Charlotte County Board Of County Commissioners
Agenda Item Summary

Item Number: N- 1

1 DEPARTMENT MAKING REQUEST

Public Works

2 MEETING DATE

7/22/2014 9:00:00 AM

3 REQUESTED MOTION/ACTION

Approve and authorize the Chairman to sign the attached Resolution supporting the Charlotte County Erosion Control Project and the County's ability to provide matching funds for design, construction, and annual monitoring of the erosion control project.

4 AGENDA

Consent

5 IS THIS ITEM BUDGETED (IF APPLICABLE) - Yes

Budget Action
No action needed. Funding from the Stump Pass Beach Renourishment MSTU/BU approved in CIP "Stump Pass Maintenance Dredging", in the FY14 budget process.

Financial Impact Summary Statement
Project is budgeted. No additional impacts.

Detailed Analysis Attached - No

Budget Officer-

6 BACKGROUND (Why is this Action Necessary, and What Action will be accomplished)

The Florida Department of Environmental Protection (FDEP) Beach Erosion Control Program was established for the purpose of working in concert with eligible governmental entities to achieve protection, preservation, and restoration of the Florida coastal system. FDEP provides financial assistance for implementation of beach erosion control/restoration projects, as determined by appropriations from the Florida Legislature. In accordance with Program guidelines, eligible local governments are required to submit a project list, cost estimate, and a resolution from the governing body indicating support and a willingness to provide the necessary funds. This submittal is Charlotte County's request for funding assistance in the amount of $3,271,559 to be applied to costs associated with design, construction, and required annual monitoring of the completed Charlotte County Erosion Control Project. The design and construction will be for renourishment and a stabilizing structure. Annual monitoring consists of sea grass surveys, hydraulic monitoring, aerial photographs, topographic and bathymetric surveys of the beach and borrow area, shorebird monitoring, and sea turtle monitoring. Attached are documents consisting of information specific to the funding request and an accompanying BCC Resolution to support the County's request for FDEP funding assistance. If funding is approved by the Florida Legislature, State funds would be available July 2015.

ATTACHMENTS:

Name:	Description:	Type:
2014_Charlotte_County_Erosion_Control_Resolution.doc	Exhibit	Exhibit
Attachment_1_-_Project_Description.pdf	Exhibit	Exhibit
Exhibit_1_-_County_Budget_Projections.pdf	Exhibit	Exhibit

R E S O L U T I O N
NUMBER 2014-

A RESOLUTION OF THE BOARD OF COUNTY COMMISSIONERS OF CHARLOTTE COUNTY, FLORIDA IN SUPPORT OF THE FLORIDA BEACH EROSION CONTROL PROGRAM; APPROVING A REQUEST FOR FUNDING FROM THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR THE CHARLOTTE COUNTY EROSION CONTROL PROJECT; AND AUTHORIZING LOCAL MATCHING FUNDS FOR FUNDING RECEIVED FROM THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION.

RECITALS

WHEREAS, Charlotte County's Gulf coastal beaches, which are among its most important ecological, economic, and recreational assets, are subject to erosion processes which, through nature, result in detrimental impacts to nesting and wintering areas for wildlife species such as sea turtles and shorebirds; loss of prime outdoor recreational opportunities for Charlotte County's residents and visitors; and damage to and loss of public and privately owned property; and

WHEREAS, beach erosion control and restoration projects are an effective tool for preventing and offsetting some of the negative impacts of beach erosion, including loss of habitat, loss of recreational opportunities, and endangerment of public and private property; and

WHEREAS, the Board of County Commissioners finds that beach erosion control and restoration projects are in the public interest and in the best interest of the health, safety, and welfare of the citizens of Charlotte County.

NOW, THEREFORE, BE IT RESOLVED by the Board of County Commissioners of Charlotte County, Florida:

1. That the Board of County Commissioners of Charlotte County hereby supports the Florida Beach Erosion Control Program and more specifically, the Charlotte County Erosion Control Project (the "Project"), as depicted in Attachment 1 *Project Description*, a copy of which is attached hereto and made a part of this Resolution. Attached also and made a part of this Resolution as Exhibit 1 is a copy of

Charlotte County's 5-Year Budget Projections in support of the County's funding request.

2. That the Board of County Commissioners of Charlotte County hereby authorizes and approves the request for funds from the Florida Department of Environmental Protection and further states its willingness and ability to provide matching funds/local cost share for the Project and to serve as local sponsor for the Project.

3. That the Board of County Commissioners of Charlotte County hereby identifies the following funding sources for the Project: West Coast Inland Navigational District (WCIND), Tourist Development Council, Boater Improvement Fund, Stump Pass/Beach Renourishment MSBU, Stump Pass/Beach Renourishment MSTU and the Federal Emergency Management Agency (FEMA).

PASSED AND DULY ADOPTED this _____ day of _____, 2014.

BOARD OF COUNTY COMMISSIONERS
OF CHARLOTTE COUNTY, FLORIDA

By:_____
Kenneth W. Doherty, Chairman

ATTEST:
Barbara T. Scott, Clerk of Circuit
Court and Ex-officio Clerk to the
Board of County Commissioners

By:_____
Deputy Clerk

APPROVED AS TO FORM
AND LEGAL SUFFICIENCY:

By:_____
Janette S. Knowlton, County Attorney
LR14-2939

p:\wpdata\dan\public works\fdep\erosion control\2014\2014 Charlotte County Erosion Control Resolution

ATTACHMENT 1
PROJECT DESCRIPTION

1 Introduction

The Project includes providing erosion control and shoreline stabilization measures including beach nourishment, maintenance dredging and bypassing, and stabilizing structures for six miles of eroding gulf and inlet shorelines within the Manasota Barriers, Charlotte County utilizing inlet channel, nearshore, and offshore borrow areas. A Project location map is presented in Figure 1.

The northern Project Boundary shall be Chadwick Park, the County's public beach park, located approximately 100 feet south of Florida Department of Environmental Protection (FDEP) Reference Monuments R-9 extending south and encompassing the Stump Pass Beach State Park to Stump Pass. The Project continues on Palm-Knight-Bocilla-Don Pedro Islands extending from approximately 1300 feet northeast of R-22 along Stump Pass' southern inlet shoreline and then along the gulf-front shoreline to the southern end of the development. The southern Project Boundary shall be the north limit of the Don Pedro State Park located approximately 600 feet south of R-40.

The Project features include the following components:

Initial Construction:

- Restore critically eroding beaches on Manasota Key (Updrift Beach Fill-UBF), Palm Island (North Beach Fill-NBF), and Knight-Don Pedro Islands (South Beach Fill-SBF) utilizing offshore sand resources and inlet channel bypassing; and
- Install stabilizing structure on the south end of the Stump Pass Beach State Park to mitigate for inlet maintenance impacts.

