Land Acq. & Mgmt.
Committee Meeting
March 15, 2013

PRELIMINARY AGENDA

FLORIDA INLAND NAVIGATION DISTRICT's
Land Acquisition & Management Committee Meeting

Following the Board Meeting, Friday, March 15, 2013

City of Stuart Commission Chambers
121 SW Flagler Avenue,
Stuart, Martin County, Florida.

Committee Members
Chair Spencer Crowley
Commissioners Bruce Barkett, Carl Blow, Aaron Bowman & Tyler Chappell

Item 1. **Call to Order.**

Chair Crowley will call the meeting to order.

Item 2. **Roll Call.**

Assistant Executive Director Mark Crosley will call the roll.

Item 3. **Additions or Deletions.**

Any additions or deletions to the meeting agenda will be announced.

RECOMMEND Approval of a final agenda.

Item 4. **DMMA LT-13 Acquisition, Palm Beach County.**

Appraisals have been made on this parcel and staff would like the committee to approve a purchase offer for the property.

(see back up pages 4 - 21)

RECOMMEND Approval of a purchase offer for DMMA LT-13.

Item 5. **DMMA BV-24A Exchange, Brevard County.**

The DMMA BV-24A exchange is moving forward again. The District needs to perform some due diligence investigations on the exchange parcel which are typical for all of our acquisitions of dredged material management areas. The Committee last approved this work in 2009 and staff coordinated the pricing with the District Engineer and the cost went up $40,000. These costs will be reimbursed by Brevard County.

(see back up pages 22 - 41)

RECOMMEND Approval of the scope of services and fee quote from Taylor Engineering for the Phase II documentation of DMMA BV-24A.

Item 6. **Duval and St. Johns County Well Monitoring Project.**

Staff advertised a bid for a new 3 year contract to perform quarterly monitoring of 30 wells 4 DMMA's in Duval County and 1 DMMA in St. Johns County. Bids will be distributed at the meeting.

(see back up pages 42 - 51)

RECOMMEND Approval of the low qualified bid for the Duval and St. Johns County Well Monitoring Project.

Item 7. **Seagrass Mitigation Site evaluation, Martin County.**

The District engineer has completed the report on the Seagrass Mitigation Site Evaluation in Martin County for Board review and discussion.

(see back up pages 52 - 70)

RECOMMEND Approval of the report on Seagrass Mitigation Site Evaluation in Martin County.

Item 8. **Dredged Material Management Plan Update.**

In 1986 the District initiated a Dredged Material Management Plan for the Intracoastal Waterway. The plan was conducted on a county by county basis and was completed in 2008. The Phase I Plan for each county is several hundred pages long and recommends which sites to purchase. There are hundreds of pages in the plans on sites we did not purchase and sometimes we didn't purchase the site initially recommended or in the configuration recommended. The Phase II Plans are specific to each site and also amount to a hundred plus pages.

