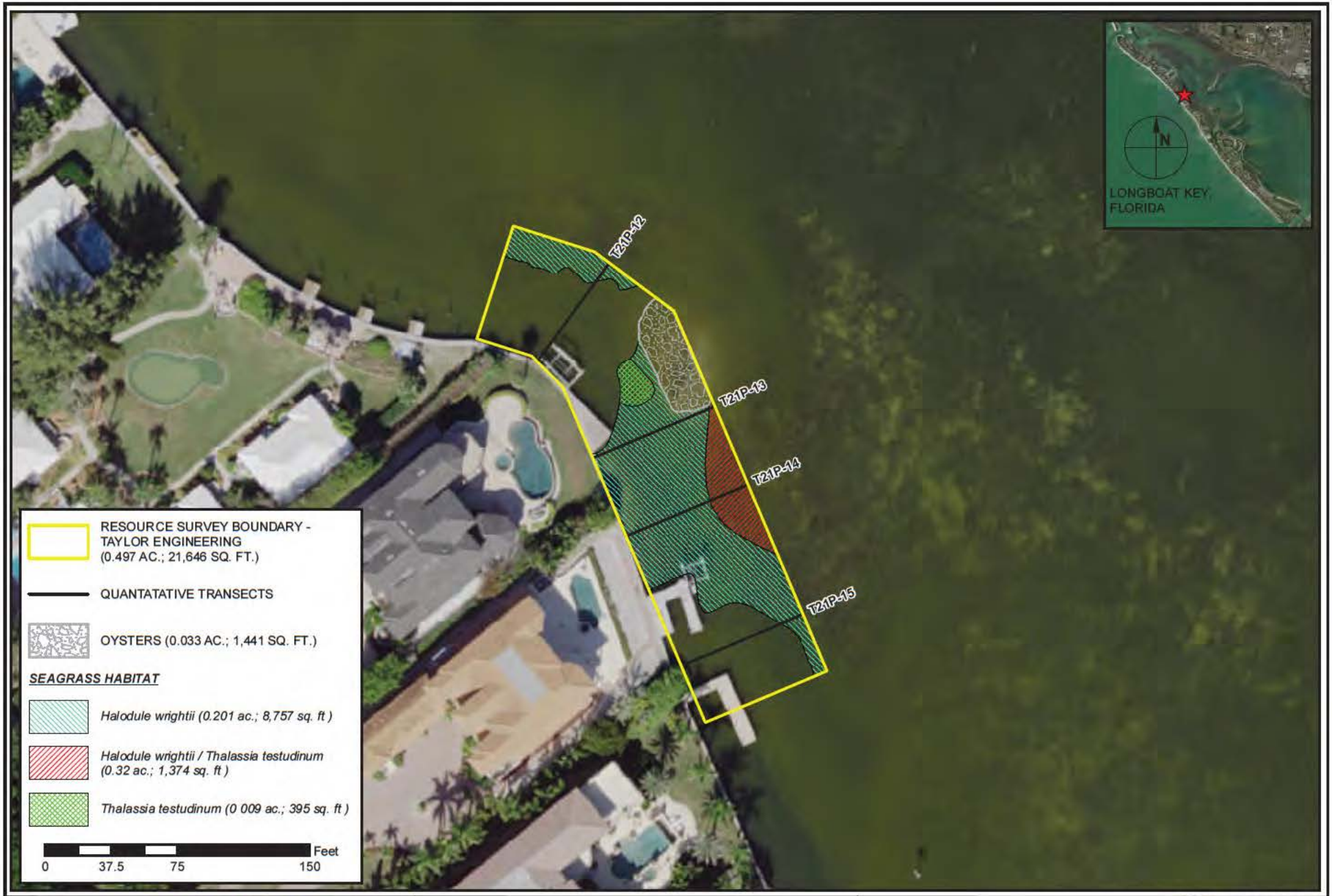

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FIGURE 10
RESOURCE MAP - CANAL 21P (SOUTH)
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

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the Canal 21P (South) survey area (Figure 10). Along each transect, field biologists deployed a 1-m^2 quadrat at five-meter intervals to assess seagrass occurrence and abundance. Mean B-B score values for *H. wrightii* and *T. testudinum* were 3.3 (converted percent cover = 45.0%) and 0.2 (converted percent cover = 1.0%), respectively. *H. wrightii* had a higher frequency of occurrence (56.6%) compared to *T. testudinum* (28.4%). Overall, seagrass habitat within the Canal 21P (South) survey area was moderate to high-quality.

A small, 0.033-acre oyster bar occurred along the eastern boundary survey area. The oyster bed contained primarily living oysters with some dead oysters and loose oyster shell material.

4.7 Canal 31D

The Canal 31D survey area totaled 0.923 acre and contained 0.201 acre of seagrass habitat occurring on the east and west sides of the survey area (Figure 11). All mapped seagrass habitat consisted of mixed beds containing *H. wrightii* and *T. testudinum*. To quantitatively assess seagrass, Taylor Engineering established three channel-perpendicular transects through the mapped habitat and collected quadrat data at five-meter intervals along each transect (Figure 11). Mean B-B scores for *H. wrightii* and *T. testudinum* were 3.2 (converted percent cover = 42.5%) and 1.2 (converted percent cover = 5.0%), respectively. *H. wrightii* was the dominant species and had a mean frequency of occurrence of 70.0%. *T. testudinum* had a mean frequency of occurrence of 9.0%. Sediment conditions consisted of fine sand to silty fine sand. Seagrass epiphytic algae load was relatively low and overall seagrass habitat quality was moderate to high.

