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March 28, 1996

Mr. Mark Hilton, Staff Scientist  
Sarasota Bay National Estuary Program  
5333 Tamiami Trail  
Sarasota FL 34234

Re: Purchase Order 000603136: Sarasota Bay Spoil Area --Final Report  
Mote Marine Laboratory Technical Report No. 464

Dear Mr. Hilton:

A report on 26 Corps of Engineer spoil sites is enclosed, along with such remarks as can be made regarding the condition or restoration potential of the major sites. The list is arranged from north to south, beginning near Tampa Bay and ending near Venice. Within the NEP study area there are 14 sites in Manatee County and 12 sites in Sarasota County.

Elements of the report remain open because existing, published information (list attached) is incomplete in several respects. Some data gaps could be filled by field measurements but such effort was beyond the scope of the present purchase order.

Records at the West Coast Inland Navigation District are numerous and potentially informative, but the records are disorganized from years of inattention. Mr. Lostowski has made it a priority since his recent arrival to systematize the records and his cooperation during this ongoing effort is appreciated.

Sarasota Bay does not present numerous spoil island restoration opportunities compared to other coastlines of Florida. Reasons include the natural deep water area in Sarasota Bay, and the availability of mainland or barrier island spoil sites where Little Sarasota and Blackburn bays are so narrow. Although ownership records are very spotty, most of the upland disposal sites seem to be privately owned, now. WCIND is undertaking a review of ownership patterns.

I suggest that SBNEP and WCIND consider requesting a Corps feasibility study for Meade Point Island and North Sister Key Addition (Manatee County), and also Big and Little Edwards Islands, Skiers' Island, Bird Key North and Bird Key South, and South Casey Key Bayside (Sarasota County). These 8 sites represent a potential area of approximately 94 acres for habitat restoration and creation, deserving of additional study and ranking in a Corps feasibility study. Following Hilton (1996), objectives for the conceptual restoration for each of these sites include:

- o Removal of non-native plant species;
- o Excavation of dredge spoil including stockpiling or removing fill to reduce elevations...to approximate heights of +2 to -3 feet mtl;

- o Construction of intertidal pools throughout each site to maximize finfish, shellfish, and wading bird habitats;
- o Planting of marsh grasses and other native plants around the tidal pools;
- o Creation of small inlets, where appropriate, to circulate water into the pools; and
- o Design and installation of interpretive educational signage.

The costs of island restoration cannot be determined in the absence of additional information on the condition of each site, defined restoration objectives, or logistical considerations. However, we have compiled information on recent island restoration projects (list attached) and suggest that a per-acre cost-range of \$50,000 to \$150,000 is not atypical. The 8 recommended sites have a preliminary cost range of \$4.7 million to \$14.1 million based on existing knowledge.

It is worth noting that Section 1135 construction projects are contracted by the Corps of Engineers, and that certain bonding, insurance, safety, monitoring, and other Corps requirements will add to direct costs of planning, design, and construction.

Several recommendations emerged from this project that may improve subsequent restoration project within the SBNEP and adjoining inshore waters, or SBNEP-WCIND coordination of regional dredge spoil management. First, a GIS inventory of channels, publicly owned lands, spoil areas, and related features is urgently needed. Care should be taken to distinguish areas proposed for spoil disposal from areas that have actually received spoil. Estimates of total and impacted area within the Bird Keys, for example, are imprecise because existing information is outdated and contradictory. Second, a separate coverage is recommended for ownership of submerged lands, islands, and shorelines. We are presently unable to state the number of recommended sites that are in public ownership. Third, field surveys of spoil sites should be undertaken to describe dominant environmental features and management issues. A few of the listed sites have changed considerably since they last were studied.

I encourage SBNEP to consult with WCIND for the purpose of crafting a letter of request to the Corps which accommodates both agencies' missions to the fullest extent possible.

Sincerely,

Ernest D. Estevez, Ph.D.  
Senior Scientist  
Attachments

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--Interviews--

Bishop, J. Palm Beach County.