Future Construction and Adaptive Management Plan:

- Maintenance dredge Stump Pass for navigation purposes;
- Bypass sand from maintenance dredging onto the NBF and backpass available sand from maintenance dredging to UBF for the purposes of offsetting erosion of the adjacent shorelines, balancing the sediment budget between the inlet and adjacent shorelines, and maintaining the location and hydraulic stability of the navigation channel;
- Install stabilizing structures on the NBF in the event future monitoring depicts beach renourishment and sand bypassing from maintenance dredging does not stabilize this segment of shoreline or provide necessary storm damage reduction benefits for the upland properties as part of the Adaptive Management Plan;
- Place sediment on the ebb shoal in the event the physical monitoring results determine additional sediment will contribute its reformation as part of the Adaptive Management Plan;
- Additional adaptive management activities including adjusting permeability of stabilizing structure on UBF, minor stabilizing structure repairs, filling scour holes adjacent to the stabilizing structures, sand sharing (transferring sand from accretional areas to erosional areas), and maintaining water quality in Rum Cove lagoon; and
- Maintain the UBF, NBF and SBF through renourishment using offshore sources.

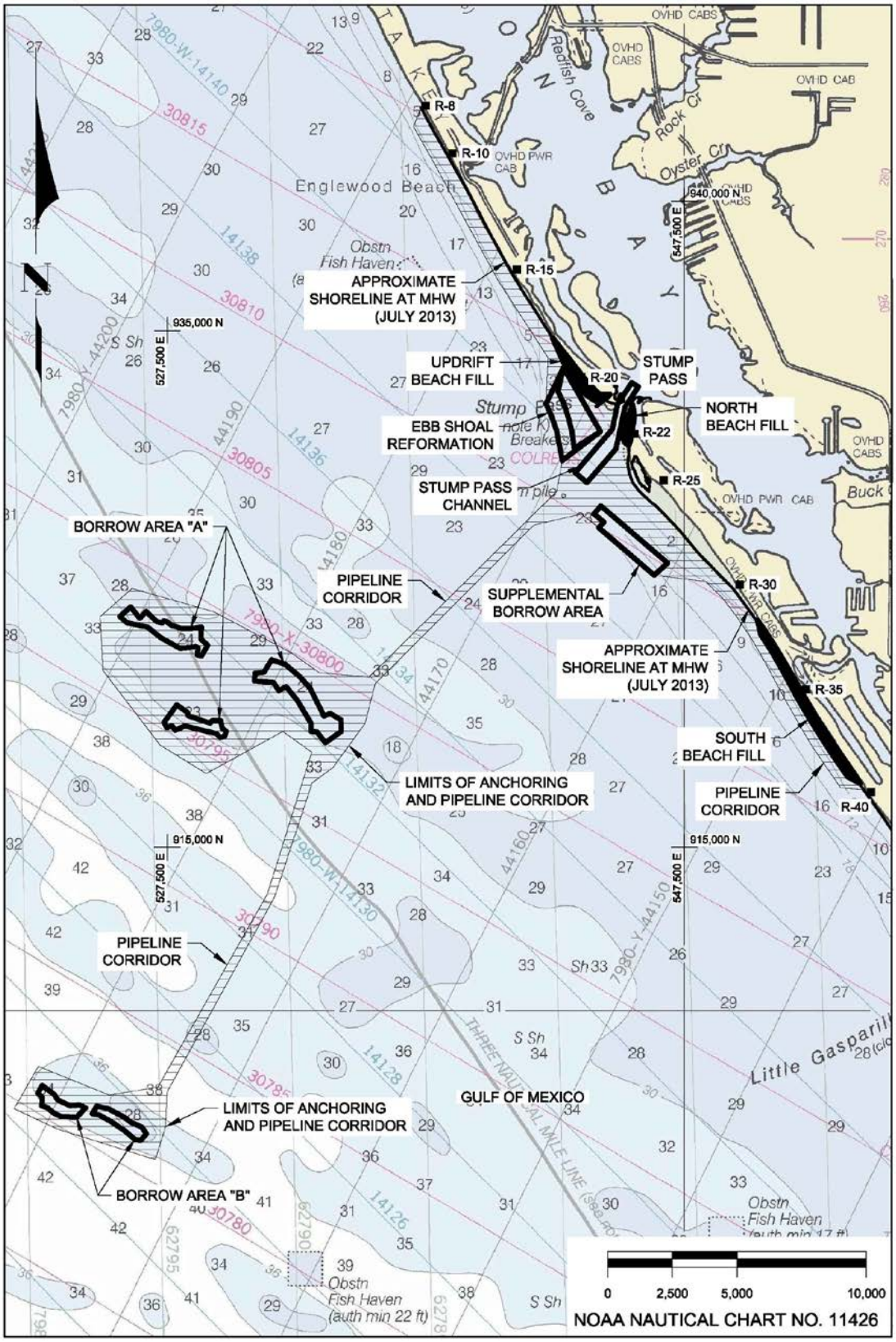

Figure 1. Project Location Map.

2 Consistency with State's Strategic Beach Management Plan

The Project is consistent with the State's Strategic Beach Management Plan (FDEP, 2008) including these components:

- Restore critically eroding beaches on Manasota Key;
- Maintain sand placed on Stump Pass Beach State Park to mitigate for inlet maintenance impacts;
- Place available sand from maintenance dredging on updrift and downdrift shorelines of Stump Pass;
- Investigate feasibility of stabilizing structure at south end of Manasota Key; and
- Maintain County's project through nourishment using sand from bypassing and offshore sources.

3 Project Location

The activity is located at Stump Pass, Manasota Key, Knight and Don Pedro Islands, Charlotte County, within the Gulf of Mexico, Stump Pass and Lemon Bay, Class II – Conditionally Approved for Shellfish Harvesting (Stump Pass Inlet and Lemon Bay) and III (Gulf of Mexico) Waters, Lemon Bay Aquatic Preserve, Outstanding Florida Waters (Stump Pass and Lemon Bay). The Project area includes the following Sections/Townships/Ranges: 12/41/19, 13/41/19, 18/41/20, 19/41/20, 20/41/20, 28/41/20, 29/41/20, 32/41/20, and 33/41/20.