4.8 Canal 32P (North)

Approximately 0.022 acre of seagrass habitat occurred within the 0.928-acre Canal 32P (North) survey area (Figure 12). The seagrass habitat was limited to very narrow bands of habitat along the northern survey boundary. The mapped habitat comprised a portion of the very extensive seagrass habitat north and east of the survey area. Mapped seagrass habitat consisted of low- to moderate-density *H. wrightii*. Taylor Engineering field biologists haphazardly deployed ten 1-m^2 quadrats to quantitatively assess seagrass abundance and occurrence. *H. wrightti* had a mean B-B score and mean frequency of occurrence of 2.5 (converted percent cover = 26.3%) and 43.5%, respectively. Seagrasses contained a moderate level of epiphytic algae cover. Sediment conditions within the seagrass habitat consisted of fine sand. The central portion of the canal contained much finer sediments (silty sand to sandy silt) with heavy accumulations of vegetation detritus.

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FIGURE 11
RESOURCE MAP - CANAL 31D
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FIGURE 12
RESOURCE MAP - CANAL 32P (NORTH)
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MANATEE AND SARASOTA COUNTIES, FLORIDA

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Mangroves (primarily red) occurred along the canal edge in the northeastern corner of the survey area and along the southern survey boundary.

4.9 Canal 32P (South)

The Canal 32P (South) survey area totaled 0.773 acre and contained 0.004 acre of seagrass habitat (Figure 13). Mapped seagrasses comprised a very narrow band of low- to moderate-density *H. wrightii* along the eastern survey boundary near the central portion of the survey area. The mapped seagrass habitat connected to the extensive seagrass habitat east of the survey area. Taylor Engineering haphazardly deployed five 1-m^2 quadrats to assess seagrass abundance and occurrence. *H. wrightii* had a mean B-B score and mean frequency of occurrence of 3.0 (converted percent cover = 37.5%) and 58.6%, respectively. Epiphytic algae and sediment conditions were very similar to Canal 32P (North).

Mangroves, primarily red, lined the eastern and western edges of the survey area. Overhanging mangrove branches encroached into the survey area.

4.10 Canal 49

The Canal 49 survey area occurred at the canal terminus and totaled 0.357 acre (Figure 14). Bulkheads armored the entire Canal 49 shoreline. Taylor Engineering identified no resources within the Canal 49 survey area. Bottom sediments consisted of very fine, silty material overlain with vegetation detritus.

5.0 SUMMARY

Taylor Engineering completed a seagrass survey of ten residential and access canals considered for maintenance dredging by the Town of Longboat Key. Of the 11.924 acres surveyed, Taylor Engineering mapped approximately 2.613 acres of seagrass habitat spread over the survey areas for Canals 6, 18, 20P, 21P (North and South), 31D, and 32 P (North and South). Canal 21P contained the greatest area of seagrass habitat. Seagrass habitat occupied the majority of the Canal 21P survey areas. Seagrass habitat quality ranged from low to high quality. Canals 21P (North and South) and 31D contained the highest quality habitat. All survey areas with the exception of Canals 21P and 49 contained mangroves, mostly along the canal edges. Taylor Engineering also mapped two small eastern oyster bars located in Canals 20P and 21P.

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FIGURE 13
RESOURCE MAP - CANAL 32P (SOUTH)
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MANATEE AND SARASOTA COUNTIES, FLORIDA

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FIGURE 14
RESOURCE MAP - CANAL 49
LONGBOAT KEY CANAL MAINTENANCE DREDGING PROJECT
MANATEE AND SARASOTA COUNTIES, FLORIDA

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REFERENCES

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Report 2: ESA Scheda

ESA SCHEDA

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memorandum

date	March 7, 2018
to	Chris Ellis, Taylor Engineering
cc	Dianne Rosensweig, ESA Scheda
from	Brandon Gray, ESA Scheda
subject	Town of Longboat Key – Seagrass Surveys for Five Canals, Florida ESA Scheda Project No. DS03817.31

PURPOSE

ESA Scheda scientists conducted a Submerged Aquatic Vegetation (SAV) survey for five canals to potentially be dredged off of Longboat Key in Manatee and Sarasota Counties, Florida (**Figure 1**). The canals were identified as Canals 55A, 55, 22A, 21A, and 1, from south to north, respectively. The intent of the survey was to provide a quantitative and qualitative assessment of the SAV communities within the project areas. The data will be utilized to show environmental constraints and to calculate impacts associated with the future proposed maintenance dredging project. Although the exact project limits are not yet fully defined, ESA Scheda made an effort to survey an adequate area beyond the anticipated project limits.