- Munion Island was a natural 10 acre island expanded to 45 acres with spoil.
- Project entailed clearing pines, lowering elevations, creating a wetland shelf and planting with spartina and mangroves, plus 5-7 acres of hammock.
- The next 10 acres will cost \$1.7 million.

Fausek, S., St. Lucie County

- Coon Island was made into wetlands, 4 acres were cleared and replanted with trees and shrubs. He did upland sites for \$2.7K per acre including picnic tables and 1,000 plants.
- Contact Maurice Adjur at local port and airport authority 4074621732 for wetland information.

Lewis, R.R. III, Lewis Environmental Services, Inc.

- Samson's Island near Titusville had elevations reduced and spartina/mangroves planted.
- 10-15 acres cost \$25-50K per acre.
- Access was more expensive than the habitat project.

Montgomery, R. Environmental Quality Laboratory

- Spoil/mangrove island inside Stump Pass was scraped down and planted with mangroves as mitigation for El Jobean highway improvements.
- GDC and EQL did all of the work, no costs were tracked.
- The interior of island was "pushed down" into surrounding shoreline areas and interior was planted with mangroves.

Mosura-Bliss, E.L., Water and Air Research.

- Most projects are mainland, not islands; FIND moving toward upland disposal and reuse of spoils.

Roach, D. Florida Inland Navigation District.

- FIND has been involved with 9 Dade County spoil island improvements, most recent \$85K, \$194K and \$216K projects to enhance recreational use, stabilize shorelines, and remove exotic species. Mangrove planters were used above mhhw.
- They chip pines onsite and use as mulch for 3 gallon plantings.
- People need boating destinations.
- Peanut Island in Palm Beach County, 80 acres total, 30-40 acre restoration costing \$5 million, FIND with multiple matching partners, Corps to take 3 years phase 1 beginning June, plantings spread over 5 year period...mangrove enhancement.
- Corps contracts out all work.
- Munion Island in Palm Beach County is a \$1135 project, a natural island expanded by dredge spoil being restored to mangrove and spartina.
- 5.5 acres done, 8 acres to go, FIND and county are local match sponsors.

--Notes--

1. Spoil area nomenclature follows Corps of Engineers system where known.
2. All areal data are measurements made using various sources and methods, and are to be used only as preliminary estimates.
3. Design area was calculated from dimensions provided in Corps documents, where known.
4. Built area refers to definable areas of submergent or emergent spoil as discerned on the most recent aerial photography or map presently available.
5. Area of direct impact is defined as the area of submergent or emergent spoil that has not reverted to pre-project condition, or become vegetated by native vegetation.
6. Area of indirect impact is defined as the area adjacent to direct impacts, where aerial photographs or other sources suggest sedimentation, erosion, or related edge effects. Indirect impacts to system functions were not considered.
7. Statements regarding ecological significance of direct or indirect impacts are based solely on professional judgement, including experience with wetlands of Sarasota Bay, and transfer of findings from other geographic areas. There are at present no published scientific accounts of ecosystem impacts caused by dredge spoil within the Sarasota Bay National Estuary Program study area.
8. Restorable area refers in most cases to area of direct impact. Allowances were made in some cases for areas of indirect impact.
9. In all cases, the preliminary goals for restoration of all recommended sites (Part 2) are the same and have been taken from SBNEP documents. See also the cover letter accompanying this report for preliminary project objectives.
10. Ownership of sites was not determined. Plans of West Coast Inland Navigation District for future use of sites as dredge spoil areas were not considered.
11. Conceptual project design for all sites is preliminary and includes removal of non-native plant species; excavation of dredge spoil including stockpiling or removing fill to reduce elevations...to approximate heights of +2 to -3 feet mtl; construction of intertidal pools throughout each site to maximize finfish, shellfish, and wading bird habitats; planting of marsh grasses and other native plants around the tidal pools; creation of small inlets, where appropriate, to circulate water into the pools; and (optionally) design and installation of interpretive educational signage.