4 Directions to the Project Site

From I-75 take Exit 170 (C.R.769). Turn onto Kings Highway. Proceed 0.4 miles. Turn right onto Veterans Boulevard and proceed 7.0 miles. Veterans Boulevard becomes SR-776W. Proceed 16.1 miles. Turn left onto Beach Road. Proceed 1.4 miles. Enter round-a-bout and take 2nd exit onto Gulf Boulevard. Proceed 1.1 miles to Stump Pass Beach State Park.

5 Project History

Beach Erosion Study (BES), Joint Project between Sarasota and Charlotte County, 2001-2003

Sarasota and Charlotte Counties teamed together to conduct a regional study on beach erosion and develop alternatives to address identified erosion problems. The Consulting Team comprised of Coastal Technology Corporation (CTC) and Coastal Engineering Consultants (CEC) provided the engineering, geotechnical, survey, and environmental services. The BES scope included the following: severity of erosion analysis, risk assessment, alternatives assessment, conceptual designs, and funding analyses (CTC & CEC, 2003).

The severity of erosion analysis examined the accretion and erosion trends and yielded a sediment budget extending from the north county line for Sarasota County to the south county line for Charlotte County for the time period of 1974 to 2001. Specific to this Project, the sediment budget defined the Stump Pass inlet impact on the order of 35,000 cubic yards per year (CY/YR) comprised of the ebb shoal, flood shoal, and Manasota Key spit growth rates noting the

Inlet Management Study (IMS) completed by CEC (2001) determined the bypass quantity around the inlet was negligible and listed published rates for the net longshore transport rate ranging from 30,000 to 50,000 CY/YR.

Utilizing the cross-shore sediment transport model, SBEACH, a risk assessment was completed for the 10, 20 and 50 year return period storm events for each critical erosion area. Specific to the Project area, the estimated storm damages for Knight – Don Pedro gulf-front properties ranged from $13.4 Million (10-Year) to $14.8 Million dollars (50-Year) in 2003 dollars.

Specific to the Knight Island – Don Pedro Island Planning Area, conceptual plans were developed for two alternatives. Both included beach restoration of the NBF and SBF. The first alternative was consistent with the recommendations of the IMS (CEC, 2001); the second alternative included an enhanced storm protection component and extended the fill to the south to include a third critical erosion area on Little Gasparilla Island.

Erosion Control Projects, 2003-Present

Utilizing the same Consulting Team, between 2002 and 2003, Charlotte County applied for and obtained permits to conduct beach restoration of the critically eroding beaches adjacent to Stump Pass utilizing inlet and nearshore borrow area sources. The original Joint Coastal Permit (JCP) Application included the recommended alternative from the 2001 IMS / first alternative from the 2003 BES. During the permit process the emphasis of the project changed from one of navigation to one of erosion control / beach restoration; thus the application was modified to include the enhanced storm protection component for the NBF and SBF. Further, a dune system was incorporated into the SBF design to address concerns from the Florida Fish and Wildlife Conservation Commission.

Due to the increase in volume to be dredged from the inlet sources to accomplish the enhanced project, an advanced mitigation component was developed among the FDEP, Florida Park Service (FPS), Charlotte County, and Consulting Team. Specifically, place the necessary volume of sand on the UBF to offset the erosion losses on the Stump Pass Beach State Park directly attributable to the project's excavation of the primary borrow area. As part of the permit process, the Consulting Team defined the average annual net longshore transport rate of 30,000 to 35,000 CY/YR at Stump Pass. The advanced mitigation component was then set equal to 100,000 CY equal to approximately three years times the average annual rate.

Initial construction of the County's Erosion Control Project was completed in 2003. A total of approximately 925,000 CY of sand were excavated and placed in the three permitted beach fill areas including the advanced mitigation component of 100,000 CY on the UBF. Dunes were constructed on a portion of the updrift beach fill and south beach fill. The sand placement created acres of sea turtle and shorebird nesting habitats. Dredging of a hydraulically efficient inlet channel increased the cross-sectional area and tidal velocities, restoring the tidal prism to historic levels measured in the early 1980's.

In 2006, Charlotte County received authorizations for and completed construction of their Post-Storm Recovery & Maintenance Project to offset significant erosion losses attribute to the

hurricanes of 2004 and 2005. The Project restored three critically eroding beach segments totaling 3.2 miles along Manasota Key, Knight Island and Don Pedro Island, using approximately 450,000 CY of sand including the advanced mitigation component of 145,000 CY on the UBF. Dunes were restored on portions of the south beach fill. An *improved project* was completed and FEMA reimbursement was received for the eligible costs associated with the 2004 hurricane damage.

In 2010/2011, Charlotte County received authorizations for and completed construction of their Post-Storm Recovery & Maintenance Project to offset erosion losses from recent storm events (e.g. Tropical Storm Fay) and to implement the permit required advanced mitigation requirement. A secondary component of the project was to restore the hydraulic efficiency of the inlet by placing additional sand along the north beach fill, forcing tidal flow through the dredged alignment. The project restored three critically eroding beach segments totaling 3.2 miles along Manasota Key, Knight Island and Don Pedro Island, using approximately 374,000 CY of sand including the advanced mitigation component of 156,000 CY on the UBF. Dunes were restored along the south beach fill. Over 4 acres of shorebird habitat were created including placement of 12,000 CY of sand to enhance low-lying beach area adjacent to the existing lagoon. An *improved project* was completed and FEMA reimbursement was received for the eligible costs associated with the storm damage.

Annual physical and biological monitoring surveys and reporting have been conducted in accordance with project permits from 2003 to the present.

10-Year Management Plan

In April 2009, representatives of the County, FPS and FDEP met on site and discussed the opportunity to partner on a feasibility study for the stabilization of South Manasota Key. FPS' preference is to maintain the natural system to the extent possible recognizing that the southern segment of the Stump Pass Beach State Park will continue to be affected by the presence of the inlet and management thereof, thus some type of stabilizing influence may be necessary. Based on the draft scope of work for such a study prepared by FPS in March 2007, the discussions from the 2009 meeting, discussions from the subsequent meeting (January 2010) held in conjunction with the permit processing of the 2011 project, and recent meetings and discussions among the County, Beach Committee, and FPS; it was recommended that the study include an analysis of modifying the Primary Borrow Area via channel size, shape, alignment and depth revisions; analysis of stabilizing influences such as a terminal structure or groin field, and evaluation of the structural complements utilizing the following parameters:

- stabilizes the southern tip of Manasota Key,
- is minimally intrusive,
- requires minimal maintenance,
- is adjustable if possible,
- increases dredging interval and thereby is cost effective, and
- possibly even creates some habitat.