METHODOLOGY

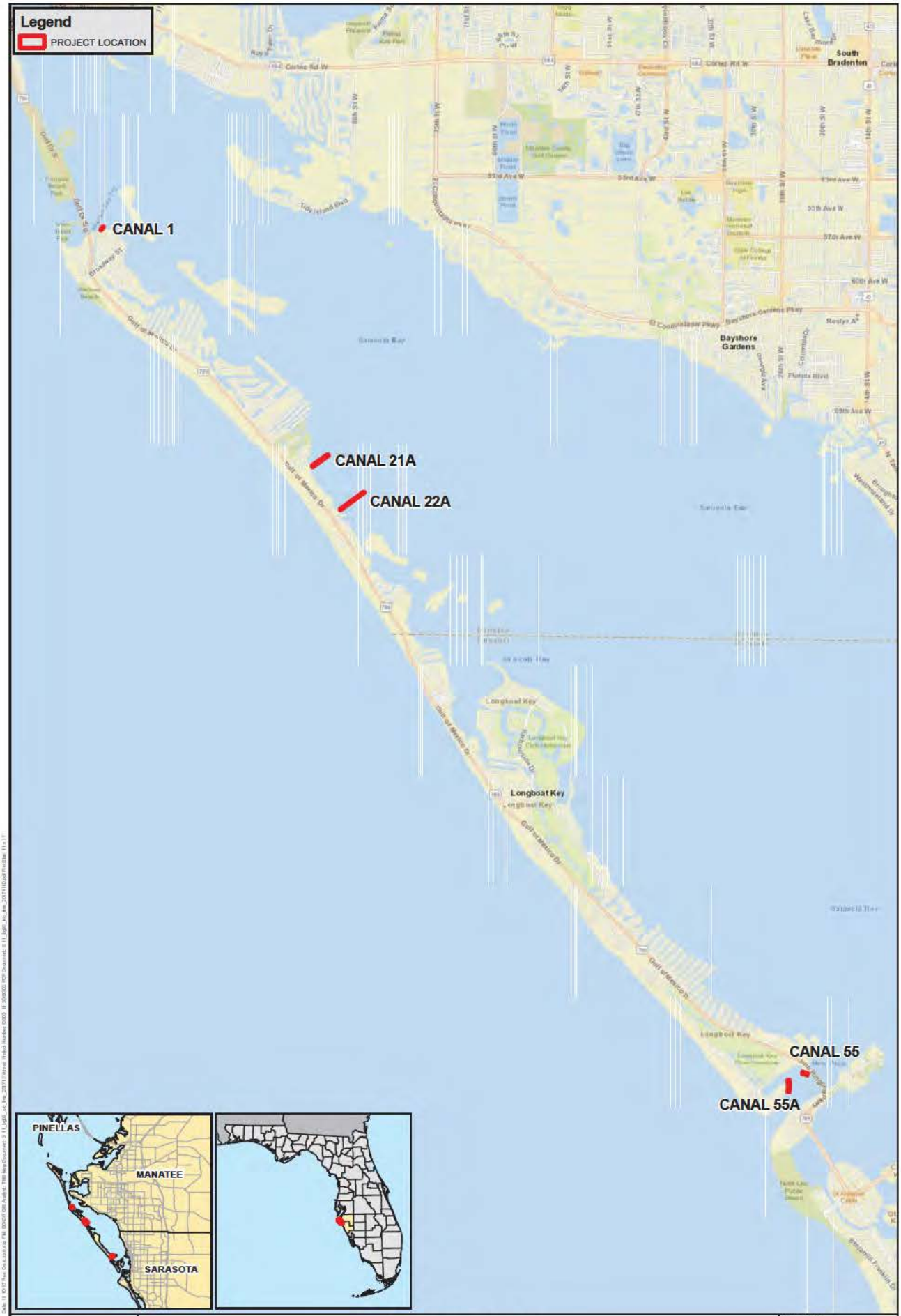
In House Data Collection

ESA Scheda scientists collected all pertinent and readily available data prior to conducting field reviews onsite. The data collection consisted of the following data sources:

- Southwest Florida Water Management District (SWFWMD) 2016 seagrass maps,
- Florida National Areas Inventory (FNAI),
- U.S. Fish and Wildlife Services (FWS),
- Florida Fish & Wildlife Conservation Commission (FWC) data

Field Observation Methodology

Based on methodology established by the FWC and U.S. Army Corps of Engineers (USACE)/National Marine Fisheries Service (NMFS), the timing of the SAV surveys to capture maximum extents within the growing



ESA SCHEDA

www.scheda.com

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Figure 1 - Project Location Map

Longboat Key Canal Maintenance Dredging Project
SAV Assessment
Manatee and Sarasota Counties, Florida

0 4,000 8,000 12,000 Feet

Data Source
- ESA Scheda
Imagery Source
- ESRI Streets

Coordinate System
NAD 1983 Florida
State Plane West

N

season for any particular area is a principal concern to provide regulatory agencies with the best information for permitting decisions. Because of hurricane impacts, altered workloads, and extensive inclement weather conditions, the USACE (Angela Ryan; Chief, Tampa Permits Section) approved a request to accept SAV survey work completed through October 31. Inclement weather and poor water quality at the end of October combined with a jellyfish bloom did not provide acceptable survey conditions until November 1, when the survey was performed.

In general, the submerged project limits were first surveyed by delineating the SAV polygons by hand-placing temporary weighted floats, which were adjusted to the demarcated limits of the community. These limits were then mapped utilizing a sub-meter Trimble GPS system. In areas where water depths and visual clarity allowed scientists to observe the seagrass from the surface, direct visual delineations of seagrass bed boundaries were made, again using the Trimble GPS unit. Then the project limits were surveyed along transects running perpendicular or parallel to the canals and evenly distributed over the project areas. A $1m^2$ PVC quadrant was placed at every 10-foot interval along the transects for Canals 55A, 55, and 1, and every 30-foot interval for Canals 22A and 21A. The beginning of the transect was on the west side for Canals 55A, 22A, and 21A, and starting at the south for Canals 55 and 1. Each $1m^2$ quadrant was evaluated for percent cover using the Blaun Blanquet scale **Table 1**), typical blade length, epiphyte load, and surface sediment conditions.

Table 1. Braun-Blanquet Technique

Score	Cover by Species
0.0	Species/functional group absent from quadrat
0.1	Solitary short shoot or individual, < 5% cover
0.5	Few with small cover
1	numerous but < 5% cover
2	5-25% cover
3	26-50% cover
4	51-75% cover
5	>75% cover

Table from Braun-Blanquet, J. 1932

RESULTS

Three ESA Scheda scientists conducted the SAV in-water surveys on November 1, 2017. The weather conditions were conducive to for surveying with wind speeds less than five mph, mostly sunny skies, and 3-foot average water clarity.