12. Techniques to be used at recommended sites include but are not limited to site surveys and preparation of site plans; herbicide applications to exotic plant species; allowing some tree species to rot in place; using a mobile chipper to produce mulch from live and dead plant materials; using mulch onsite; removing unwanted spoil to the mainland; stockpiling fill in a dedicated area onsite; using mobile earth-movers to grade spoil and excavate channels and ponds; contracting for services of native plant landscapers; employing volunteer workers for plantings; and contracting for environmental monitoring services.

Part 1 - Master Site List

Manatee County

<u>Number</u>	<u>Name</u>	<u>Approx. Restorable Acreage</u>	<u>Type</u>	<u>USACOE Project</u>
1.	Bulkhead	0	submerged	M-19
2.	none	0	submerged	M-18
3.	none	0	submerged	M-17
4.	Meade Point I.	4	emergent	M-16
5.	Perico I.	6	emergent	M-15
6.	Marina	3	emergent	M-12
7.	Leffis Key	0	emergent	M-11-A
8.	none	0	submergent	M-11
9.	N. Sister	30	emergent	M-8
10.	Redfinger	4	emergent	M-7-A
11.	none	0	submergent	M-4
12.	none	0	submergent	M-3
13.	none	0	submergent	M-2
14.	none	0	submergent	M-1

Manatee County potential area: 47 acres

Sarasota County

<u>Number</u>	<u>Name</u>	<u>Approx. Restorable Acreage</u>	<u>Type</u>	<u>USACOE Project</u>
1.	Hospital Shoal	0	submergent	S-42,43
2.	Big Edwards I.	6	emergent	S-40-1
3.	Little Edwards I.	6	emergent	S-40
4.	Skiers' I.	5	emergent	S-39
5.	Phillippi Cr. I.	3	emergent	needed
6.	Phillippi Cr. Bank	12	emergent	S-37
7.	Coral Cove Shoal	0	submergent	S-34
8.	Bird Key North	12	emergent	S-30
9.	Bird Key South	20	emergent	S-30-A
10.	Palmer Pt. (N. Casey)	3	emergent	S-28
11.	S. Creek	2	emergent	S-24-2
12.	S. Casey Bayside	10	emergent	S-24-B

Sarasota County potential area: 79 acres

**Total SBNEP potential area: 126 acres**



## Part 2 - Recommended Sites

1. Meade Point Island (Manatee).....4 acres
2. North Sister Key Addition (Manatee).....30 acres
3. Big Edwards Island (Sarasota).....6 acres
4. Little Edwards Island (Sarasota).....6 acres
5. Skiers' Island (Sarasota).....6 acres
6. Bird Key North (Sarasota).....12 acres
7. Bird Key South (Sarasota).....20 acres
8. South Casey Key Bayside (Sarasota).....10 acres

**Total Restoration Area Recommended for Study...94 acres**

**Range of Costs: 4.7 million to 14.1 million dollars**

Site Name: Meade Point Island  
County: Manatee  
Corps Designation: M-16  
Other ID: none

Type: Emergent island

Township: 34S  
Range: 16E  
Section: 22

Design Area: 13 acres  
Built Area: 4 acres  
Area of Direct Impact: 5 acres  
Indirect Impact Area: 2 acres

Existing Habitats: Barren > Casuarina > Mangrove > Batis > Other

Displaced Habitats: Seagrasses, macroalgal beds, shallow waters

Other Ecosystem Effects: Sedimentation, exotic species seed source, attraction to boaters resulting in propeller damages, circulation changes.

Restoration Alternatives: No action; exotic species removal only; topographic adjustments without planting; topographic adjustments with plantings of native species; removal with offsite disposal of all spoil materials.

Recommended Action: Exotic species removal followed by topographic adjustments with plantings of native species.

Conceptual Design: See Note 11.

Restoration Techniques: See Note 12.

Restored Habitat Area: 4 acres

Expected Benefits: Increase in subtidal and intertidal habitat area; recovery of seagrasses and expansion of riparian wetlands; increased habitat for fishery species; native upland plant and animal species recovery.

