

RESOLUTION NO. 2010- 143

**A RESOLUTION ADOPTING A BEACH MAINTENANCE & MONITORING
PLAN FOR THE ATLANTIC OCEAN ENGINEERED BEACHES AND
PROVIDING FOR AN EFFECTIVE DATE.**

WHEREAS, the Nassau County Board of County Commissioners, Nassau County, Florida through the establishment of the South Amelia Island Shore Stabilization Municipal Services Benefit Unit (SAISS-MSBU), has constructed and maintained an engineered beach nourishment project along the Atlantic Ocean shoreline at the southern end of Amelia Island (South Amelia Island) to restore and maintain the storm protection function and recreational amenity value of the Atlantic Ocean beaches there along; and

WHEREAS, the Board of County Commissioners of Nassau County, Florida recognizes the economic value of maintaining the Atlantic Ocean beaches in a healthy and protective condition; and

WHEREAS, the Board of County Commissioners, Nassau County, Florida, through the SAISS-MSBU, supports the future monitoring and maintenance of the health of the Atlantic Ocean beaches of the island, including the interim repair and eventual renourishment of the engineered beaches; and

WHEREAS, the Board of County Commissioners, Nassau County, Florida acknowledges the need to develop and follow a Beach Maintenance & Monitoring Plan to guide the management of the engineered beach project and maintain the eligibility of the engineered beach restoration project for State and Federal post-storm assistance in the event of a declared disaster, such as a hurricane or other tropical event.

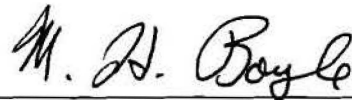
NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS, NASSAU COUNTY, FLORIDA THAT:

Section 1. The Board of County Commissioners, Nassau County, Florida hereby supports the maintenance and monitoring of the engineered beaches along the Atlantic Ocean shoreline of South Amelia Island and hereby adopts the Beach Maintenance & Monitoring Plan (rev. July 2010) developed for the engineered beach nourishment project.

Section 2. EFFECTIVE DATE. This Resolution shall take effect immediately upon its adoption.

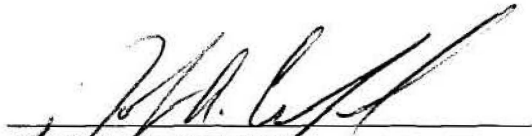
DULY ADOPTED this 13th day of September, 2010.

**BOARD OF COUNTY COMMISSIONERS
NASSAU COUNTY, FLORIDA**



Michael H. Boyle
Its: Chairman


Attest as to Chairman's signature:



JOHN A. CRAWFORD
Its: Ex-Officio Clerk

*EBK
9/13/10*

APPROVED AS TO FORM BY THE
NASSAU COUNTY ATTORNEY:



DAVID A. HALLMAN

Rev. 07/10

**South Amelia Island
Shore Stabilization Project**
Nassau County, FL

Beach Maintenance & Monitoring Plan



olsen
associates, inc.
Coastal Engineering

olsen associates, inc.

4438 Herschel St.

Jacksonville, FL 32210

(904) 387-6114

(904) 384-7368 fax

www.olsen-associates.com

**South Amelia Island
Shore Stabilization Project
Nassau County, FL**

Beach Maintenance & Monitoring Plan
Rev. July 2010

Olsen Associates, Inc.
2618 Herschel St.
Jacksonville, FL 32204
(904) 387-6114

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
2.0	PROJECT DESCRIPTION.....	3
2.1	Project Purpose	3
2.2	Project Responsibility	3
2.3	Project History (rev. 04/10)	4
2.4	Project Design.....	7
3.0	BEACH MAINTENANCE PLAN.....	10
3.1	Post-Construction Coastal Monitoring Program	11
3.2	Sand Conservation and Future Sand Source Development	12
3.3	Interim Repairs, Dune Maintenance, and Renourishment	14
4.0	PROJECT FUNDING & LOCAL COMMITMENT.....	15
4.1	Project Funding	15
4.2	Commitment to Beach Maintenance	15
5.0	REFERENCES.....	16

**South Amelia Island
Shore Stabilization Project
Nassau County, FL**

Beach Maintenance & Monitoring Plan

Rev. July 2010

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1.0 INTRODUCTION

This document describes the Beach Maintenance and Monitoring Plan implemented by the Nassau County, FL, South Amelia Island Shore Stabilization Municipal Services Benefit Unit (SAISS-MSBU) and the Florida Department of Environmental Protection – Division of Recreation and Parks (FL Park Service) to maintain the engineered beaches along the southern 3.8 miles of the Atlantic Ocean shoreline of Amelia Island, FL. As part of a long-term beach management plan initiated in the early 1990's, the two project sponsors have adopted a strategy of full-scale beach nourishment, structural stabilization, and subsequent maintenance to protect the upland infrastructure and environmental habitat in these areas and to maintain and enhance the recreational amenity value of their Atlantic Ocean beaches. The Plan encompasses the planning, permitting, construction, maintenance, funding, day-to-day operations, and compulsory and voluntary monitoring associated with the two engineered beach segments.

The 3.8-mile project is comprised of two engineered beach segments located along the Amelia Island shoreline in Nassau County, FL (**Figure 1**). The longer northern segment extends for 3.0 miles along the shoreline fronting developed public and private properties, including Nassau County property and Amelia Island Plantation. The segment includes approximately 5,000 ft of protective shore-parallel geotextile tubes installed -- and presently buried -- in the reconstructed dune line. The 0.8-mile southern engineered beach segment extends southward along the Atlantic Ocean shoreline from the northern boundary of Amelia Island State Park (AISP) to the southern tip of the island. The dunes along the entire project length have subsequently been further stabilized by the installation of salt-tolerant vegetation and sand fencing. Both segments are beneficially stabilized by a 275-ft detached emergent rock breakwater, located just north of the AISP northern boundary, and a 1,600-ft porous rock terminal groin located on AISP property near the southern tip of the island. The terminal groin is presently buried completely within the sandy beach. A third small rock groin structure was constructed just west of the A1A bridge to stabilize the AISP shoreline along Nassau Sound.