The County has expressed its commitment to partner with the FPS and FDEP. To that end, the County has embarked on the next 10-Year Management Plan utilizing its local dedicated funding

sources to fund the Study. The County and its Consulting Team (CEC and CTC) have held numerous stakeholder meetings including two with the FDEP and FPS staff to date to keep them apprised of the progress of the work and seek input and recommendations as to formulation of alternative plans and approaches. Further, the County is pursuing an Offshore Sand Source Search for the purpose of identifying beach compatible sand sources as an alternate to using Stump Pass and ebb shoal complex to address the County's long-term sand needs. This work follows the 2003 BES desktop analysis of potential sand sources.

The County has undertaken extensive stakeholder outreach as an integral component of developing the new long-term management plan. Together with the Consulting Team, the County has arranged, prepared for, and attended over a dozen major stakeholder meetings comprised of the kick-off meeting, Board of County Commissioner meetings, County advisory committee meetings (Beaches and Shores, Parks and Recreation, Marine Advisory), resident and stakeholder meetings (Manasota Key, Palm-Knight-Don Pedro Island), and meetings / webinars with the state agencies (FDEP, FPS). The County has also posted on their website all of the published reports and milestones for access by the general public. Lastly, the County has shared the details with the local media who have published newspaper articles on the progress.

The 2013 Joint Coastal Permit Application Submittal is the culmination of extensive stakeholder communications, and the technical analyses performed during the Plan Formulation and Alternatives Analysis tasks. Refer to Attachments 15 and 16, respectively for these Project reports. Please refer to Attachment 2 for the Project Need and Justification. Copies of the historic permits are included in Attachment 3.

In summary, through development of a stabilizing structure for the south end of Manasota Key and identification of offshore sand sources, the County is redefining the next 10-Year Management Plan, eliminating the need for advanced mitigation, and making Manasota Key an integral part of the overall County Erosion Control Project.

6 Sediment Budget

The Project's sediment budget is presented in Figure 2. It was developed based on the surveys for the period between 2003 (pre-construction survey) and 2013 (monitoring survey). The Project area was broken into 5 cells described below. The sediment budget takes into account the amount of sand dredged from the borrow areas and placed on the beaches.

<u>Cell 1 (R4-R14)</u>

- Based on past sediment budgets for this region, it was assumed 50,000 CY/YR entered Cell 1
- Manasota Key beaches gained 13,000 CY/YR
- 37,000 CY/YR left Cell 1 to enter Cell 2

<u>Cell 2 (R14-R20)</u>

- Manasota Key beaches eroded 2,000 CY/YR
- Volume placed equaled 40,000 CY/YR
- Net change equaled loss of 42,000 CY/YR
- 79,000 CY/YR left Cell 2 to enter Cell 3

Cell 3 (R20-R24 incl. Ebb Shoal and Inlet Shorelines)

- Inlet shoreline and ebb shoal eroded 48,000 CY/YR
- Volume dredged equaled 112,000 CY/YR
- Volume placed equaled 18,000 CY/YR
- Net change equaled gain of 46,000 CY/YR
- 33,000 CY/YR left Cell 3 to enter Cell 4

Cell 4 (R24-R29)

- Knight Island Inlet shoreline eroded 29,000 CY/YR
- Volume dredged equaled 63,000 CY/YR
- Volume placed equaled 11,000 CY/YR
- Net change equaled gain of 23,000 CY/YR
- 10,000 CY/YR left Cell 4 to enter Cell 5

Cell 5 (R29-R47)

- Knight and Don Pedro Island beaches gained 65,000 CY/YR
- Volume placed equaled 106,000 CY/YR
- Net change equaled loss of 41,000 CY/YR
- 51,000 CY/YR left Cell 5

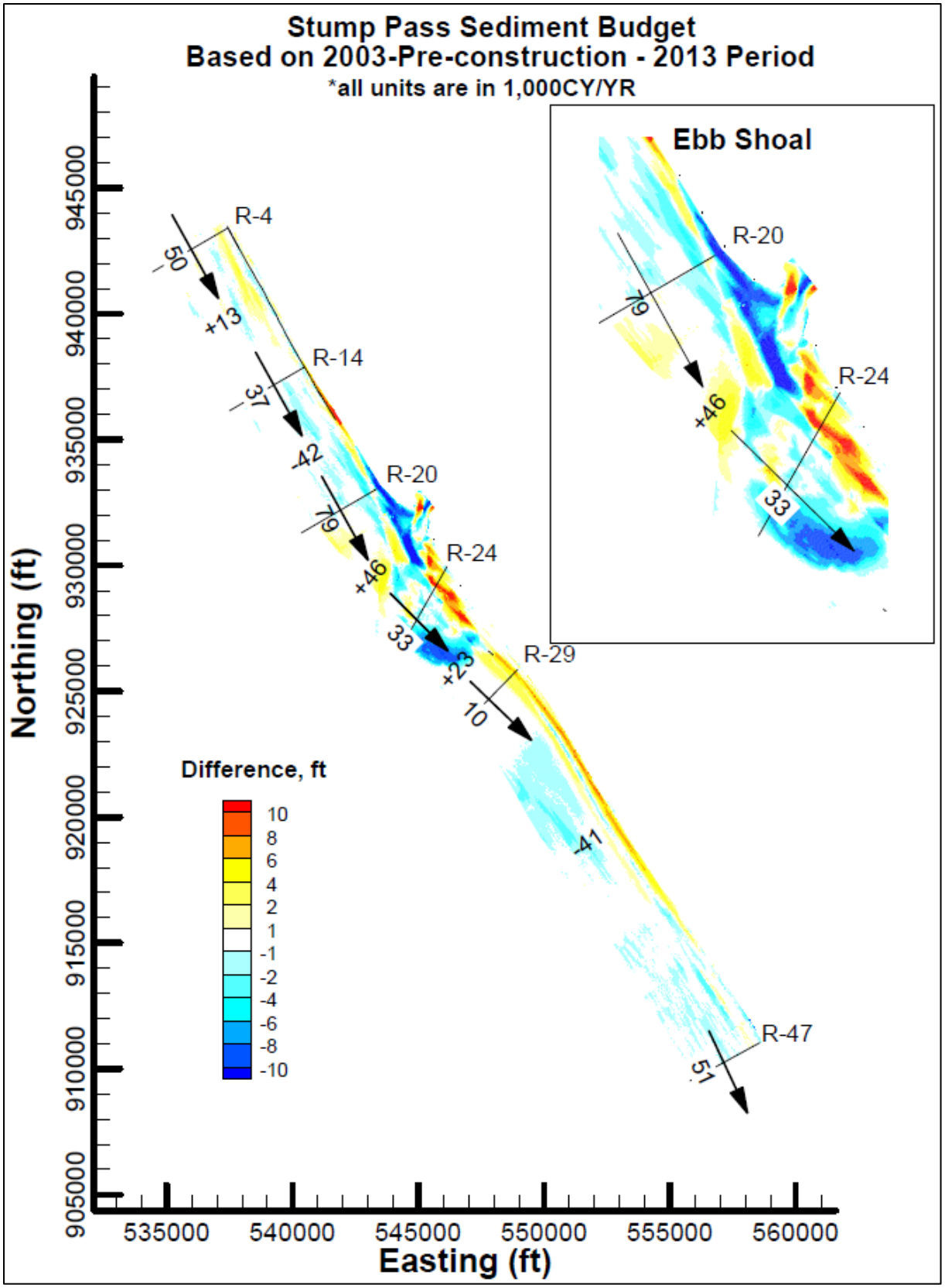

Figure 2. Sediment Budget.