Other Recommendations: Integrate with boater destination (anchorage, signage) plan

Site Name:	North Sister Key Addition
County:	Manatee
Corps Designation:	M-8
Other ID:	none
Type:	Emergent island
Township:	35S
Range:	16E
Section:	14
Design Area:	45 acres
Built Area:	34 acres
Area of Direct Impact:	32 acres
Indirect Impact Area:	none
Existing Habitats:	Casuarina > Barren + Shrub > Mangrove > Other
Displaced Habitats:	Seagrasses, macroalgal beds, shallow waters
Other Ecosystem Effects:	Sedimentation, exotic species seed source, attraction to boaters resulting in propeller damages, circulation changes.
Restoration Alternatives:	No action; exotic species removal only; topographic adjustments without planting; topographic adjustments with plantings of native species; removal with offsite disposal of all spoil materials.
Recommended Action:	Exotic species removal followed by topographic adjustments with plantings of native species.
Conceptual Design:	See Note 11.
Restoration Techniques:	See Note 12.
Restored Habitat Area:	30 acres
Expected Benefits:	Increase in subtidal and intertidal habitat area; recovery of seagrasses and expansion of riparian wetlands; increased habitat for fishery species; native upland plant and animal species recovery.
Other Recommendations:	Design to maintain or enhance gopher tortoise and other terrestrial species at risk.

Site Name: Big Edwards Island  
County: Sarasota  
Corps Designation: S-40-1  
Other ID: none

Type: Emergent island

Township: 37S  
Range: 17E  
Section: 1

Design Area: 7 acres  
Built Area: 7 acres  
Area of Direct Impact: 7 acres  
Indirect Impact Area: 2 acres

Existing Habitats: Casuarina > Other Terrestrial > Mangrove > Other

Displaced Habitats: Seagrasses, macroalgal beds, shallow waters

Other Ecosystem Effects: Sedimentation, exotic species seed source, attraction to boaters resulting in propeller damages, circulation changes.

Restoration Alternatives: No action; exotic species removal only; topographic adjustments without planting; topographic adjustments with plantings of native species; removal with offsite disposal of all spoil materials.

Recommended Action: Exotic species removal followed by topographic adjustments with plantings of native species.

Conceptual Design: See Note 11.

Restoration Techniques: See Note 12.

Restored Habitat Area: 6 acres

Expected Benefits: Increase in subtidal and intertidal habitat area; recovery of seagrasses and expansion of riparian wetlands; increased habitat for fishery species; native upland plant and animal species recovery.

Other Recommendations: Integrate with boater destination (anchorage, signage) plan. Stabilize east bank to prevent shoaling. Schedule so as to not interfere with nearby seabird rookery.

Site Name: Little Edwards Island  
County: Sarasota  
Corps Designation: S-40  
Other ID: none

Type: Emergent island

Township: 37S 37S  
Range: 17E 18E  
Section: 1 6

Design Area: 14 acres  
Built Area: 8 acres  
Area of Direct Impact: 7 acres  
Indirect Impact Area: 2 acres

Existing Habitats: Casuarina > Diked Area > Mangrove > Beach

Displaced Habitats: Mangroves, seagrasses, macroalgal beds, shallow waters

Other Ecosystem Effects: Sedimentation, exotic species seed source, attraction to boaters resulting in propeller damages, circulation changes.

Restoration Alternatives: No action; exotic species removal only; topographic adjustments without planting; topographic adjustments with plantings of native species; removal with offsite disposal of all spoil materials.

Recommended Action: Exotic species removal followed by topographic adjustments with plantings of native species.

Conceptual Design: See Note 11.

Restoration Techniques: See Note 12.

Restored Habitat Area: 6 acres

Expected Benefits: Increase in subtidal and intertidal habitat area; recovery of seagrasses and expansion of riparian wetlands; increased habitat for fishery species; native upland plant and animal species recovery.

