ATTACHMENT NO. 33

EFFECTS ON THE COASTAL SYSTEM

ATTACHMENT NO. 33a
EFFECTS ON THE COASTAL SYSTEM

The Lido Key shoreline is classified by FDEP as critically eroded. To address the erosion, beach nourishment and structural alternatives have been analyzed in the feasibility, modeling, and engineering reports presented in Attachment No. 38. The proposed project is intended to maintain the shoreline as defined per the 2002/2004 Feasibility Report (USACE). The project will provide additional beach width, maintain the existing berm elevation for storm protection, and improve and/or protect the existing environmental habitat. The proposed borrow source provides a renewable sediment resource in a sediment scarce region, relieves erosional pressure on the northern interior shoreline of Siesta Key (proposed dredging of the Big Sarasota Pass ebb shoal), avoids impacts to the Big Sarasota Pass boating channel, and is not expected to interrupt the sediment pathways between Lido Key and Siesta Key (USACE, 2015). Also, the two groin structures were designed to be the minimum length that can maintain the required 80-foot beach width along southern Lido Key throughout the 5-year renourishment interval. Due to their shortened size and porosity, these structures are anticipated to have minimal impact on littoral processes and are not anticipated to create significant adverse downdrift effects. The effects on the coastal system are further described in the reports presented in Attachment No. 38.

A physical monitoring plan is being provided in this attachment to monitor the physical effect of the proposed activity on the coastal conditions.

References

USACE, 2015. "Study of Big Sarasota Pass Sediment Mining Alternatives for Sarasota County, Lido Key Hurricane and Storm Damage Reduction Project."

ATTACHMENT NO. 33b
COMPATIBILITY ANALYSIS

The compatibility analysis of the fill material with respect to the existing sediment at the placement site is included in Attachment No. 27.

ATTACHMENT NO. 33c
CONSISTENCY WITH BEACH MANAGEMENT PLAN

The FDEP (May 2008) Strategic Beach Management Plan (SBMP) for the Southwest Gulf Coast Region includes the beaches of Lido Key, within Sarasota County, from R-31 to R-44.5. The SBMP identifies the shoreline as critically eroded and identified that the project design consists of a beach at elevation +5 ft NGVD and provides five years of advance nourishment to protect the existing dune and upland development.

The SBMP strategy is defined as: "Maintain the project through monitoring and nourishment using sand from bypassing and offshore sources; restoration of the remaining critically eroded beach along the southern gulf shoreline of the island; conduct feasibility study for alternative beach erosion control terminal structures at south end of island." The proposed project is consistent with this strategy.

ATTACHMENT NO. 33d
EFFECT ON WATER QUALITY AND NATURAL COMMUNITIES

During construction, turbidity monitoring will be performed according to an approved turbidity monitoring plan (Attachment No. 34).

A portion of the borrow area and mixing zones is located within the Outstanding Florida Water (OFW) in Big Sarasota Pass. The applicant intends to provide additional information to the Department in order to establish the compliance limit relating to the OFW water quality, as described by Rule 62-4.242 (2)(b), F.A.C. which allows the natural variability in turbidity values to be utilized when determining compliance limits at the edge of the mixing zone. Sampling will be conducted within the approximate mixing zone in the OFW. Prior to conducting the field work, the applicants will coordinate with FDEP on the guidelines and proposed procedure.

The mixing zones for the proposed project are shown on the graphic in this attachment. The maximum beach fill mixing zone (300 m offshore x 1000 m downcurrent) and the borrow area mixing zones (150 meter radius) are shown, with natural communities delineated in the area. Submerged aquatic vegetation (SAV) is shown based on the benthic resource investigation conducted in the growing season, September 2014. There are no SAV within the beach fill placement or related mixing zone area. The acreage of each seagrass patch within the borrow area mixing zone is listed in Table 1 below and the location shown in the figure provided with this attachment. The total seagrass patch area within the borrow area and borrow area mixing zone is 5.71 acres, with 1.68 acres within the borrow area and 4.03 acres in the respective mixing zone. No direct impacts to seagrasses are anticipated; the seagrasses within the borrow area will be avoided with "no work" zones established during construction. Further description of the seagrasses is provided in Attachment No. 28-1.

Table 1. 2014 Big Sarasota Pass Seagrass Patch Acreage within Mixing Zone.

Site	Depth (m)	Species	Percent Cover	Acreage
Patch 1	1	*Syringodium filiforme*	75-100%	2.81
Patch 2	1	*Syringodium filiforme*	75-100%	0.95
Patch 3	2	*Halodule wrightii*	50-75%	N/A
Patch 4	2	*Halodule wrightii*	50-75%	N/A
Patch 5	2	*Halodule wrightii*	75-100%	0.02
Patch 6	2	*Halodule wrightii*	50-75%	0.02
Patch 7	2	*Halodule wrightii*	50-75%	0.15
Patch 8	4	*Syringodium filiforme*	*	N/A
Patch 9	3	*Halodule wrightii*	numerous, but < 5%	1.18
Patch 10	3	*Halodule wrightii*	numerous, but < 5%	0.45
Patch 11	2	*Halodule wrightii*	numerous, but < 5%	0.05
Patch 12	3	*Halodule wrightii*	numerous, but < 5%	0.08
Patch 13	3	*Halodule wrightii*	few, < 5%	N/A
Patch 14	5	*Halophila decipiens*	50-75%	N/A

*Divers were unable to collect *in situ* data for Patch 8 due to the unsafe diving conditions at the site.