7 Beach Fills

7.1 Updrift Beach Fill

Background
The project permits included an advanced mitigation plan to offset the predicted impacts to the south end of the State Park Beach from the channel realignment. The County's three erosion control projects placed a total of 401,000 CY on the UBF to fulfill the advanced mitigation plan.

Monitoring
Immediately updrift of the Stump Pass Beach State Park, the beach profile had eroded significantly between 1982 and 2003 leaving virtually no beach as MHW was pinching against the existing seawall. This beach segment was restored and has been maintained as documented by the annual monitoring surveys, noting the beach widths exceed the 1974 conditions. Within the northern segment of the State Park, the erosion control project restored and maintained the beach that had been eroding between 1982 and 2003. Based on the recent monitoring surveys, the dry beach width was significantly wider than it was in 1974. The southern segment immediately adjacent to Stump Pass had grown between 1974 and 2003 due to spit formation. However, after restoring the 1980 channel alignment in the 2003 project, the southern end of the State Park became erosional. Between 2003 and 2011 the beach eroded several hundred feet. This area is within the impact zone while the northern half of the State Park Beach was the receiver site for the advanced nourishment under the mitigation plan.

Restoration Plan
For the initial construction event, the 10-Year Management Plan proposes to restore the UBF to the approximate 1980's shoreline conditions through beach fill placement from the offshore borrow areas and sustain the beach through installation and adaptive management of stabilizing structures (Sections 8 and 10). The proposed fill volume is 180,000 CY. The proposed fill section extends from R-18 to 250 feet south of R-21 equal to approximately 3,200 feet. The nourished beach berm ranges from 135 to 375 feet wide, descending from an approximate elevation of +5.0 feet NAVD88 on the landward side to an approximate elevation ranging from +4.0 feet NAVD88 (northern end) to +2.5 feet NAVD88 (southern end) on the seaward side of the berm at a slope ranging from 1V:200H (northern) to 1V:200H for 140 feet and then a grade break to flat (southern). The seaward face of the berm will have a slope of 1V:15H to the toe of fill. A 0.5-foot vertical tolerance is proposed to account for construction. The beach fill area encompasses approximately 21.0 acres, of which approximately 17.3 acres are presently inter-tidal or sub-tidal, i.e., below Mean High Water (MHW).

7.2 North Beach Fill

Background
The project permits included placement of sand in a low-lying fill to close off the former channel and redirect tidal flow through the dredged channel. The County's three erosion control projects placed a total of 278,000 CY on the NBF to redirect tidal flow into the dredged channel.

Monitoring
This segment of shoreline is dynamic as evidenced by historical photography and the annual monitoring surveys. The beach had eroded significantly between 1982 and 2003 due to the spit formation on the north side of the pass that shifted the channel to the south. Since 2003, the southwestern segment of the beach has been accretional. However, monitoring of the NBF led to the County to request and receive a permit modification for the 2011 project whereby the sand was placed on the northeastern segment to address shoreline erosion that occurred post-2006 construction.

Restoration Plan
For the initial construction event, the 10-Year Management Plan proposes to restore the NBF to provide a uniform shoreline along this dynamic area, and sustain the beach through sand bypassing from the inlet maintenance dredge events in the future (Section 9), and if necessary, through installation of stabilizing structures (Section 8). The proposed fill volume is 40,000 CY. The proposed fill section extends from 1,200 feet northeast of R-22 to 500 feet southwest of R-23 equal to approximately 1,600 feet. The nourished beach berm ranges from 50 to 150 feet wide, descending from an approximate elevation of +4.0 feet NAVD88 on the landward side to an approximate elevation of +2.5 feet NAVD88 on the seaward side of the berm. A 0.5-foot vertical tolerance is proposed to account for construction. The seaward face of the berm will have a slope of 1V:15H to the toe of fill. The beach fill area encompasses approximately 8.0 acres, of which approximately 6.3 acres are presently inter-tidal or sub-tidal (below MHW).

7.3 South Beach Fill

Background
The project permits included the restoration of the critically eroding beaches along the gulf-front shoreline along with advanced nourishment and dune construction. The County's three erosion control projects placed a total of 1.03 Million Cubic Yards (MCY) on the SBF to provide a 10 to 15 year level of storm protection for the majority of the properties.

Monitoring
Along the northern segment of the SBF, the beach was accretional between 1974 and 1982 then became erosive between 1982 and 2003. The 2003 erosion control project restored and maintained the beach as documented by the monitoring surveys which indicate an increase in beach width by over 150 feet compared to the 2003 pre-construction conditions. It was predicted that upon channel realignment in 2003, the former ebb shoal would collapse and the sand would migrate southward and landward. This ebb shoal collapse and accretional benefit was a key design premise of the original project. This area is located approximately from R-29 to R-31.5 and benefits from the ebb shoal collapse and migration onto shore. It is noted that the 2006 project placed a low volume of sand in this area. In the 2011 project, this section beach was wider and higher than the 2003 permitted and constructed conditions; thus no sand was placed. Along the southern segment of the SBF, the beach was erosional between 1974 and 1982. The trend continued between 1982 and 2003. The erosion control projects restored and maintained

the beach as documented by the monitoring surveys. As of 2013, the significant majority of the beach is wider than it was in 1982.

Restoration Plan
For the initial construction event, the 10-Year Management Plan proposes to restore the SBF and sustain the beach through nourishment projects in the future (Section 9). The proposed fill volume is 200,000 CY. The proposed fill section extends from approximately 500 feet south of R-31 to approximately 500 feet south of R-39 equal to 7,400 feet. The nourished beach berm ranges from 65 to 140 feet wide, descending from an approximate elevation of +4.0 feet NAVD88 on the landward side to an approximate elevation of +2.5 feet NAVD88 on the seaward side of the berm. A 0.5-foot vertical tolerance is proposed to account for construction. The seaward face of the berm will have a slope of 1V:15H to the toe of fill. The beach fill area encompasses approximately 41.5 acres, of which approximately 32.8 acres are presently inter-tidal or sub-tidal (below MHW).