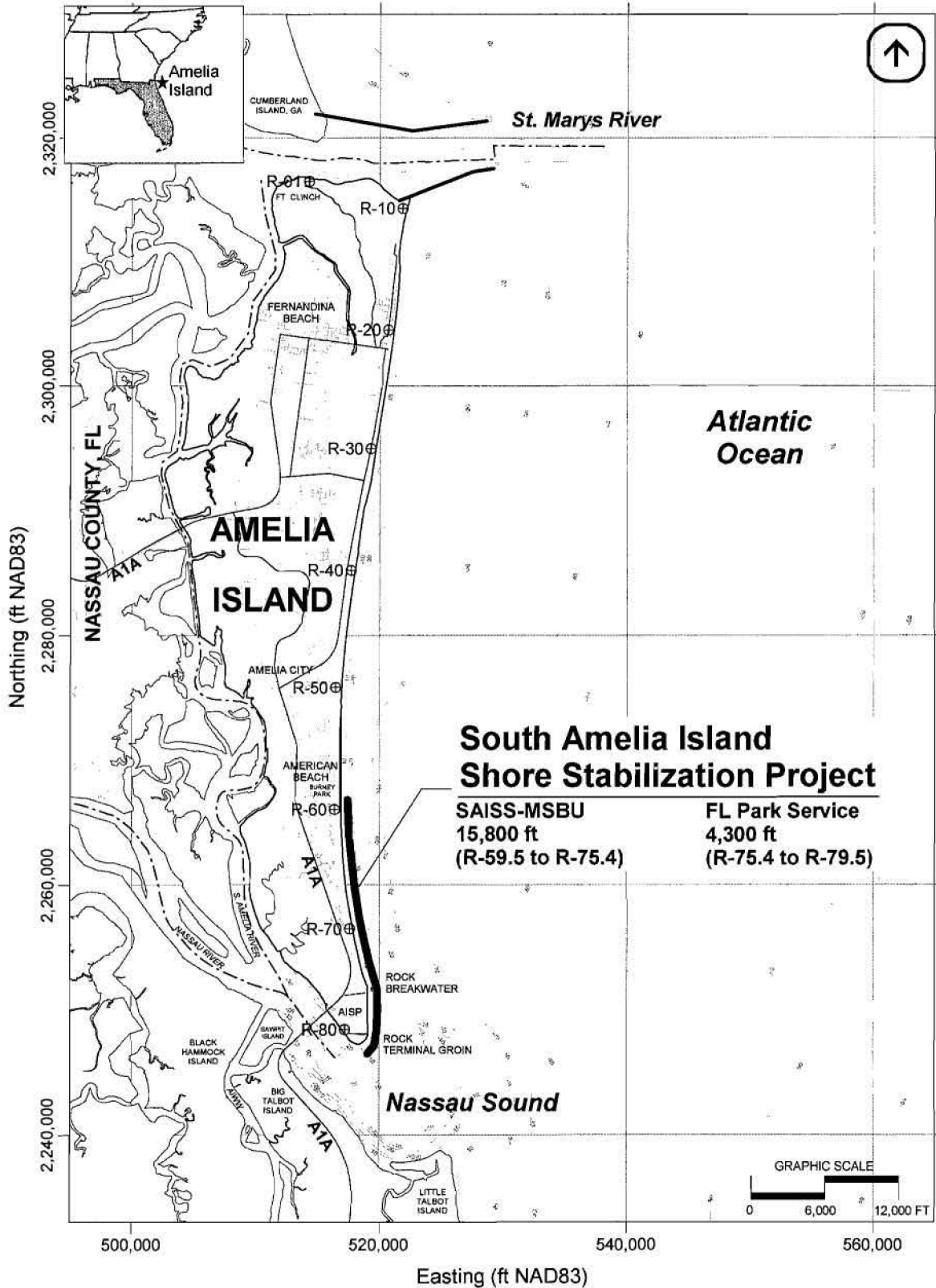


Figure 1: Location Map, South Amelia Island Shore Stabilization Project, Nassau County, FL.

2.0 PROJECT DESCRIPTION

2.1 Project Purpose

The project sponsors, the Nassau County Board of County Commissioners, through the SAISS-MSBU, and the FDEP FL Park Service, have adopted a long term beach management plan to protect upland infrastructure and environmental habitat and to maintain and enhance the recreational amenity value of their Atlantic Ocean beaches at Amelia Island, FL. To preserve the natural function and aesthetics of the project beaches to the fullest extent possible, the plan is predicated principally upon a strategy of large-scale beach nourishment, with moderate structural stabilization at the project terminus, and subsequent maintenance. Prior to beach restoration within the project limits, severe erosion of the shoreline in the late 1980's and early 1990's threatened numerous buildings and infrastructure in the developed upland area with erosion and flooding and destroyed acres of substantial dunes within the Park property, inducing flooding and salt-water intrusion into the lower elevation maritime forest areas of the Park. Erosion along the South Amelia Island shoreline is generally the combined result of the influence of the large unstabilized tidal inlet at Nassau Sound, which produces a progressively erosive southerly-directed increase in net sand transport from north to south along the shoreline, and the repeated impacts of nor'easters (OAI, 1993, 2000).