Canal 55A

This 1.45-acre survey area had water depths of approximately two to six feet below mean low water, with the SAV growing in up to 5 feet of water. The 1.04 acres ~72%) of mapped SAV **Figure** 2 was dominated by an even mixture of turtle grass *Thalassia testudinum* and shoal grass *Halodule wrightii*), with dense to very dense coverages (Braun-Blanquet levels 4-5 . **Table 2** includes the results of the transect data. The southeastern and northwestern portions of the survey limits were devoid of seagrass and contained sandy bottom. The turtle grass had average blade lengths of 23 inches, whereas the shoal grass blade lengths averaged 8 inches. Both species contained moderate epiphytic coverage. Several prop scars were also observed in the shallower water depths near the central eastern portion of the survey area.

Canal 55

This 0.69-acre survey area had water depths of approximately two to five feet below mean low water, with the SAV growing in up to 5 feet of water. The 0.45 acre (~65%) of mapped SAV **Figure 3** was dominated by an even mixture of turtle grass and shoal grass, with moderate to very dense coverages (Braun-Blanquet levels 3-5 . **Table 3** includes the results of the transect data. In general, the southern one-third of the survey area was devoid of seagrass and contained sandy bottom, whereas the seagrass density gradually increased in correlation to the shallower depths to the north. The turtle grass had average blade lengths of 20 inches, and the shoal grass blade lengths averaged 8 inches. Both species contained moderate epiphytic coverage. Several prop scars were also observed in the shallower water depths along the northwestern portion of the survey area.

Canal 22A

This 2.60-acre survey area had water depths of approximately two to five feet below mean low water, with the SAV growing in up to 4 feet of water. The 1.84 acres ~72%) of mapped SAV **Figure 4** was dominated by approximately 80% turtle grass and 20% shoal grass, with moderate to very dense coverages (Braun-Blanquet levels 3-5 . **Table 4** includes the results of the transect data. In general, the entire survey area contained seagrass, with the exception of the extreme western end where water depths were at or below 5 feet, and no seagrass in a majority of the center of the canal. The sediments throughout the survey area contained predominately sandy bottom. The turtle grass had average blade lengths of 20 inches, and the shoal grass blade lengths averaged 8 inches. Both species contained light epiphytic coverage. Minimal to no prop scars were observed within the survey area; however, a few were observed outside the survey boundaries.

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Figure 2 - Canal 55A SAV Map

Longboat Key Canal Maintenance Dredging Project
SAV Assessment
Manatee and Sarasota Counties, Florida

0 100 200 300 Feet

Data Source
- ESA Scheda
Imagery Source
- ESRI Aerial Imagery

Coordinate System
NAD 1983 Florida
State Plane West

N

Table 2. 2017 Transect Data - Seagrass Density Estimates

Transect	Quad	Species	Braun-Blanquet Score[1,2]	Mid Point %	Blade Length (cm)	Epiphyte Coverage (L, M, or H)	Sediment Type
Canal 55A							
1 110')	0	*bare*	0	0	0	0	sand
	10	*bare*	0	0	0	0	sand
	20	*Halodule wrightii*	5	88	20	M	sand
	30	*Halodule wrightii*	5	88	20	M	sand
	40	*Halodule wrightii*	5	88	20	M	sand
	50	*bare*	0	0	0	0	sand
	60	*bare*	0	0	0	0	sand
	70	*bare*	0	0	0	0	sand
	80	*bare*	0	0	0	0	sand
	90	*bare*	0	0	0	0	sand
	100	*bare*	0	0	0	0	sand
	110	*bare*	0	0	0	0	sand
	ABUNDANCE		**5**	**88.0%**	**20.0**		
2 110')	0	*Halodule wrightii*	4	63	20	M	sand
	10	*Halodule wrightii*	5	88	20	M	sand
	20	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	30	*Halodule wrightii & Thalassia testudinum*	5	88	58	M	sand
	40	*Thalassia testudinum*	4	63	56	M	sand
	50	*Thalassia testudinum*	4	63	56	M	sand
	60	*Thalassia testudinum*	5	88	59	M	sand
	70	*Halodule wrightii & Thalassia testudinum*	5	88	58	M	sand
	80	*Halodule wrightii & Thalassia testudinum*	5	88	54	M	sand
	90	*bare*	0	0	0	0	sand
	100	*bare*	0	0	0	0	sand
	110	*bare*	0	0	0	0	sand
	ABUNDANCE		**5**	**79.7%**	**46.6**		
3 110')	0	*Halodule wrightii*	2	15	21	M	sand
	10	*Halodule wrightii & Thalassia testudinum*	4	63	50	M	sand
	20	*Halodule wrightii & Thalassia testudinum*	5	88	56	M	sand
	30	*Halodule wrightii & Thalassia testudinum*	5	88	58	M	sand
	40	*Halodule wrightii & Thalassia testudinum*	5	88	58	M	sand
	50	*Halodule wrightii & Thalassia testudinum*	4	63	58	M	sand
	60	*Halodule wrightii & Thalassia testudinum*	5	88	58	M	sand
	70	*Halodule wrightii & Thalassia testudinum*	4	63	56	M	sand
	80	*Halodule wrightii & Thalassia testudinum*	4	63	55	M	sand
	90	*Halodule wrightii & Thalassia testudinum*	3	38	52	M	sand
	100	*bare*	0	0	0	0	sand
	110	*bare*	0	0	0	0	sand
	ABUNDANCE		**4**	**65.7%**	**51.6**		
4 110')	0	*Halodule wrightii*	4	63	22	M	sand
	10	*Halodule wrightii*	4	63	22	M	sand
	20	*bare*	0	0	0	0	sand
	30	*Halodule wrightii & Thalassia testudinum*	4	63	54	M	sand
	40	*Halodule wrightii & Thalassia testudinum*	4	63	56	M	sand
	50	*Halodule wrightii & Thalassia testudinum*	4	63	54	M	sand
	60	*Halodule wrightii & Thalassia testudinum*	4	63	58	M	sand
	70	*Halodule wrightii & Thalassia testudinum*	4	15	60	M	sand
	80	*Halodule wrightii*	3	38	23	M	sand
	90	*Halodule wrightii*	4	63	22	M	sand
	100	*Halodule wrightii*	4	63	22	M	sand
	110	*Halodule wrightii*	4	63	22	M	sand
	ABUNDANCE		**4**	**56.0%**	**37.7**		
5 110')	0	*bare*	0	0	0	0	sand
	10	*bare*	0	0	0	0	sand
	20	*Thalassia testudinum*	3	38	56	M	sand
	30	*Thalassia testudinum*	3	38	56	M	sand
	40	*Thalassia testudinum*	3	38	56	M	sand
	50	*Thalassia testudinum*	2	15	56	M	sand
	60	*Thalassia testudinum*	3	38	58	M	sand
	70	*Thalassia testudinum*	3	38	58	M	sand
	80	*Halodule wrightii & Thalassia testudinum*	4	63	58	M	sand
	90	*Halodule wrightii & Thalassia testudinum*	5	88	58	M	sand
	100	*Halodule wrightii*	5	88	22	M	sand
	110	*Halodule wrightii*	5	88	22	M	sand
	ABUNDANCE		**4**	**53.2%**	**50.0**		
6 110')	0	*bare*	0	0	0	0	sand
	10	*bare*	0	0	0	0	sand
	20	*bare*	0	0	0	0	sand
	30	*bare*	0	0	0	0	sand
	40	*bare*	0	0	0	0	sand
	50	*bare*	0	0	0	0	sand
	60	*Thalassia testudinum*	3	38	54	M	sand
	70	*Thalassia testudinum*	3	38	56	M	sand
	80	*Halodule wrightii & Thalassia testudinum*	4	63	56	M	sand
	90	*Halodule wrightii & Thalassia testudinum*	5	88	58	M	sand
	100	*Halodule wrightii*	4	63	22	M	sand
	110	*Halodule wrightii*	4	63	22	M	sand
	ABUNDANCE		**4**	**58.8%**	**44.7**		