Other Recommendations: Integrate with boater destination (anchorage, signage) plan. This site is well suited for passive recreational use and education. Schedule so as to not interfere with nearby seabird rookery.

Site Name: Skier's Island  
County: Sarasota  
Corps Designation: S-39  
Other ID: none

Type: Emergent island

Township: 37S  
Range: 17E  
Section: 1

Design Area: 20 acres  
Built Area: 7 acres  
Area of Direct Impact: 7 acres  
Indirect Impact Area: 2 acres

Existing Habitats: Casuarina > Diked Area > Schinus > Mangrove > Other

Displaced Habitats: Oysters, seagrasses, macroalgal beds, shallow waters

Other Ecosystem Effects: Sedimentation, exotic species seed source, attraction to boaters resulting in propeller damages, circulation changes.

Restoration Alternatives: No action; exotic species removal only; topographic adjustments without planting; topographic adjustments with plantings of native species; removal with offsite disposal of all spoil materials.

Recommended Action: Exotic species removal followed by topographic adjustments with plantings of native species.

Conceptual Design: See Note 11.

Restoration Techniques: See Note 12.

Restored Habitat Area: 6 acres

Expected Benefits: Increase in subtidal and intertidal habitat area; recovery of seagrasses and expansion of riparian wetlands; increased habitat for fishery species; native upland plant and animal species recovery.

Other Recommendations: Suitable for interior wetlands and ponded areas. Integrate with boater destination (anchorage, signage) plan. Oyster cultching should be attempted here.

Site Name: Bird Key North  
County: Sarasota  
Corps Designation: S-30  
Other ID: Neville Preserve

Type: Emergent island

Township: 37S  
Range: 18E  
Section: 33

Design Area: 20 acres  
Built Area: 15 acres  
Area of Direct Impact: 12 acres  
Indirect Impact Area: 3 acres

Existing Habitats: Casuarina > Mangrove > Diked Area > Schinus > Other

Displaced Habitats: Oysters, mangroves, live bottom, seagrasses, macroalgal beds, shallow waters

Other Ecosystem Effects: Sedimentation, exotic species seed source, attraction to boaters resulting in propeller damages, circulation changes.

Restoration Alternatives: No action; exotic species removal only; topographic adjustments without planting; topographic adjustments with plantings of native species; removal with offsite disposal of all spoil materials.

Recommended Action: Exotic species removal followed by topographic adjustments with plantings of native species.

Conceptual Design: See Note 11.

Restoration Techniques: See Note 12.

Restored Habitat Area: 12 acres

Expected Benefits: Increase in subtidal and intertidal habitat area; recovery of seagrasses and expansion of riparian wetlands; increased habitat for fishery species; native upland plant and animal species recovery.

Other Recommendations: Suitable for interior wetlands and ponded areas. Oyster cultching should be attempted here.

Site Name: Bird Key South  
County: Sarasota  
Corps Designation: S-30-A  
Other ID: Neville Preserve

Type: Emergent island

Township: 38S  
Range: 18E  
Section: 4

Design Area: 60 acres  
Built Area: 30 acres?  
Area of Direct Impact: 20 acres  
Indirect Impact Area: 1 acres

Existing Habitats: Casuarina > Mangrove > Diked Area > Schinus > Other

Displaced Habitats: Oysters, mangroves, live bottom, seagrasses, macroalgal beds, shallow waters

Other Ecosystem Effects: Sedimentation, exotic species seed source, attraction to boaters resulting in propeller damages, circulation changes.

Restoration Alternatives: No action; exotic species removal only; topographic adjustments without planting; topographic adjustments with plantings of native species; removal with offsite disposal of all spoil materials.

Recommended Action: Exotic species removal followed by topographic adjustments with plantings of native species.

Conceptual Design: See Note 11.

Restoration Techniques: See Note 12.

Restored Habitat Area: 20 acres

Expected Benefits: Increase in subtidal and intertidal habitat area; recovery of seagrasses and expansion of riparian wetlands; increased habitat for fishery species; native upland plant and animal species recovery.