2.2 Project Responsibility

As described above, the project is comprised of two engineered beach segments¹. The Florida Park Service manages Amelia Island State Park and has responsibility for the protection and maintenance of the Park's Nassau Sound and Atlantic Ocean shorelines. North of the AISP, the Nassau County Board of County Commissioners formulated a Municipal Services Benefit Unit, the South Amelia Island Shore Stabilization MSBU (SAISS-MSBU²), to fund and manage the restoration and maintenance of the 3.0-mile northern engineered beach segment. The County delegates the management of the SAISS-MSBU to an appointed board, the South Amelia Island Shore Stabilization Association (SAISSA), to administer the maintenance and monitoring of that project segment. The County is responsible for all actions of the SAISS-MSBU (e.g. all contracts are executed by the Nassau County, FL, BOCC).

¹ The segments have historically been constructed and managed as a joint project (single contract) to achieve significant cost savings to both entities.

² The SAISS-MSBU was established by the Nassau County Board of County Commissioners through County Ordinance #93-14.

2.3 Project History (rev. 07/10)

Table 1 lists the shore protection efforts that have occurred along the southern half of Amelia Island since the 1960's (OAI, 2008). Since 1984, over 7.6 Mcy of sand have been placed as beach fill or dune enhancement along the Atlantic Ocean shoreline on the south end of the island between R-48 and R-79. As of July 2010, the engineered beach history of the South Amelia Island Shore Stabilization Project can be summarized with four major milestones:

- **Initial beach restoration - 1994**
 - 1994-2002: area-wide monitoring, dune maintenance, planning for renourishment
- **1st beach renourishment - 2002**
 - 2002-present: area-wide monitoring, dune maintenance, planning for renourishment
- **Structural stabilization of the southern terminus of the project - 2004**
- **2nd renourishment - 2011-2012**
 - Presently in design and permitting phase

Major restoration of the project shoreline began in 1994 with the initial construction of the engineered beaches along the 3.0-mile SAISS-MSBU shorefront (from FDEP R-monuments R-60, roughly 1,000 ft south of Burney Park, southward and tapering to R-78 on the AISP property). The project was prompted by severe erosion along the shoreline in the 1980's and early 1990's, punctuated by the impacts of severe nor'easters in 1992. The initial restoration project consisted of the placement of over 2.6 million cubic yards of beach fill sand excavated from a borrow site located immediately offshore of the southern end of the fill, along the extreme northern margin of the Nassau Sound ebb shoal. Dune features along the project length were reconstructed and subsequently enhanced with salt-tolerant vegetation and sand fencing. T. L. James Dredging Company, of Kenner, LA, constructed the engineered beach project. Olsen Associates, Inc., was the Engineer of Record. Following construction of the engineered beach fill, four 'temporary' geotextile groins were placed in the southern end of the fill to slow the sand loss rate from the fill project (these four tubes were removed in 2002).

The SAISS-MSBU project was renourished in 2002. At that time, the FL Park Service joined the project as a co-sponsor, and the beach fill was extended southward to R-79 (nearly to the southern tip of the island as it existed at that time). The project was also extended northward to north of R-60 along the Amelia Island Plantation shoreline. Approximately 2.0 Mcy of sand were placed along the entire project length in the 2002 project, utilizing sand excavated from a borrow site developed along the northeast edge of the Nassau Sound ebb shoal. Weeks Marine, Inc., of Covington, LA, was the dredge contractor selected to construct the project. Olsen Associates, Inc., was the Engineer of Record. Construction of the beach fill cost \$7,550,000.00.

Table 1: Historical shoreline protection efforts, South Amelia Island, 1964-2010

DATE	ACTION
1964	In response to erosion damage suffered during Hurricane Dora in 1964, emergency Federal funds were appropriated for the construction of granite stone revetments along approximately 1.1 miles of American Beach (north of project area). This revetment is currently buried by both beach fill and natural dunes.
1970's	Amelia Island Plantation (AIP) conducted beach scraping along its shoreline. The effort consisted of seasonal scraping of sand from the intertidal beach zone and subsequent placement at the dune toe.
1980	Permitted beach scraping of approximately 32,000 cy of material was conducted between monuments R-64 and R-68. The project was undertaken by the AIP and constructed in a manner consistent with previous scraping efforts.
1984	<p>Between January and March, AIP placed approximately 76,000 cy of material via truck haul from the Atlantic Intracoastal Waterway (AIWW) dredge spoil disposal site within the Amelia Island State Recreation Area (AISRA) located at the southern end of Amelia Island. The material was placed as dune enhancement along 7,200 feet of AIP shoreline.</p> <p>As an emergency response to the Thanksgiving Day Storm of 1984, an additional 5,500 cy of sand were trucked in from the aforementioned spoil pile and placed at various locations where breaching of the AIP dune system was considered to be imminent.</p>
1987	As part of a larger island-wide 1.42 mcy beach fill project, 515,000 cy of material were placed by the USACE along a 1.3-mile reach of shoreline between R-48 and R-55 (north of project area). The material was obtained from new-work dredging of the St. Mary's Entrance required to provide navigational access for the U.S. Navy's Trident-class submarines. The disposal project was undertaken as a result of a 1986 Memorandum of Understanding (MOU) between the U.S. Navy and the State of Florida.
1987	USACE placed 2.13 mcy of material in a nearshore disposal site located between R-33 and R-55. The material placed at this site was obtained from the aforementioned new work dredging of the St. Mary's Entrance. The material was placed seaward of the -18 ft (MLW) contour, and primarily in deeper water (-20 to -35 ft, MLW).
1988	Under the conditions of the 1986 State/Navy MOU, USACE reportedly placed 750,000 cy of material along approximately 1 mile of shoreline between R-55 and R-60. The material was originally placed in the USACE nearshore disposal site by hopper dredge and later moved onshore by means of a cutterhead dredge. The volume actually placed on the beach is a matter of dispute. The dredging contractor was paid for the placement of 1.083 mcy of fill, intended to extend over the 12,000-ft reach of shoreline between R-54 and R-65. Actual placement of material occurred along approximately 5,000 ft of shoreline between R-55 and R-60. This resulted in an approximate 60% shortfall in project length relative to the original design. Anecdotal visual inspection indicated that much of the material was fine sands and clay, which in all probability resulted from over-dredging of the specified nearshore rehandling site.
1989	AIP placed about 50,000 cy of beach fill material along its shoreline. The material was trucked in from an AIWW dredge spoil disposal site located west of the Amelia River.
1991	AIP placed approximately 12,000 cy of beach fill, from an upland source, along its shoreline as a part of a continuing dune protection effort.
1992	Severe nor'easters cause flooding and dune erosion along entire project length. In response, SAISSA installs ~10,000 ft of shore-parallel sand filled geotextile tubes at the foot of the eroded dune features (50% of which remains buried in the engineered dune as of April 2010). A protective steel sheetpile wall was installed in front of the Windsong condo.