8 Borrow Areas

8.1 Offshore Borrow Areas

As defined in the Plan Formulation Report (Attachment 15), a new objective of the Plan is to introduce utilization of offshore sand resources to reduce the reliance upon the inlet system to meet the beach renourishment needs, thereby reducing the erosion rate immediately updrift of the inlet and minimizing or eliminating any future advanced mitigation plan.

To that end, on behalf of the County, the Consulting Team conducted both reconnaissance-level and a detailed-level sand source search surveys and a reconnaissance-level geotechnical survey. The area of investigation is the vicinity of Stump Pass offshore of Manasota Key, Don Pedro, and Knight Islands (Figure 1). The islands in this area are later Holocene in age, with the barriers dating within the last 3000 years, while the nearshore material dates back up to 4500 years before present as suggested by prior investigations. The sediments that comprise the barriers in this area were likely derived from the reworking of existing material throughout the Holocene transgression, as there is no sediment supply of riverine origin. Although some texts argue for the theory that the barrier islands formed far offshore and migrated to their present positions throughout the transgression, others contend that the islands formed where sediment was concentrated close to their present positions. The sand source search survey reports are contained in Attachment 10. The borrow area design reports and compatibility analysis with the native beach are contained in Attachment 11. The proposed sediment qa-qc plan for the offshore borrow areas is contained in Attachment 12.

8.1.1 Borrow Area A

Proposed for the initial event, Borrow Area A is located approximately 22,000 feet offshore of Stump Pass. There are three subareas denoted as A1, A2 and A3. The design templates vary in width and depth based on the limits of beach compatible sand defined through detailed geophysical surveys and vibracores. Combining the three subareas, the dredge template encompasses approximately 142 acres (bottom of cut), all of which are presently sub-tidal

(below MHW). The estimated volume contained within the three subareas is approximately 1.2 MCY.

8.1.2 Borrow Area B

Proposed for the future renourishment events, Borrow Area B is located approximately 35,300 feet offshore of Stump Pass. There are three subareas denoted as B1 and B2. The design templates vary in width and depth based on the limits of beach compatible sand defined through detailed geophysical surveys and vibracores. Combining the two subareas, the dredge template encompasses approximately 42 acres (bottom of cut), all of which are presently sub-tidal (below MHW). The estimated volume contained within the two subareas is approximately 350,000 CY.

8.2 Stump Pass Navigation Channel

Denoted as the primary borrow area in previous projects, sand dredged from Stump Pass along the navigation channel alignment has been utilized for the Erosion Control Project construction events since 2003 noting the alignment of the primary borrow area did change between the 2003 and 2006 events through the permit modification process. An average maintenance dredge cycle of four years is proposed for improved navigation through Stump Pass. The proposed dredge volume is 85,000 CY plus a shoaling volume allowance to be determined through physical monitoring. The allowance will enable removal of a sufficient volume of sand to address storm related impacts and / or placement of additional sand to address critical erosion needs on the NBF or UBF as documented by the beach profiles and performance assessment. The recommended navigation channel design dimensions are described as follows.

8.2.1 Dredge Depth

The West Coast Inland Navigation District, Florida Sea Grant (FSG), and Charlotte County recently completed a Regional Waterway Management System Report (FSG, 2012) providing boating data for the County's waterways. Utilizing the traffic sheds within the Stump Pass area, 94% of the vessels ranged in size up to 40 feet in length with drafts ranging from less than 1.0 foot to 6.0 feet. The design vessel draft was chosen as three (3) feet based on an analysis of this data and consistency with the Stump Pass Inlet Management Study (CEC, 2000). Applying the design draft, squat, under keel clearance, wave allowance, and advanced maintenance parameters, the recommended channel depth was determined to be -11 feet Mean Lower Low Water (MLLW) (Table 1). Allowing for a two (2) foot dredge tolerance, the recommended construction depth was determined to be -11 feet MLLW. This equates to approximately -13 feet North American Vertical Datum of 1988 (NAVD88) based on interpolation between tidal stations 8725858 at Venice and 8725110 at Naples. It is noted that the wave allowance parameter is excluded on the approach channel (landward of the bayside shorelines of Manasota Key and Palm Island reducing the design depth to -9 feet NAVD8888 and construction depth to -11 feet NAVD8888. These proposed depths are approximately one-foot shallower than the historical permitted depths.

Table 1. Navigation Channel Depth Requirements

NAVIGATION CHANNEL DEPTH REQUIREMENTS	
DESIGN CRITERIA	**DEPTH (FT, MLLW)**
DESIGN VESSEL DRAFT	3.0
SQUAT	1.0
UNDER KEEL CLEARANCE	1.0
WAVE ALLOWANCE	2.0
ADVANCED MAINTENANCE	2.0
RECOMMENDED CHANNEL DEPTH	9.0
DREDGE TOLERANCE	2.0
CONSTRUCTION DEPTH	11.0

8.2.2 Channel Width

When the alignment of the Primary Borrow Area shifted from the original 1980 channel to a modified channel in response to Division of State Lands concerns, the borrow area width was increased from 300 feet to 600 feet to provide the volume of sand needed for the proposed storm damage reduction project. As this Project proposes to dredge Stump Pass for navigation purposes, the original 300-foot wide channel was chosen as the design channel width. Further, this channel width to the proposed channel depth yields a cross-sectional area that closely matches the historically hydraulic efficient channel measured during the 1980's. To allow for flexibility at the time of construction, and recognizing that the primary borrow area remains authorized under Sovereign Submerged Lands Easement No. 40072 (5079-08) dated March 5, 2003 (Attachment 7), it is proposed to be retained for the Project.

8.2.3 Summary

The Stump Pass Navigation Channel is located along the modified alignment of the historical primary borrow area utilized for the 2003 through 2011 restoration projects. Approximately 85,000 CY of beach compatible sediment plus a shoaling volume allowance is proposed to be excavated on a 4-year (average) cycle noting the available volume is on the order of 250,000 CY. The borrow area is authorized under Sovereign Submerged Lands Easement No. 40072 (5079-08). The design cut depth is to elevation -11 feet NAVD88 with a 2-foot overdredge tolerance to -13 feet NAVD88 from Stations 0+00 to 36+00 and -9 feet NAVD88 with a 2-foot overdredge tolerance to -11 feet NAVD88 from Stations 36+00 to 42+00. The design cut width is 300 feet and may be shifted laterally within the permitted limits. These design dimensions are equal to or are within the historical permitted dredge limits. The dredge template encompasses approximately 42.8 acres (bottom of cut), of which 42.3 are presently inter-tidal or sub-tidal (below MHW). The proposed sediment qa-qc plan for the inlet sand sources is contained in Attachment 12.