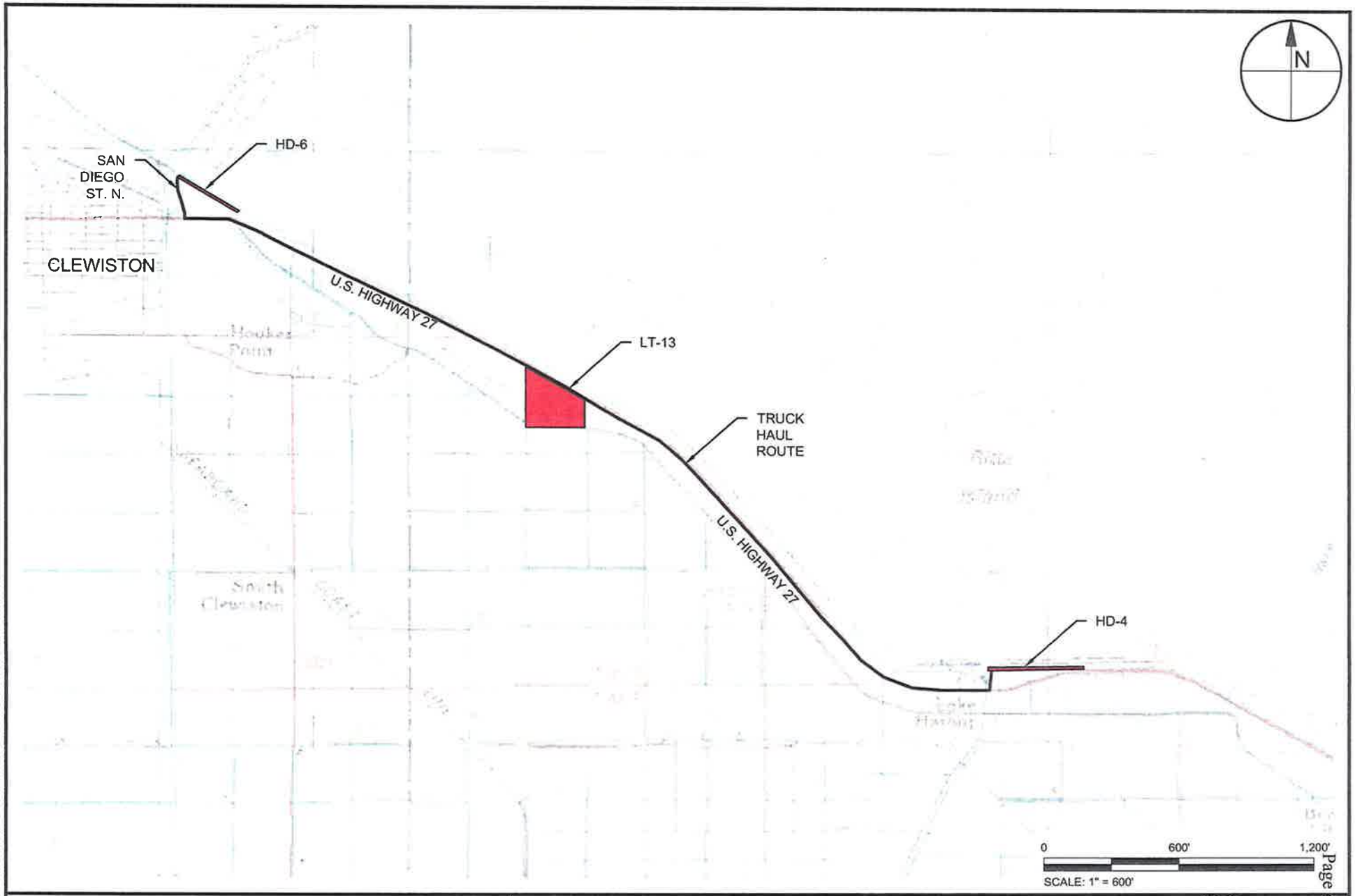
We often get requests for the Phase I Plans from agencies, engineers and the public. They are often confused as to what they are looking at because of all the extraneous information. Staff would like to update the Phase I Plans to document the sites that were actually acquired plus changes to the projected dredging and management quantities as a result of the channel condition surveys made in 1996, 2000, 2004 and a channel condition survey we are planning for this year. The new DMMP's would be less than one hundred pages for each county and therefore a more consumable document for everyone including ourselves.

Staff is seeking concurrence from the Committee before we have the District engineer provide us a scope of services and fee quote to perform the first updated plan document.