(continued on next page)

Table 1 (continued): Historical shoreline protection efforts, South Amelia Island, 1964-2002

DATE	ACTION
1993	USACE beach fill along South American Beach~300,000 cy extending south to about R-62.
1994	SAISS-MSBU funded the design and construction of a comprehensive beach restoration project along the southernmost 17,000 feet of Amelia Island's shoreline. The project placed approximately 2.6 mcy of fill between monuments R-62 and R-78. The borrow area for the site was 800-ft wide by 7,500-ft long and located between 3,000 and 3,900 feet offshore of the southern end of the island on the margins of the Nassau Sound ebb shoal platform.
1995	A temporary terminal groin field was constructed between August and November consisting of four groins placed perpendicular to the shoreline, spaced about 500 ft apart in a tapered configuration. The groins were constructed of 70-inch diameter, sand-filled geotextile tubes (LONGARD™) and numerous smaller support tubes. The landward terminus of each groin was installed below grade within the 1994 beach fill.
1996	The southernmost groin, G-4, was first vandalized in October, resulting in deflation of a 50-ft section of the geotextile groin. The gap was closed through the placement of several small tube sections.
1997	Between May and September, USACE placed about 300,000 cy of sand along 4,500 ft of shoreline between monuments R-77.5 and R-73.5. The sand was obtained from maintenance dredging of the AIWW through Nassau Sound. Fill was placed within the groin field as well as along the beach 1,000 ft to the north and 2,000 ft to the south of the structures.
2000	All four of the geotextile groins were routinely vandalized, resulting in substantial structural damage and sand loss. The seaward terminus of each groin required major reconstruction during which the decision was made by SAISS-MSBU to truncate each structure. Additional stabilizing bags were also added to groin G-4 at that time. In October, groin G-3 essentially was rendered ineffective.
2000	In November/December, approximately 2,000 ft of shore-parallel sand-filled geotextile tubes were placed along segments of the AISRA to reduce flooding of the maritime forest in areas where the dune had been lost to chronic erosion.
2001	Between May and September, USACE placed about 300,000 cy of sand along 4,500 ft of shoreline between monuments R-77.5 and R-73.5. The sand was obtained from maintenance dredging of the AIWW through Nassau Sound. Fill was placed within the groin field as well as along the beach 1,000 ft to the north and 2,000 ft to the south of the structures.
2002	Phase I of the South Amelia Island Shore Stabilization Project was constructed between monuments R-79 and R-60 along Amelia Island State Park and northward thereof; approximately 1.8 Mcy of sand were placed. Prior to construction, all shore-parallel and shore-perpendicular geotextile structures were removed.
2004/05	Phase II of the South Amelia Island Shore Stabilization Project was constructed consisting of The project consisted of three engineered rubble mound erosion control structures, a detached breakwater and two groins, including a "leaky" terminal groin at the south end of the island in an east-west orientation
2006	Approximately 400,000 cy of material from the AIWW was hydraulically placed by U.S. Army Corps of Engineers onto the south Amelia Island beaches between the detached breakwater and the terminal groin, or between monuments R-76 to R-79

In 2004 the southern terminus of the engineered beach restoration project was partially stabilized via the construction of a 275-ft long detached emergent rock breakwater, constructed just offshore of the north end of Amelia Island State Park. Also constructed was a 1,600-ft long low and porous rock terminal groin, constructed south of R-79 at what was at the time the southern tip of Amelia Island. The terminal groin was designed to be a 'leaky' structure to allow some fraction of the southerly-directed sand transport to pass over, around, and through the structure. As of April 2010, the entire length of the structure is buried in the beach at AISP. A third small rock groin was constructed just west of the A1A bridge to stabilize the beach in the vicinity of the north bridge abutment. Construction of the three rock structures totaled approximately \$4,100,000.00. The Industrial Company (T.I.C.) of Savannah, GA, constructed the project. Olsen Associates, Inc., was the Engineer of Record.

The AISP shoreline has been nourished with additional sand placement on three occasions since 1994. In 1997, 2001, and 2006, sand dredged by the U.S. Army Corps of Engineers³ from the Atlantic Intracoastal Waterway has been placed along the Atlantic Ocean shoreline near the north boundary of AISP. Each event resulted in the placement of approximately 300,000 to 400,000 cy of sand.