Notes:

L Light, M Moderate, and H Heavy

[1]Braun-Blaquet cover classifications consisted of: 0.1 solitary, with small cover, 0.5 few, with small cover, 1 numerous, but less than 5%, 2 Any number, with >5% to <25% cover, 3 Any number, with >25% to <50% cover, 4 Any number, with >50% to <75% cover, 5 Any number >75% cover.

[2]Abundance coverage calculated by using the mid-point of each Braun-Blanquet coverage classification divided by the total # of occupied quads.

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Figure 3 - Canal 55 SAV Map

Longboat Key Canal Maintenance Dredging Project
SAV Assessment
Manatee and Sarasota Counties, Florida

0 70 140 210 Feet

Data Source
- ESA Scheda
Imagery Source
- ESRI Aerial Imagery

Coordinate System
NAD 1983 Florida
State Plane West

N

Table 3. 2017 Transect Data - Seagrass Density Estimates							
Transect	**Quad**	**Species**	**Braun-Blanquet Score[1,2]**	**Mid Point %**	**Blade Length (cm)**	**Epiphyte Coverage (L, M, or H)**	**Sediment Type**
Canal 55							
1 114')	0	*bare*	0	0	0	0	sand
	10	*bare*	0	0	0	0	sand
	20	*bare*	0	0	0	0	sand
	30	*bare*	0	0	0	0	sand
	40	*bare*	0	0	0	0	sand
	50	*Thalassia testudinum*	2	15	40	M	sand
	60	*Thalassia testudinum*	3	38	50	M	sand
	70	*Thalassia testudinum & Halodule wrightii*	3	38	50	M	sand
	80	*Thalassia testudinum & Halodule wrightii*	5	88	50	M	sand
	90	*Thalassia testudinum & Halodule wrightii*	4	63	50	M	sand
	100	*Thalassia testudinum & Halodule wrightii*	4	63	50	M	sand
	110	*Thalassia testudinum & Halodule wrightii*	4	63	50	M	sand
	ABUNDANCE		**4**	**52.6%**	**48.6**		
2 114')	0	*bare*	0	0	0	0	sand
	10	*bare*	0	0	0	0	sand
	20	*bare*	0	0	0	0	sand
	30	*bare*	0	0	0	0	sand
	40	*bare*	0	0	0	0	sand
	50	*Thalassia testudinum*	3	38	40	M	sand
	60	*Thalassia testudinum*	3	38	50	M	sand
	70	*Thalassia testudinum & Halodule wrightii*	4	63	50	M	sand
	80	*Thalassia testudinum & Halodule wrightii*	5	88	50	M	sand
	90	*Thalassia testudinum & Halodule wrightii*	4	63	50	M	sand
	100	*Thalassia testudinum & Halodule wrightii*	4	63	50	M	sand
	110	*Halodule wrightii*	5	88	24	M	sand
	ABUNDANCE		**4**	**63.0%**	**44.9**		
3 114')	0	*bare*	0	0	0	0	sand
	10	*bare*	0	0	0	0	sand
	20	*bare*	0	0	0	0	sand
	30	*bare*	0	0	0	0	sand
	40	*Thalassia testudinum*	3	38	50	M	sand
	50	*Thalassia testudinum*	5	88	50	M	sand
	60	*Thalassia testudinum & Halodule wrightii*	5	88	48	M	sand
	70	*Thalassia testudinum & Halodule wrightii*	4	63	48	M	sand
	80	*Thalassia testudinum & Halodule wrightii*	4	63	48	M	sand
	90	*Halodule wrightii*	4	63	22	M	sand
	100	*Halodule wrightii*	5	88	22	M	sand
	110	*Halodule wrightii*	5	88	22	M	sand
	ABUNDANCE		**4**	**72.4%**	**38.8**		

Notes:

L= Light, M Moderate, and H= Heavy

[1]Braun-Blaquet cover classifications consisted of: 0.1 solitary, with small cover, 0.5 few, with small cover, 1 numerous, but less than 5%, 2 Any number, with >5% to <25% cover, 3 Any number, with >25% to <50% cover, 4 Any number, with >50% to <75% cover, 5= Any number >75% cover.