ATTACHMENT NO. 33e
CUMULATIVE IMPACTS

Positive impacts to the coastal ecosystem include providing storm erosion protection, increasing the beach area for sea turtle and shorebird nesting, and providing an aesthetically pleasing recreational beach for Lido Key. There are no hardbottom resources in the project area. Seagrasses within the borrow area will be avoided by establishing "no work" zones therefore no cumulative impacts to seagrasses are expected. Turbidity monitoring requirements as required by permit conditions and the Water Quality Monitoring Plan (Attachment No. 34) will be adhered to along with requirements for sea turtle protection, shorebirds and threatened and endangered species (Attachment No. 35).

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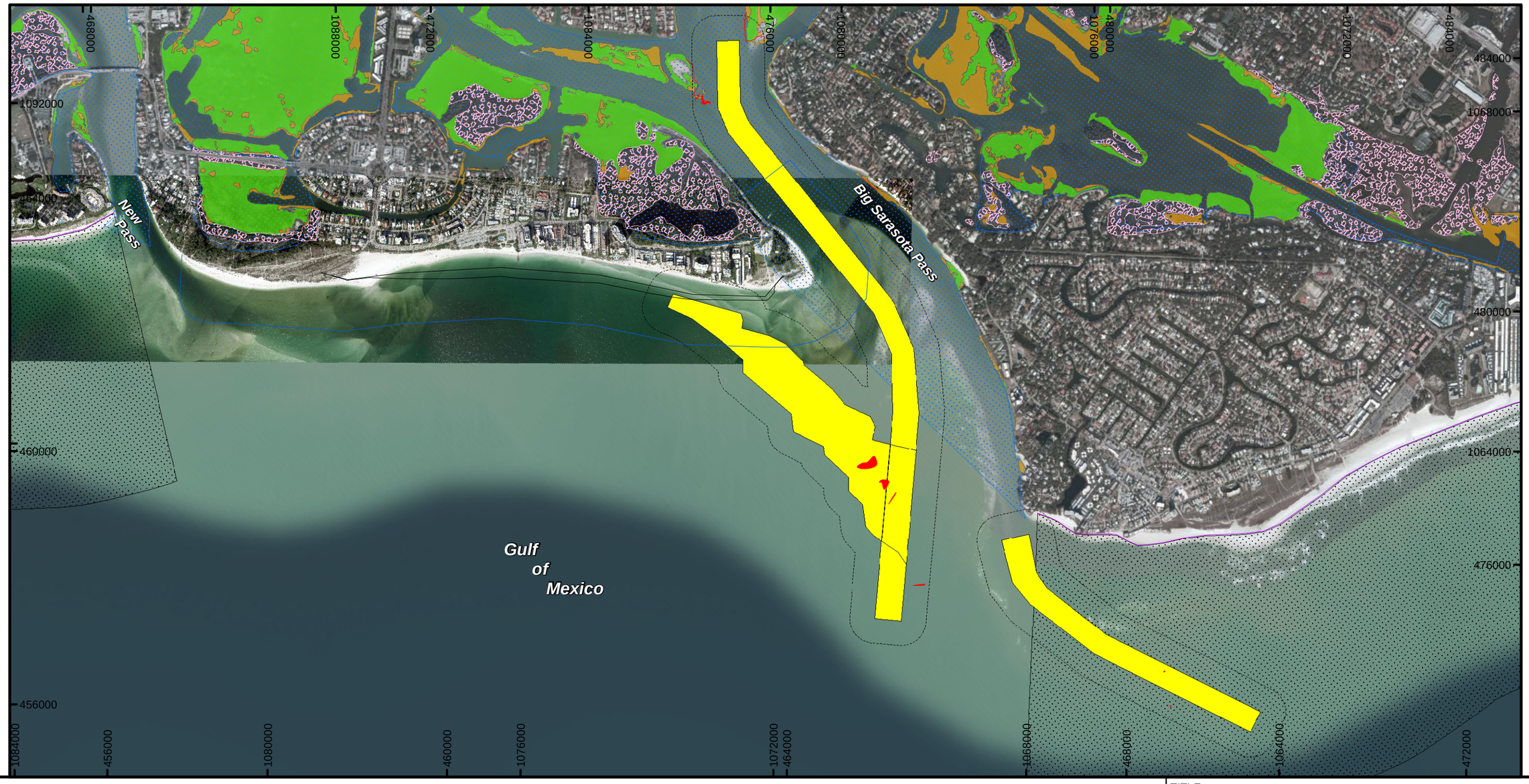

G:\Enterprise\Sarasota\150252 Lido Key Storm Damage Reduction Project Permitting\MXD\Lido Key Mixing Zone.mxd

Notes:

1. Coordinates are in feet based on the Florida State Plane Coordinate System, West Zone, North American Datum of 1983 (NAD 83).
2. LIdo Key aerial photography provided by Aerial Cartographics of America, date flown August 10, 2014.
3. Additional background imagery is ESRI's Imagery Basemap.

Legend:

- Outstanding Florida Waters
- Borrow Areas
- Beach Design
- Beach Site Mixing Zone
- Borrow Area Mixing Zone
- USFWS Loggerhead Critical Habitat
- NMFS Loggerhead Critical Habitat

2014 CB&I Seagrass Survey

- Fix on Seagrass Patch
- Edge of Seagrass Patch
- Seagrass Patch

2010 Florida FWCC-FWRI Seagrass

- Continuous
- Discontinuous

- 2011 SWFWMD Mangroves

0 1,000 2,000 Feet

1 inch = 2,000 feet

TITLE:

Lido Key, Sarasota County Florida Hurricane and Storm Damage Reduction Project Mixing Zone Map

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Date: 03/09/15	By: HMV	Comm No. : 150252	**Attachment 33d**