2.4 Project Design

Figure 2 depicts the typical design construction template for the renourishment of the project. As shown, the template includes an upper flat beach berm, constructed at an elevation of +10 ft NAVD88, that ties into the existing beach berm -- a portion of the original 1994 construction. Seaward thereof, the beach dips slightly seaward at a slope of 1:66 to an elevation of +8.5 ft NAVD88 at the seaward edge of the berm. The construction template then slopes seaward at a steeper 1:15 slope to the template intersection with the seabed, typically in water depths of ten (10) feet or shallower. The 1:15 slope is intended to generally match the placed angle of repose of the unconstrained sand/water slurry pumped during construction. The overall seaward-sloping design of the beach fill construction template is intended to reduce post-construction scarping of the beach fill, reduce ponding of water on the new beach berm, and assist in the crawl direction of sea turtle hatchlings following emergence from nests. The increased elevation of the back berm was designed to enhance the storm protection function and longevity of the beach fill.

The renourishment template is positioned above and seaward of the initial engineered beach fill berm, originally constructed in 1994. The intent of renourishment projects is to protect that fill berm, which in turn provides a baseline level of storm protection to the upland infrastructure and habitat.

³ The USACE is not required to place sand from AIWW along the AISP beaches, the disposal of the dredged sand is a mutual "convenience" that aids the AISP shoreline and reduces the burden on the USACE's upland disposal sites. Likewise the USACE is not responsible for the maintenance of this portion of the beach.

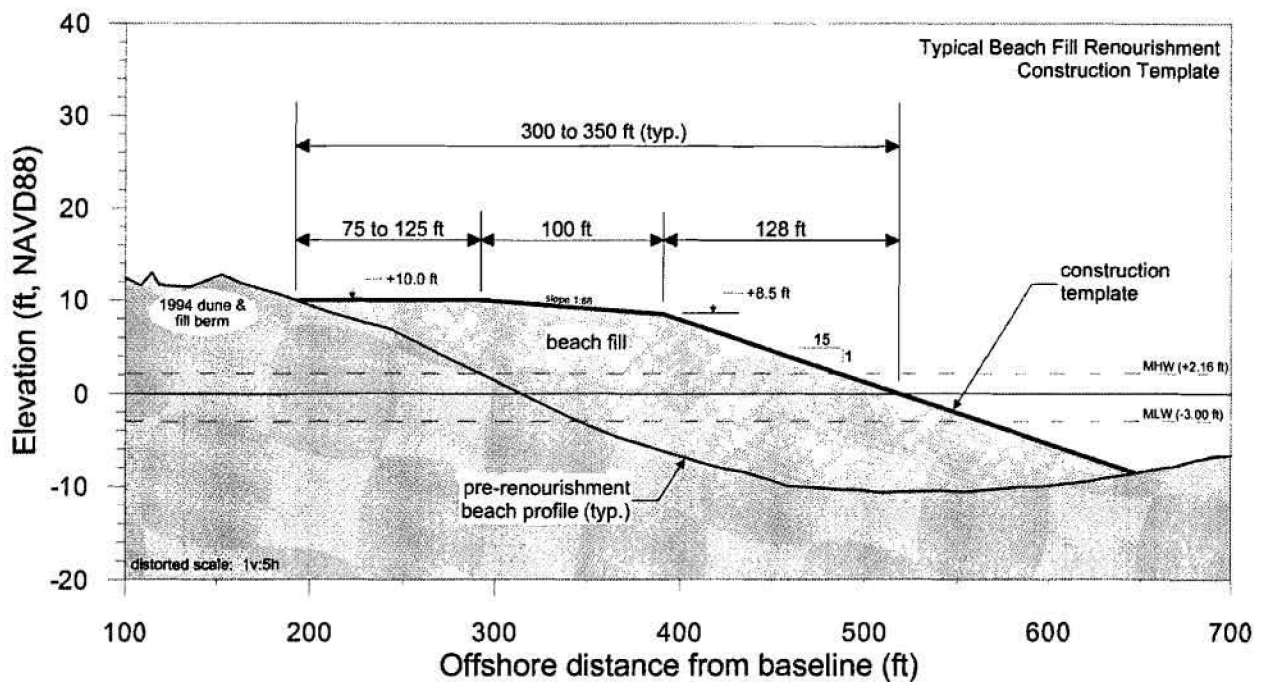


Figure 2: Typical beach fill construction template for renourishment of the South Amelia Island Shore Stabilization Project. As noted, the renourishment fill protects the initial engineered beach fill berm, constructed in 1994.

Post-construction equilibration: As indicated in Figure 2, the construction template for the engineered beaches extends seaward at a 1:15 slope to its intersection with the pre-project seabed. That intersection typically fell in water depths of -5 ft to -10 NAVD88, along the nearshore terrace within 100 to 200 ft of the pre-project MHW (OAI, 2004). The construction template, however, is not the design target of the engineered beach fill project. As with all beach nourishment projects, the constructed fill berm is expected to undergo equilibration over the first 12 to 18 months of the renourishment project life. Equilibration entails the natural seaward transport of fill sand by waves & tides from the designed construction template into the nearshore area, thereby transforming the post-construction beach profile template into a more natural shape. This process results in the initial narrowing of the beach, by design, from the post-construction condition to a narrower, but more natural condition. In the present case, the equilibration process generally results in a reduction of 30 to 50% from the beach fill template width over a period of 12 to 18 months following construction. The equilibration process does not result in the loss of sand from the project as a whole, rather, by design the sand is transported offshore a short distance to the equilibrated toe of fill of the beach project (USACE 2006, Part V-4). Inspection of historical beach profiles suggests that the equilibrated toe of fill of the project may fall somewhere in the range of -13 ft to -17 ft NAVD88.