[2]Abundance coverage calculated by using the mid-point of each Braun-Blanquet coverage classification divided by the total # of occupied quads.

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Figure 4 - Canal 22A SAV Map

Longboat Key Canal Maintenance Dredging Project
SAV Assessment
Manatee and Sarasota Counties, Floridada

0 200 400 600 Feet

Data Source
- ESA Scheda
Imagery Source
- ESRI Aerial Imagery

N

Coordinate System
NAD 1983 Florida
State Plane West

Table 4. 2017 Transect Data - Seagrass Density Estimates							
Transect	**Quad**	**Species**	**Braun-Blanquet Score[1,2]**	**Mid Point %**	**Blade Length (cm)**	**Epiphyte Coverage (L, M, or H)**	**Sediment Type**
Canal 22A							
1 (1,415	0	*bare*	0	0	0	-	sand
	30	*bare*	0	0	0	-	sand
	60	*bare*	0	0	0	-	sand
	90	*bare*	0	0	0	-	sand
	120	*bare*	0	0	0	-	sand
	150	*Halodule wrightii*	2	15	20	L	sand
	180	*Thalassia testudinum & Halodule wrightii*	4	63	48	L	sand
	210	*Thalassia testudinum & Halodule wrightii*	4	63	48	L	sand
	240	*Thalassia testudinum & Halodule wrightii*	3	38	48	L	sand
	270	*Thalassia testudinum & Halodule wrightii*	4	63	50	L	sand
	300	*Thalassia testudinum & Halodule wrightii*	3	38	50	L	sand
	330	*Thalassia testudinum & Halodule wrightii*	3	38	50	L	sand
	360	*Thalassia testudinum & Halodule wrightii*	3	38	50	L	sand
	390	*Thalassia testudinum & Halodule wrightii*	3	38	50	L	sand
	420	*Thalassia testudinum*	3	38	50	L	sand
	450	*Thalassia testudinum & Halodule wrightii*	3	38	50	L	sand
	480	*Thalassia testudinum & Halodule wrightii*	3	38	50	L	sand
	510	*bare*	0	0	0	-	sand
	540	*bare*	0	0	0	-	sand
	570	*bare*	0	0	0	-	sand
	600	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	630	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	660	*bare*	0	0	0	-	sand
	690	*bare*	0	0	0	-	sand
	720	*bare*	0	0	0	-	sand
	750	*bare*	0	0	0	-	sand
	780	*bare*	0	0	0	-	sand
	810	*bare*	0	0	0	-	sand
	840	*bare*	0	0	0	-	sand
	870	*bare*	0	0	0	-	sand
	900	*bare*	0	0	0	-	sand
	930	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	960	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	990	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1020	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1050	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1080	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	1110	*Halodule wrightii*	5	88	21	L	sand
	1140	*Halodule wrightii*	5	88	22	L	sand
	1170	*Halodule wrightii*	5	88	22	L	sand
	1200	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1230	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1260	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1290	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1320	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1350	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1380	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1410	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	ABUNDANCE		**4**	**58.3%**	**49.0**		

Table 4. 2017 Transect Data - Seagrass Density Estimates							
Transect	**Quad**	**Species**	**Braun-Blanquet Score[1,2]**	**Mid Point %**	**Blade Length (cm)**	**Epiphyte Coverage (L, M, or H)**	**Sediment Type**
2 (1,425	0	*bare*	0	0	0	-	sand
	30	*bare*	0	0	0	-	sand
	60	*bare*	0	0	0	-	sand
	90	*bare*	0	0	0	-	sand
	120	*bare*	0	0	0	-	sand
	150	*Halodule wrightii*	3	38	21	L	sand
	180	*bare*	0	0	0	-	sand
	210	*Halodule wrightii*	3	38	21	L	sand
	240	*Halodule wrightii*	3	38	21	L	sand
	270	*Halodule wrightii*	3	38	21	L	sand
	300	*Halodule wrightii*	3	38	21	L	sand
	330	*bare*	0	0	0	-	sand
	360	*bare*	0	0	0	-	sand
	390	*bare*	0	0	0	-	sand
	420	*bare*	0	0	0	-	sand
	450	*bare*	0	0	0	-	sand
	480	*bare*	0	0	0	-	sand
	510	*bare*	0	0	0	-	sand
	540	*bare*	0	0	0	-	sand
	570	*bare*	0	0	0	-	sand
	600	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	630	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	660	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	690	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	720	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	750	*bare*	0	0	0	-	sand
	780	*Halodule wrightii*	3	38	21	L	sand
	810	*Halodule wrightii*	3	38	21	L	sand
	840	*bare*	0	0	0	-	sand
	870	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	900	*Thalassia testudinum & Halodule wrightii*	4	88	55	L	sand
	930	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	960	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	990	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1020	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1050	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1080	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1110	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1140	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1170	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1200	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1230	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1260	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1290	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1320	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1350	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1380	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1410	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	ABUNDANCE		**4**	**57.4%**	**47.0**		