Other Recommendations: Suitable for interior wetlands and ponded areas. Oyster cultching should be attempted here.



Site Name: South Casey Bayside  
County: Sarasota  
Corps Designation: S-24-B  
Other ID:

Type: Emergent fill adjoining Casey Key

Township: 38S  
Range: 18E  
Section: 26,35

Design Area: 16 acres  
Built Area: 15 acres  
Area of Direct Impact: 12 acres  
Indirect Impact Area: 1 acres

Existing Habitats: Casuarina > Mangrove > Barrens > Schinus > Other

Displaced Habitats: Oysters, mangroves, seagrasses, macroalgal beds, shallow waters

Other Ecosystem Effects: Sedimentation, exotic species seed source, attraction to boaters resulting in propeller damages, circulation changes, increased access for nest predators.

Restoration Alternatives: No action; exotic species removal only; topographic adjustments without planting; topographic adjustments with plantings of native species; removal with offsite disposal of all spoil materials.

Recommended Action: Exotic species removal followed by topographic adjustments with plantings of native species.

Conceptual Design: See Note 11.

Restoration Techniques: See Note 12.

Restored Habitat Area: 10 acres

Expected Benefits: Increase in subtidal and intertidal habitat area; recovery of seagrasses and expansion of riparian wetlands; increased habitat for fishery species; native upland plant and animal species recovery.

Other Recommendations: Suitable for interior wetlands and ponded areas. Development of this site should be coordinated with mosquito control efforts.

Table 1. Names and areas of possible SBNEP restoration sites. All are submerged spoil, emergent spoil islands, or extensions of the mainland or a barrier island. T, Township; R, Range; S, Section.

**MAP I**

<u>Number</u>	<u>Name</u>	<u>Approx. Acreage</u>	<u>T-R-S</u>	<u>USACOE Project</u>
1.	Bulkhead	20	34S,16E,16*	"79"
2.	none	11	34S,16E,16*	yes
3.	none	10	34S,16E,21*	yes
4.	Meade Point I.	3	34S,16E,22	"90"
5.	Marina	4	34S,16E,27	may be
6.	Perico	10	34S,16E,35	private
7.	Sister Keys	50	35S,16E,14+23+24	yes

**MAP II**

<u>Number</u>	<u>Name</u>	<u>Approx. Acreage</u>	<u>T-R-S</u>	<u>USACOE Project</u>
1.	none	23	35S,16E,24	yes
2.	none	23	35S,16E,24*	yes
3.	none	23	35S,17E,30*	yes
4.	none	23	35S,17E,30*	yes
5.	Bayshore	4	35S,17E,27	private

**MAP III**

<u>Number</u>	<u>Name</u>	<u>Approx. Acreage</u>	<u>T-R-S</u>	<u>USACOE Project</u>
1.	Quick Point	36	36S,17E,22	yes
2.	none	45	36S,18E,31*	"85"
3.	Big Edwards I.	7	37S,17E,1	yes

4.	Little Edwards I.	4	37S,17E,1+ 37S,18E,6	yes
5.	Skiers' I.	7	37S,17E,1	yes
6.	Phillippi Cr.	3	37S,18E,7	may be
7.	none	8	37S,18E,20*	"86"

#### MAP IV

<u>Number</u>	<u>Name</u>	<u>Approx. Acreage</u>	<u>T-R-S</u>	<u>USACOE Project</u>
1.	N. Neville Pres. I.	15	37S,18E,33	yes
2.	S. Neville Pres. I.	8	38S,18E,4	yes
3.	Palmer Pt. (N. Casey)	3/15	38S,18E,S4	yes
4.	S. Creek Is.	2	38S,18E,15+22	yes
5.1	Little Turner Key	10	39S,18E,2	may be
5.2	Turner Key	25	39S,18E,1	may be
6.	Bird I.	10	39S,18E,1	may be

\* MAY NOT BE VISIBLE AS AN EMERGENT ISLAND