Renourishment Interval: For the design and permitting of the initial engineered beach restoration project, an inlet management study of Nassau Sound was conducted (OAI, 1993). That study recommended for the construction of the engineered beach restoration project along the SAISS-MSBU properties, with subsequent renourishment. OAI (1993) studied historical shoreline change rates and littoral processes at the site and identified an initial renourishment interval of eight to ten years. The 1993 study found average rates of shoreline recession of approximately -3 ft/year along the northern end of the project. Conversely, at the extreme southern end of the project, within the State Park near Nassau Sound, long-term erosion rates had averaged almost -15 ft/year.

A formal physical monitoring plan was instituted before the initial 1994 beach fill to document the performance of the placed sand and provide guidance for future renourishment. Field observation and the physical monitoring of the 1994 project revealed that the renourishment interval of eight years was appropriate for the majority of the northern portion of the project. However, during the 1994-2002 interval, the shoreline along the Amelia Island State Park property suffered severe erosion and the loss of tens of acres of subaerial beach property just seaward of the wooded maritime forest in the park. In particular, severe nor'easter activity in late 1997 resulted in significant erosion of the sand spit at the southern tip of the island (OAI, 2000).

With the renourishment project in 2002 and the associated construction of the terminal shore-stabilizing rock structures in 2004, the project within the State Park limits has reclaimed a significant fraction of the lost beach acreage, and **the renourishment interval of approximately eight to ten years** has been observed to now apply to the project as a whole, not simply the northern portion. Project monitoring from 2002 to 2009 reveals the significant deposition of sand immediately north of the rock terminal groin, and the stabilization of the shoreline near the north park boundary in the lee of the rock breakwater. Along the SAISS-MSBU properties (R-60 to R-75), shoreline erosion has *averaged* roughly -200,000 to -240,000 cy/yr between 2002 and 2009. From R-75 to R-78, shoreline erosion during that time has averaged -100,000 cy/yr, inclusive of the sand placement by the USACE from the AIWW⁴. Similarly, eight to ten years after the upcoming renourishment it is expected that the renourishment volume will have eroded completely and the shoreline will have retreated once again to the residual limits 1994 engineered fill berm (such is nearly the case at present, approx.).

Ultimately, storm impacts and other variables may affect the specific timing of renourishment. **Hence the focal point for determining the timing for renourishment shall be the results of the comprehensive physical monitoring (Section 3.1).**

⁴ In 2006, the USACE placed approximately 400,000 cy of very fine sand excavated from the Intracoastal Waterway along the South Amelia Island shoreline in the vicinity of R-75 to R-78. The material was expected to erode at a fairly rapid rate, but did provide an enhanced level of storm protection and recreational space during its placement life. It is anticipated that a similar disposal operation may occur in the next two years (approx.).

3.0 BEACH MAINTENANCE PLAN

Intent The beach maintenance plan is intended to provide a framework from which the physical evolution of the beach restoration project can be monitored and evaluated for future activities, such as repairs, regularly scheduled renourishment, dune maintenance, etc. Ultimately the beach maintenance plan will culminate in the renourishment of the engineered beach fill project, after which the maintenance would “reset” and begin to follow the renourishment project and serve the same, recurring purpose. After each renourishment interval, the goals and components of the maintenance plan would be revised, based upon the performance of the project and the completion of any associated goals from the prior plan. The plan is likewise provided in keeping with CFR 206.226(j) to demonstrate the continuing eligibility of the engineered beaches for post-disaster public assistance in the event of a declared disaster (i.e. hurricane).

Beach Maintenance Plan Elements The maintenance plan consists of four principal elements:

- **Project-wide Coastal Monitoring Program** – The engineered beach segments and rock stabilizing structures shall be monitored on an annual basis to track the physical performance of the beach fill. Post-storm surveys shall be conducted after significant storm events to document damages, track the fate of lost sand or rock (if possible), and provide design guidance for post-storm repair efforts.
- **Sand Conservation and Future Sand Source Development** – Beach-compatible sand resources in the Atlantic Ocean off Nassau County, FL, are a finite and extremely valuable resource. As such, every effort shall be made to conserve sand on the beaches. Likewise, as funding allows, potential borrow sources of beach-compatible sand for future project renourishment actions should be strategically developed in advance of need.
- **Interim Repairs and Dune Maintenance** – The project sponsors shall make efforts to maintain the beach and dune system during the renourishment interval. The engineered beaches are dynamic systems subject to fluctuations in shoreline position and condition. It is the objective of the maintenance plan to maintain the upper beach and dune system in as intact a condition as possible, within available funding limits, in order to prevent or limit wave overtopping and storm damage during the small- to intermediate- storms, and to limit the extent of storm damage during more severe storms.
- **Periodic Beach Renourishment** – The project sponsors shall regularly evaluate shoreline conditions and the results of the ongoing physical monitoring program to prepare for and execute the periodic renourishment of the engineered beaches. Typical erosion rates from prior projects suggest that the project renourishment interval is approximately eight to ten years. This timing will be routinely evaluated by the Engineer, in coordination with the project sponsors, to determine if the project is no longer meeting its intended storm protection function over an unacceptable percentage of the length of the project.