Table 4. 2017 Transect Data - Seagrass Density Estimates							
Transect	**Quad**	**Species**	**Braun-Blanquet Score[1,2]**	**Mid Point %**	**Blade Length (cm)**	**Epiphyte Coverage (L, M, or H)**	**Sediment Type**
3 (1,425	0	*bare*	0	0	0	-	sand
	30	*bare*	0	0	0	-	sand
	60	*Thalassia testudinum*	3	38	55	L	sand
	90	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	120	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	150	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	180	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	210	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	240	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	270	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	300	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	330	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	360	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	390	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	420	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	450	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	480	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	510	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	540	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	570	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	600	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	630	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	660	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	690	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	720	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	750	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	780	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	810	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	840	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	870	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	900	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	930	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	960	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	990	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1020	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1050	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1080	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1110	*Thalassia testudinum & Halodule wrightii*	5	88	55	L	sand
	1140	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1170	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	1200	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	1230	*bare*	0	0	0	-	sand
	1260	*bare*	0	0	0	-	sand
	1290	*bare*	0	0	0	-	sand
	1320	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1350	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1380	*Thalassia testudinum & Halodule wrightii*	4	63	55	L	sand
	1410	*Thalassia testudinum & Halodule wrightii*	3	38	55	L	sand
	ABUNDANCE		**4**	**72.9%**	**55.0**		

Notes:

L Light, M Moderate, and H= Heavy

[1]Braun-Blaquet cover classifications consisted of: 0.1 solitary, with small cover, 0 5 few, with small cover, 1 numerous, but less than 5%, 2 Any number, with >5% to <25% cover, 3 Any number, with >25% to <50% cover, 4 Any number, wi h >50% to <75% cover, 5 Any number >75% cover.

[2]Abundance coverage calculated by using the mid-point of each Braun-Blanquet coverage classification divided by the total # of occupied quads.

Canal 21A

This 2.56-acre survey area had water depths of approximately two to five feet below mean low water, with the SAV growing in up to 4 feet of water. The 2.38 acres ~93% of mapped SAV **Figure 5** was dominated by an even mixture of turtle grass and shoal grass, with sparse to very dense coverages Braun-Blanquet levels 2-5 . **Table 5** includes the results of the transect data. In general, seagrass was dense to very dense seagrass coverage along the northern and southern portions of the survey area, with gradually decreasing densities towards the center, with some in the center of the canal devoid of seagrass. The sediments throughout the survey area contained predominately sandy bottom. The turtle grass had average blade lengths of 20 inches, and the shoal grass blade lengths averaged 8 inches. Both species contained moderate epiphytic coverage. Minimal prop scars were observed toward the eastern portions of the survey area.

Canal 1

This 0.39-acre survey area had water depths of approximately two to four feet below mean low water, with the SAV growing in up to 3.5 feet of water. The 0.23 acre (~59%) of mapped SAV **Figure 6** was dominated by turtle grass and manatee grass *Syringodium filmiforme*), with occasional shoal grass throughout. The seagrass coverage where found was considered to be dense to very dense Braun-Blanquet levels 4-5 . **Table 6** includes the results of the transect data. In general, only the southern one-third and northernmost 15 feet of the project limits were devoid of seagrass. The turtle grass had average blade lengths of 20 inches, manatee grass blade lengths averaged 24 inches, and the shoal grass blade lengths averaged 8 inches. All three species contained moderate epiphytic coverage. The substrate was considered to sandy throughout, with lots of detritus and drift algae accumulated in the southern portion of the project area. Several prop scars were also observed in the shallower water depths along the north central portion of the survey area.

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All data within this map are supplied as is without warranty. This product has not been prepared by a legal engineering or surveying purposes. Users of this information should review or consult the primary data sources to ascertain the usability of the information.

Figure 5 - Canal 21A SAV Map

Longboat Key Canal Maintenance Dredging Project
SAV Assessment
Manatee and Sarasota Counties, Florida

0 200 400 600 Feet

Data Source
- ESA Scheda
Imagery Source
- ESRI Aerial Imagery

Coordinate System
NAD 1983 Florida
State Plane West

N

Table 5. 2017 Transect Data - Seagrass Density Estimates							
Transect	**Quad**	**Species**	**Braun-Blanquet Score[1,2]**	**Mid Point %**	**Blade Length (cm)**	**Epiphyte Coverage (L, M, or H)**	**Sediment Type**
Canal 21A							
1 (932	0	*Halodule wrightii*	4	63	20	M	sand
	30	*Halodule wrightii*	4	63	20	M	sand
	60	*Halodule wrightii*	4	63	20	M	sand
	90	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	120	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	150	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	180	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	210	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	240	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	270	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	300	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	330	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	360	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	390	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	420	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	450	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	480	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	510	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	540	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	570	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	600	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	630	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	660	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	690	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	720	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	750	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	780	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	810	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	840	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	870	*Halodule wrightii & Thalassia testudinum*	5	88	50	M	sand
	900	*bare*	0	0	0	0	sand
	930	*Halodule wrightii*	5	88	17	M	sand
	ABUNDANCE		**5**	**85.6%**	**46.0**		

Table 5. 2017 Transect Data - Seagrass Density Estimates							
Transect	**Quad**	**Species**	**Braun-Blanquet Score[1,2]**	**Mid Point %**	**Blade Length (cm)**	**Epiphyte Coverage (L, M, or H)**	**Sediment Type**
Canal 21A							
2 (932	0	*Halodule wrightii*	4	63	20	M	sand
	30	*Halodule wrightii*	5	88	22	M	sand
	60	*Halodule wrightii*	5	88	22	M	sand
	90	*Halodule wrightii*	5	88	22	M	sand
	120	*Halodule wrightii*	5	88	22	M	sand
	150	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	180	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	210	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	240	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	270	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	300	*bare*	0	0	0	0	sand
	330	*bare*	0	0	0	0	sand
	360	*bare*	0	0	0	0	sand
	390	*bare*	0	0	0	0	sand
	420	*bare*	0	0	0	0	sand
	450	*bare*	0	0	0	0	sand
	480	*bare*	0	0	0	0	sand
	510	*bare*	0	0	0	0	sand
	540	*bare*	0	0	0	0	sand
	570	*Halodule wrightii*	3	38	22	M	sand
	600	*Halodule wrightii & Thalassia testudinum*	4	63	55	M	sand
	630	*Halodule wrightii & Thalassia testudinum*	4	63	55	M	sand
	660	*Halodule wrightii & Thalassia testudinum*	3	38	55	M	sand
	690	*Halodule wrightii & Thalassia testudinum*	4	63	55	M	sand
	720	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	750	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	780	*Halodule wrightii & Thalassia testudinum*	4	88	55	M	sand
	810	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	840	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	870	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	900	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	930	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	ABUNDANCE		**5**	**79.3%**	**33.0**		