8.3 Supplemental Borrow Area

The ebb shoal borrow area was originally used in the 1994 Palm Island restoration project. It was subsequently permitted and utilized in the 2003 initial construction of the County's erosion control project. Entitled the Supplemental Borrow Area, it is proposed for the Erosion Control

Project in subsequent renourishment events to provide additional sand specifically to address storm damage impacts to the beaches. Approximately 114,000 CY of beach compatible sediment is available for future projects as part of the Adaptive Management Plan. The borrow area is authorized under Sovereign Submerged Lands Easement No. 40072 (5079-08). The design cut depth is to elevation -13 feet NAVD88 with a 2-foot overdredge tolerance to -15 feet NAVD88. The design cut width ranges from 400 feet to 700 feet. These design dimensions are equal to the historical permitted dredge limits. The dredge template encompasses approximately 50.6 acres (bottom of cut), all of which are presently sub-tidal (below MHW). The proposed sediment qa-qc plan for the inlet sand sources is contained in Attachment 12.

9 Stabilizing Structures

As presented herein, to address the Project goals defined for the long-term management of Stump Pass and its adjacent beaches, the County and Consulting Team completed a detailed analysis on the addition of stabilizing structures to the south end of Manasota Key including extensive stakeholder coordination. Refer to Attachments 15 and 16 for the Plan Formulation and Alternatives Analysis Reports. Through this work, a rock terminal groin was selected as the optimal balance among the decision matrix comprised of technical, environmental, fiscal and institutional parameters.

The structure will be sited south of R-21. The proposed maximum dimensions include approximately 400 feet from MHW, the crest width equals 10 feet at +4 feet NAVD88, side slopes equal 1V:2H, and seaward slope equals 1V:5H for the armor layer and a seaward slope of 1V:1H for the core and foundation layers. A step in the groin section at design grade is included on the updrift side to reduce material quantities and account for the sand entrapment from longshore transport. The construction will include excavating to design grades, installing foundation layer and bedding stone from design grade to -6 feet NAVD88, installing core stone layer to -3 feet NAVD88, and installing armor stone layer to +4 feet NAVD88. During the Final Design Phase, the permeability of the structure will be designed to provide the opportunity for sand transport to the downdrift side of the structure on Manasota Key.

10 Future Renourishment / Maintenance Dredging Projects

To address future beach erosion within the permit duration, renourishment of the beaches within the Project limits with beach compatible sand from one or more of the borrow areas be included in the permitting at intervals necessary to address both storm-induced and background erosion. The Project limits are defined from R-9 at the north end of the County's Chadwick Beach Park boundary to R40.5 at the north end of the Don Pedro State Park boundary. The interval would be determined by erosion analyses as documented by the physical monitoring surveys. It is noted that the Updrift, North and South Beach Fill Templates shall remain the same as the initial event. Templates for the segments north of the Updrift Beach Fill and between the North and South Beach Fills are included in the Permit Drawings (Attachment 9).

To provide for improved navigation for Stump Pass within the permit duration, routine maintenance dredging is included in the permitting at intervals necessary to address both storm-induced and background infilling. Dredge material from the maintenance dredging will be

bypassed onto the NBF and available dredge material from the maintenance dredging will be backpassed to the UBF for the purposes of offsetting erosion of the adjacent shorelines, balancing the sediment budget between the inlet and adjacent shorelines, and maintaining the location and hydraulic stability of the navigation channel.

The County agrees to the following permit condition for future renourishment and maintenance dredging events:

> *Periodic renourishment is authorized by this permit for the beaches from R-9 to R40.5 on an as needed basis. Periodic maintenance dredging of the Stump Pass channel is authorized on an as needed basis. During each event, sand placement will be rotated within the permitted fill templates such that no specific segment receives sand more frequently than once every 4 years unless the physical monitoring surveys demonstrate the significant majority of the sand placed in the prior event is eroded.*
>
> *Prior to commencement of construction for these events, the County shall obtain a Notice to Proceed from the Department. The County shall submit the following documents to the Department for review and approval. No work may commence until the County has received a written Notice to Proceed.*
>
> *a. Monitoring data depicting the beach profiles comparisons and erosion analyses justifying the need for renourishment; or inlet cross sections and shoaling analyses justifying the need for maintenance dredging.*
>
> *b. Two hard copies and an electronic copy of detailed final construction plans and specifications for all authorized activities that are consistent with the project description, conditions and drawings of this permit. Any deviations from the project description, conditions and drawings of this permit shall be pointed out in the plans and specifications, and any such changes may require the Permittee to apply for a permit modification. These documents shall be signed and sealed by the design engineer who must be registered in the State of Florida, and shall bear the certifications specified in Rule 62B-41.007(4), F.A.C. The plans and specifications shall include a description of the methods that will be used for the dredging and beach construction, and also include drawings and surveys that show all biological resources and work spaces (e.g., staging areas, access corridors, etc.) to be used for this project.*

11 Adaptive Management Plan

The long term permit shall also authorize the Adaptive Management Plan to be comprised of the following elements.

- Adjust permeability of stabilizing structures on the UBF to increase / decrease the bypassing of sand to the downdrift shoreline as documented by the physical monitoring surveys;
- Install stabilizing structures (up to three T-groins) on the NBF in the event future monitoring depicts beach renourishment and sand bypassing from maintenance dredging does not stabilize this segment of shoreline or provide necessary storm damage reduction benefits for the upland properties. Installation may occur when the physical monitoring surveys document the loss of over 50% of the design section for the majority of the NBF

shoreline segment noting the loss shall be sustained for two consecutive annual monitoring surveys;

- Place sediment on the ebb shoal in the event the physical monitoring results determine additional sediment is needed for its reformation; and
- Use of the Supplemental Borrow Area for post-storm recovery projects.