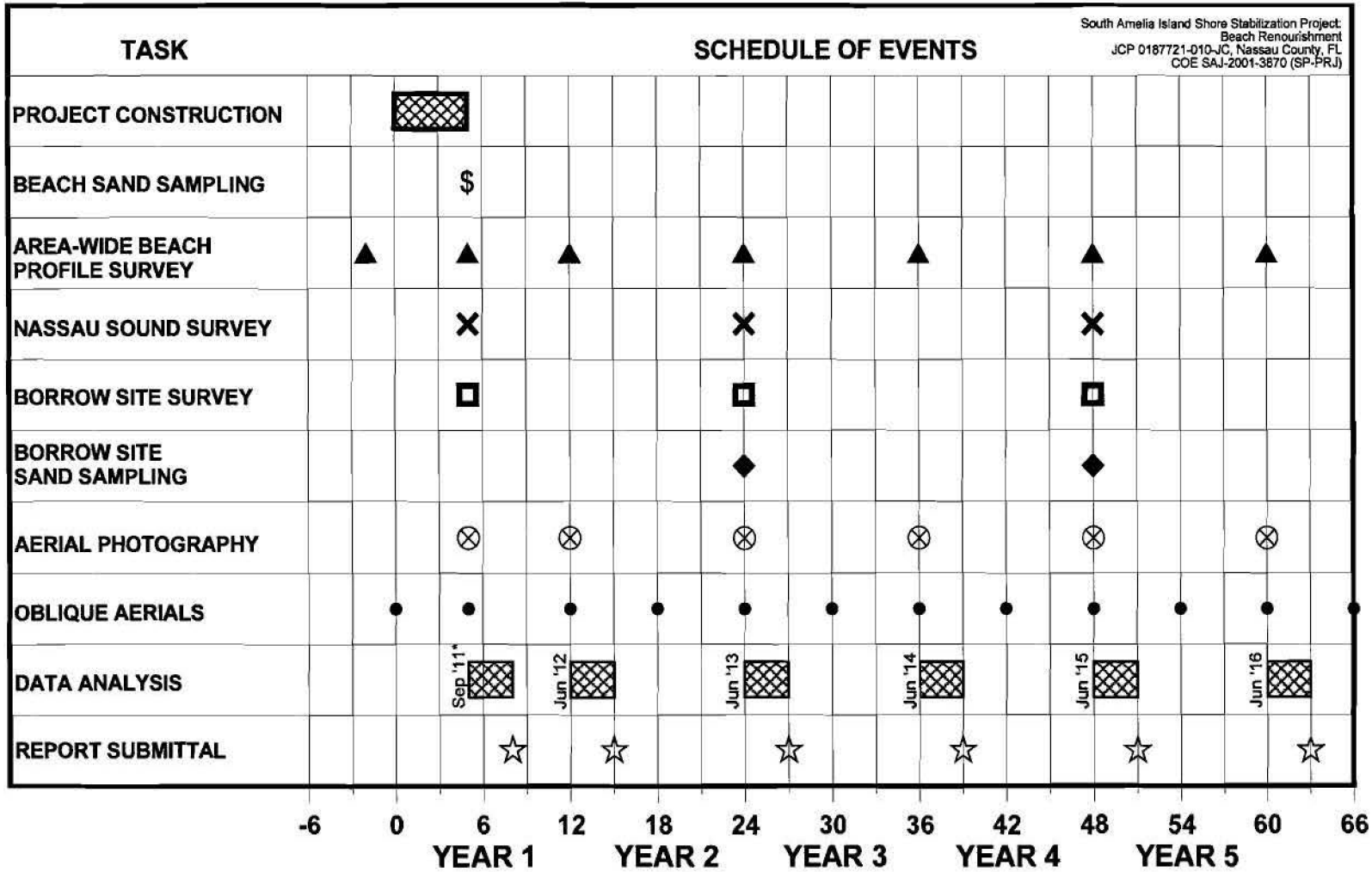
3.1 Post-Construction Coastal Monitoring Program

The existing physical monitoring plan is implemented by the FL Park Service and the South Amelia Island Shore Stabilization Association (SAISSA) as part of the well-established ongoing Long Range Beach Management Plan for South Amelia Island. The project shoreline has been formally monitored since the early 1990's, prior to the initial beach restoration along the SAISSA properties north of Amelia Island State Park. This plan will be a component of the project permits: FDEP Joint Coastal Permit 00187721-010-JC and U.S. Army Corps of Engineers permit SAJ-2001-3870 (SP-PRJ). The physical monitoring plan will provide spatially continuous survey coverage for 28,400 ft along the Nassau County Atlantic Ocean and Nassau Sound shoreline from the northern limit of survey at R-55 southward and westward to R-82 at the A1A bridge over the Sound. The physical monitoring plan consists of numerous elements that will seek to describe the performance of the proposed 2011 beach renourishment project and the existing rock stabilization structures. The purpose of the monitoring plan is to:

- meet the regulatory requirements of the permits issued for the proposed beach restoration projects (permit numbers noted above),
- evaluate the post-construction performance of the proposed beach fill project and borrow site, including the continuing performance of the rock breakwater constructed in 2004 near monument R-75, the rock terminal groin constructed at R-79, and the small rock groin built just west of the A1A bridge.
- assess any potential large-scale impacts associated with the project on abutting Nassau Sound and its surrounding environs. This includes, but is not limited to, the Bird Island shoal formations and the northern limits of the Talbot Island complex,
- function as an important database for purposes of future beachfront development, planning or management activities,
- fulfill the requirements of FEMA with respect to disaster relief eligibility by documenting beach conditions via pre-storm surveys at the beginning of each tropical storm season, and
- provide design guidance for future engineered beach maintenance activities along the South Amelia Island shoreline.

The Monitoring Plan includes four basic elements:

- Comprehensive surveys of the beaches and borrow site by a qualified hydrographic surveyor,
- Vertical digital orthophotography and oblique photography,
- Analysis of annual beach changes and development of a cumulative comparative database,
- Formulation of a detailed *Annual Report of Findings* for consideration by the FL Park Service, SAISSA, FDEP BBCS, other State and Federal agencies, and the general public.