Table 5. 2017 Transect Data - Seagrass Density Estimates							
Transect	**Quad**	**Species**	**Braun-Blanquet Score[1,2]**	**Mid Point %**	**Blade Length (cm)**	**Epiphyte Coverage (L, M, or H)**	**Sediment Type**
Canal 21A							
3 (932	0	*Halodule wrightii*	3	38	20	M	sand
	30	*Halodule wrightii*	5	88	22	M	sand
	60	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	90	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	120	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	150	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	180	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	210	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	240	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	270	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	300	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	330	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	360	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	390	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	420	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	450	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	480	*Halodule wrightii & Thalassia testudinum*	4	63	55	M	sand
	510	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	540	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	570	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	600	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	630	*Halodule wrightii & Thalassia testudinum*	4	63	55	M	sand
	660	*Halodule wrightii*	4	63	24	M	sand
	690	*Halodule wrightii*	4	63	24	M	sand
	720	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	750	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	780	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	810	*Halodule wrightii & Thalassia testudinum*	5	88	55	M	sand
	840	*Halodule wrightii & Thalassia testudinum*	4	63	55	M	sand
	870	*Halodule wrightii & Thalassia testudinum*	4	63	55	M	sand
	900	*Halodule wrightii & Thalassia testudinum*	4	63	55	M	sand
	930	*Halodule wrightii & Thalassia testudinum*	4	63	55	M	sand
	ABUNDANCE		**5**	**80.2%**	**50.9%**		

Notes:

L Light, M Moderate, and H= Heavy

[1] Braun-Blaquet cover classi ications consisted of: 0.1 solitary, with small cover, 0 5 ew, with small cover, 1 numerous, but less than 5%, 2 Any number, with >5% to <25% cover, 3 Any number, with >25% to <50% cover, 4 Any number, with >50% to <75% cover, 5= Any number >75% cover

[2] Abundance coverage calculated by using the mid-point of each Braun-Blanquet coverage classification divided by the total # of occupied quads.

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Figure 6 - Canal 1 SAV Map

Longboat Key Canal Maintenance Dredging Project
SAV Assessment
Manatee and Sarasota Counties, Florida

0 60 120 180 Feet

Data Source
- ESA Scheda
Imagery Source
- ESRI Aerial Imagery

N

Coordinate System
NAD 1983 Florida
State Plane West

Table 6. 2017 Transect Data - Seagrass Density Estimates							
Transect	**Quad**	**Species**	**Braun-Blanquet Score[1,2]**	**Mid Point %**	**Blade Length (cm)**	**Epiphyte Coverage (L, M, or H)**	**Sediment Type**
Canal 1							
1 60')	0	*bare*	0	0	0	0	sand
	10	*bare*	0	0	0	0	sand
	20	*bare*	0	0	0	0	sand
	30	*bare*	0	0	0	0	sand
	40	*bare*	0	0	0	0	sand
	50	*Halodule wrightii*	4	63	21	M	sand
	60	*bare*	0	0	0	0	sand
	ABUNDANCE		**4**	**63.0%**	**21.0**		
2 72')	0	*Thalassia testudinum*	3	38	48	M	sand
	10	*Thalassia testudinum*	4	63	50	M	sand
	20	*Thalassia testudinum & Syringodium filiforme*	5	88	56	M	sand
	30	*Thalassia testudinum & Syringodium filiforme*	5	88	58	M	sand
	40	*Thalassia testudinum & Syringodium filiforme*	5	88	60	M	sand
	50	*Thalassia testudinum & Syringodium filiforme*	4	63	54	M	sand
	60	*Halodule wrightii*	5	88	20	M	sand
	70	*Halodule wrightii*	4	63	21	M	sand
	ABUNDANCE		**4**	**72.4%**	**46.0**		
3 72')	0	*bare*	0	0	0	0	sand
	10	*Thalassia testudinum & Syringodium filiforme*	4	63	52	M	sand
	20	*Thalassia testudinum & Syringodium filiforme*	5	88	55	M	sand
	30	*Thalassia testudinum & Syringodium filiforme*	5	88	56	M	sand
	40	*Thalassia testudinum & Syringodium filiforme*	4	63	54	M	sand
	50	*Thalassia testudinum & Syringodium filiforme*	4	63	52	M	sand
	60	*Thalassia testudinum & Syringodium filiforme*	4	63	51	M	sand
	70	*Thalassia testudinum*	4	63	50	M	sand
	ABUNDANCE		**4**	**70.1%**	**53.0**		

Notes:

L= Light, M Moderate, and H= Heavy

[1]Braun-Blaquet cover classifications consisted of: 0.1 solitary, with small cover, 0.5 few, with small cover, 1 numerous, but less than 5%, 2 Any number, with >5% to <25% cover, 3 Any number, with >25% to <50% cover, 4 Any number, with >50% to <75% cover, 5= Any number >75% cover.

[2]Abundance coverage calculated by using the mid-point of each Braun-Blanquet coverage classification divided by the total # of occupied quads.

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