The County agrees to the following permit condition for implementation of Adaptive Management Plan elements:

Adaptive Management activities are authorized by this permit. Prior to implementation, the County shall obtain a Notice to Proceed from the Department. The County shall submit the following documents to the Department for review and approval. No work may commence until the County has received a written Notice to Proceed.

a. Monitoring data and analyses justifying the need for adaptive management.

b. Two hard copies and an electronic copy of detailed final construction plans and specifications for all authorized activities that are consistent with the project description, conditions and drawings of this permit. Any deviations from the project description, conditions and drawings of this permit shall be pointed out in the plans and specifications, and any such changes may require the Permittee to apply for a permit modification. These documents shall be signed and sealed by the design engineer who must be registered in the State of Florida, and shall bear the certifications specified in Rule 62B-41.007(4), F.A.C. The plans and specifications shall include a description of the methods that will be used for the dredging and beach construction, and also include drawings and surveys that show all biological resources and work spaces (e.g., staging areas, access corridors, etc.) to be used for this project.

12 Operation and Maintenance

The long term permit shall also authorize Operation and Maintenance (O&M) activities including minor structure repairs, filling scour holes adjacent to the structures, sand sharing (transferring sand from accretional areas to erosional areas), and maintaining water quality in Rum Cove lagoon adjacent to the NBF in the event Project measures (e.g. fill placement, t-groin installation) preclude natural exchange with the lagoon.

The County agrees to the following permit condition for O&M activities:

Routine operation and maintenance (O&M) activities are authorized by this permit. Prior to commencement of an O&M activity, the County shall obtain a Notice to Proceed from the Department. The County shall submit the following documents to the Department for review and approval. No work may commence until the County has received a written Notice to Proceed.

a. Two hard copies and an electronic copy of detailed final construction plans and specifications for all authorized activities that are consistent with the project description, conditions and drawings of this permit. Any deviations from the project description, conditions and drawings of this permit shall be pointed out in the plans and specifications, and any such changes may require the Permittee to apply for a permit modification. These documents shall be

signed and sealed by the design engineer who must be registered in the State of Florida, and shall bear the certifications specified in Rule 62B-41.007(4), F.A.C. The plans and specifications shall include details of construction including general construction procedures and equipment to be used, turbidity control measures, and work spaces (e.g., staging areas, access corridors, etc.) to be used.

13 Environmental Protection Plans

The County proposes to conduct natural resource protection programs during construction for sea turtles, shorebirds, water quality, manatees, and smalltooth sawfish consistent with the most current and applicable state and federal Reasonable and Prudent Measures for protection of the pertinent threatened and endangered species. The proposed sea turtle protection plan consists of daily monitoring of turtle nesting, mark and avoidance, nest relocations, escarpment removal, lighting, and beach tilling corresponding to the state and federal requirements. The proposed shorebird protection plan includes routine monitoring of bird activity and nesting, and marking/maintaining/enforcing appropriate construction buffers corresponding to the state and federal requirements. The proposed water quality protection plan contains standard water quality monitoring provisions for turbidity at the borrow area and beach fill along with additional turbidity monitoring to protect water quality in the adjacent Aquatic Preserve during Stump Pass Channel dredging. The proposed manatee, swimming sea turtle, and smalltooth sawfish protection plans contain the standard construction conditions corresponding to the state and federal requirements. Note that there are no seagrass beds or hardbottom communities within the proposed limits of beach renourishment and borrow area dredging. These are well documented by the prior projects and current design tasks summarized by the various reports attached to the JCP Application. Copies of the historic permits are included in Attachment 3. Please refer to Attachment 17 for details on the proposed environmental protection plans.

14 Existing and Proposed Upland Uses

The beaches within the Project area are publicly accessible. There are no user fees for the public to access County beaches. However, the State Park on the south end of Manasota Key charges a user fee to access the portion of the beach managed by the park. The proceeds of the fee are used to maintain park facilities. The north end of the Manasota Key project area, Knight Island and Don Pedro Island are all developed and include single, multi-family, and condominium residences. No changes are proposed for the existing upland uses.

15 Post-Storm Recovery and Maintenance

Consistent with the past ten years, the County shall continue with post-storm recovery and maintenance projects to address significant storm damages. These activities include but are not limited to debris removal, sand placement (e.g. FEMA berms), dune restoration, vegetative plantings, and major renourishment subject to funding availability.

16 Existing Structures

On Manasota Key between R-9 and R-15.4 there are existing shoreline armoring structures, either seawalls or revetments.

The construction specifications shall include the following protection plan:

> *During staging, construction access, excavation, sediment transport, beach fill placement, and site restoration, the Contractor shall implement best management practices to protect the structures within and adjacent to the Work area and to prevent damage thereto by the Contractor's operations. The Contractor shall provide the Owner in their Work Plan how they will accomplish this work including but not limited to use of small equipment, hand labor, etc. as necessary to protect the structures. Beach fill may be placed abutting existing structures and the Contractor shall exercise due caution when placing sediment near the structure so as not to damage the structure. The Contractor will be responsible for the cost to repair any damage to existing structures caused by the Work. Final payment shall be withheld until the repairs are made and approved by the Owner.*

17 Construction Schedule

Dates are taken from Date of Notice to Proceed from FDEP

Mobilization: 30 days
Hydraulic Dredge and Fill: 150 days
Stabilizing Structures on Manasota Key: 90 days (in part concurrent with beach fill on downdrift beaches)
Demobilization: 30 days

Exhibit 1

5-Year Budget Projections in Support of FY 2015/16 Local Government Funding Request Beach Management Projects

Year	Proposed Method	Description	Total Estimated Cost	Federal Cost Share	State Cost Share	Local Cost Share
2015/ 2016	Construction	Renourishment and Stabilizing Structure	$7,057,200		$3,172,917	$3,884,283
	Monitoring	Phys, Bio, Hyd, Species	$219,400		$98,642	$120,758
2016/ 2017	Monitoring	Phys, Bio, Hyd, Species	$223,790		$100,616	$123,174
2017/ 2018	Monitoring	Phys, Bio, Hyd, Species	$228,270		$102,630	$125,640
2018/ 2019	Design & Permitting	Bypassing	$100,000		$44,960	$55,040
	Monitoring	Phys, Bio, Hyd, Species	$232,830		$104,680	$128,150
2019/ 2020	Construction	Bypassing	$3,100,900		$1,394,165	$1,706,735
	Monitoring	Phys, Bio, Hyd, Species	$237,500		$106,780	$130,720
2020/ 2021	Monitoring	Phys, Bio, Hyd, Species				
2021/ 2022	Monitoring	Phys, Bio, Hyd, Species				
2022/ 2023	Design & Permitting	Renourishment				
	Monitoring	Phys, Bio, Hyd, Species				
2023/ 2024	Construction	Renourishment				
	Monitoring	Phys, Bio, Hyd, Species				
2024/ 2025	Monitoring	Phys, Bio, Hyd, Species				
TOTAL			$11,399,890.00	0	$5,125,390.00	$6,274,500.00

June 25, 2014