South Amelia Island Shore Stabilization Project:
Beach Renourishment
JCP 0187721-010-JC, Nassau County, FL
COE SAJ-2001-3870 (SP-PRJ)

Figure 3: Schedule of monitoring events for the first five years following renourishment of the South Amelia Island Shore Stabilization Project. Monitoring elements beyond the 5-yr mark follow the same annual/biennial pattern. Monitoring limits extend from R-55 north of Lewis Street in American Beach southward and westward to R-82 at the A1A bridge. Aerial photography will extend southward across Nassau Sound to Little Talbot Island.

*Schedule assumes construction in the Summer 2011 timeframe, such that the post-construction survey can be conducted in September/October 2011. Subsequent monitoring surveys will be held in the June pre-tropical storm season time frame.

3.2 Sand Conservation and Future Sand Source Development

Sand source investigations for the engineered beach nourishment projects addressed herein were conducted in 1992, 2001, and 2007. These efforts, especially the 2001 and 2007 field investigations, were specifically focused upon developing a sand borrow site for that particular upcoming project. Construction of the 1994 and 2002 projects depleted those two sites, and the upcoming renourishment will functionally deplete the presently designed site. Hence, additional investigation is required to identify beach-compatible sand volumes for future renourishment needs.

Sand Conservation – Since the supply of readily-available high quality beach-compatible sand is limited, every effort should be made to conserve sand along the beaches within the project limits. In the event of a major overtopping storm event that produces sand overwash from the beach, every effort will be made to recover that sand and return it, after screening if necessary) to the beach-dune system -- as opposed to sand being taken off the island as post-storm debris.

Another area where sand conservation can be improved lies at the large maintained tidal inlet at the entrance to the St. Marys River. That Federal navigation project periodically dredges sand from the river entrance and disposes of it in various locations, including along the Atlantic Ocean shoreline in Fernandina Beach. The project sponsors should continue to encourage the proper sand management of dredged material from the St. Marys Entrance to assure that all future sand disposal is directed toward the littoral system of Amelia Island.

Sand Source Development – Sand sources for future nourishment should be sought and developed in advance of future renourishment projects. To the extent possible, long-term reserves of beach-compatible sand sources should be identified and protected from contamination or loss of the resources due to artificial reef placement programs and/or future oil and gas infrastructure development.

3.3 Interim Repairs, Dune Maintenance, and Renourishment

To the extent practicable, the project sponsors shall endeavor to maintain the form and integrity of the engineered beach and dune system during the renourishment interval. In doing so, one objective is to protect the upper beach, especially the original 1994 fill berm (**Figure 2**), along the project length and limit or prevent wave overtopping and storm damage during the small- to intermediate-level storms. Doing so will also limit the extent of storm damage during more severe storms when the dune system is severely impacted. Such protection would entail the replacement of beach-compatible sand in any breach areas, and promoting the use of dune walkovers where possible. Other items associated with beach and dune maintenance include the frequent removal of debris from the beach and the promotion of dune growth and stabilization via the installation of sand fencing and salt-tolerant vegetation; the sand fencing and vegetation likewise require some level of ongoing maintenance. **Table 2** summarizes the general schedule for the maintenance of the engineered beaches.

Table 2: Beach Maintenance Schedule
South Amelia Island Shore Stabilization Project

Frequency	Action / Deliverable
Weekly	Trash/debris removal
Monthly	Beach inspection by FL Park Service/SAISSA personnel;
Seasonally (as needed)	Dune enhancement/maintenance (vegetation/sand fencing)
Annually (June/July)	Physical Monitoring Annual Report
Post-Storm	Beach inspection, beach profile survey and report (if warranted),
Renourishment Interval* (8-10 years: projected)	Planning & Implementation of project renourishment

*The renourishment interval is sensitive to the level of storm surge and storm wave energy experienced over the life-cycle of the nourishment project. The precise renourishment schedule will be established from the project physical monitoring program results.

4.0 PROJECT FUNDING & LOCAL COMMITMENT

4.1 Project Funding

The engineered beach segments along the South Amelia Island Shore Stabilization Project are both local and State (i.e. non-Federal) constructed beach nourishment projects that potentially qualify for disaster assistance in the event they are damaged during a declared disaster (i.e. tropical storm or hurricane). In accordance with the Stafford Act, the Florida Park Service and Nassau County -- through the SAISS-MSBU -- have committed to the maintenance of the engineered beaches. This commitment is demonstrated through the permits obtained for the project and the annual commitment of each party to the State of Florida FDEP Beaches and Coastal Systems Resolution to support and maintain the project. Nassau County, FL, commits to and pays for its portion of the construction and maintenance costs through a taxing assessment administered to the SAISS-MSBU. The FL Park Service likewise has committed to funding its beach restoration obligations through its general revenue stream or the State Beach Management Program. These funding sources are subject to annual approval by the Florida Legislature.

4.2 Commitment to Beach Maintenance

The AISP property is owned by the State of Florida, and through the Board of Trustees of the Internal Improvement Trust Fund of Florida, the FL Park Service is given the authority and legal responsibility to protect and maintain the shoreline in the Park. The Unit Management Plan for AISP includes the following language regarding the protection of the shoreline in the Park: *"Continue to monitor coastal sediment transport processes and coordinate with other agencies in developing and implementing erosion control projects and sediment management plans"* Nassau County, through the SAISS-MSBU, maintains the shoreline along the SAISSA portion of the project and has the necessary easements, consents, and/or permissions from property owners (public and private) for the purposes of renourishing and maintaining the engineered beach project.

5.0 REFERENCES

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