Item 9. **Additional Staff Comments and Additional Agenda Items.**

Item 10. **Commissioners Comments.**

Item 11. **Adjournment.**



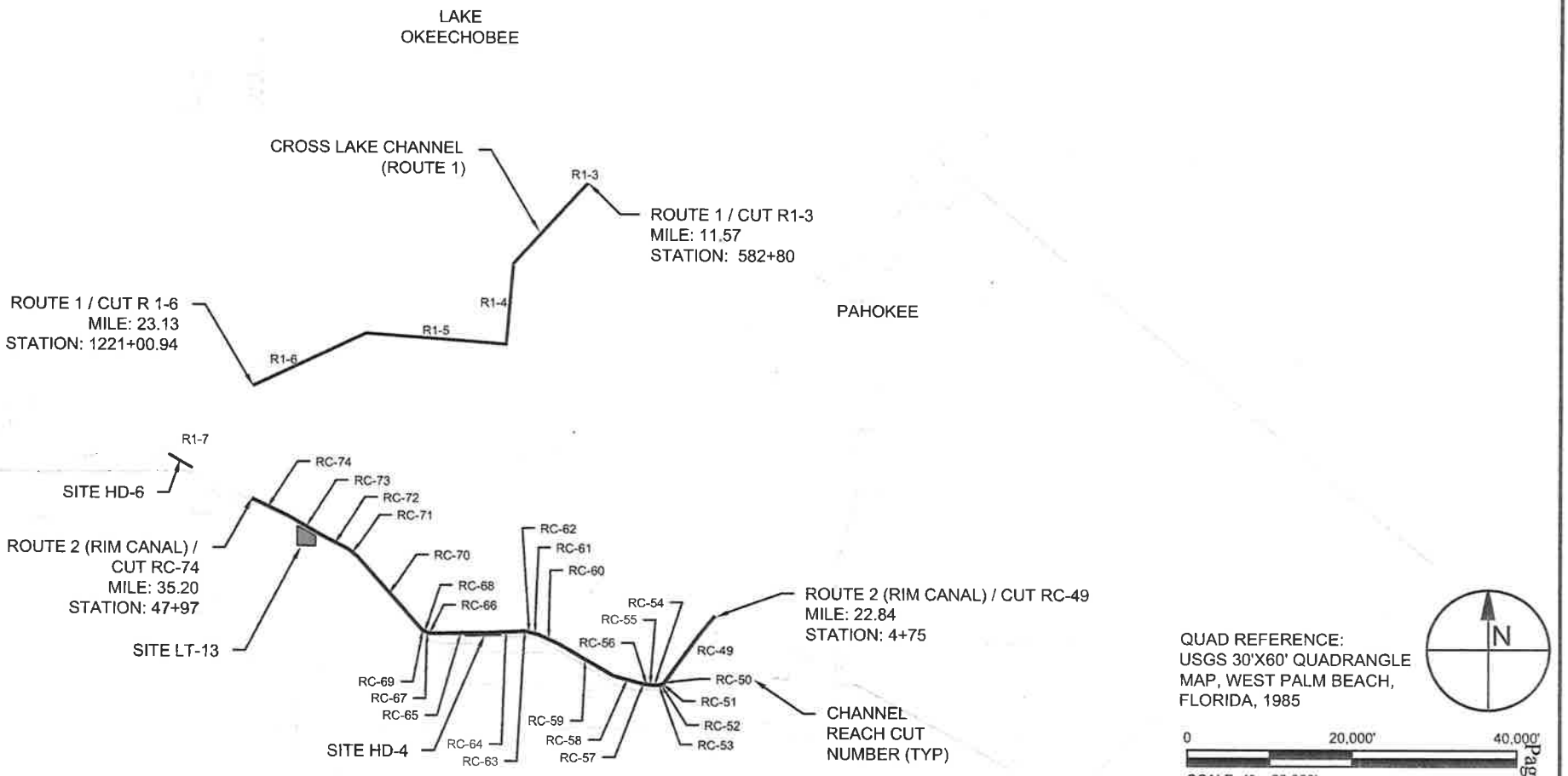
TAYLOR ENGINEERING INC.
10151 DEERWOOD PARK BLVD.
BLDG. 300, SUITE 300
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

FIGURE 3.1
TRUCK ROUTE FROM HD-4 & HD-6 TO LT-13
FIND OWW DREDGED MATERIAL MANAGEMENT AREA LT-13
PALM BEACH COUNTY, FLORIDA

PROJECT	C2010-038
DRAWN BY	AF
SHEET	6 of 6
DATE	APR 2011

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

ANTON FLEWELLING X:\SYS\PROJECTS\C2010-038 LT-13\PERMIT\MANAGEMENT PLAN SET\C2010-038-MP-TRUCKHAUL.DWG 4/4/2011 10:38:50 AM

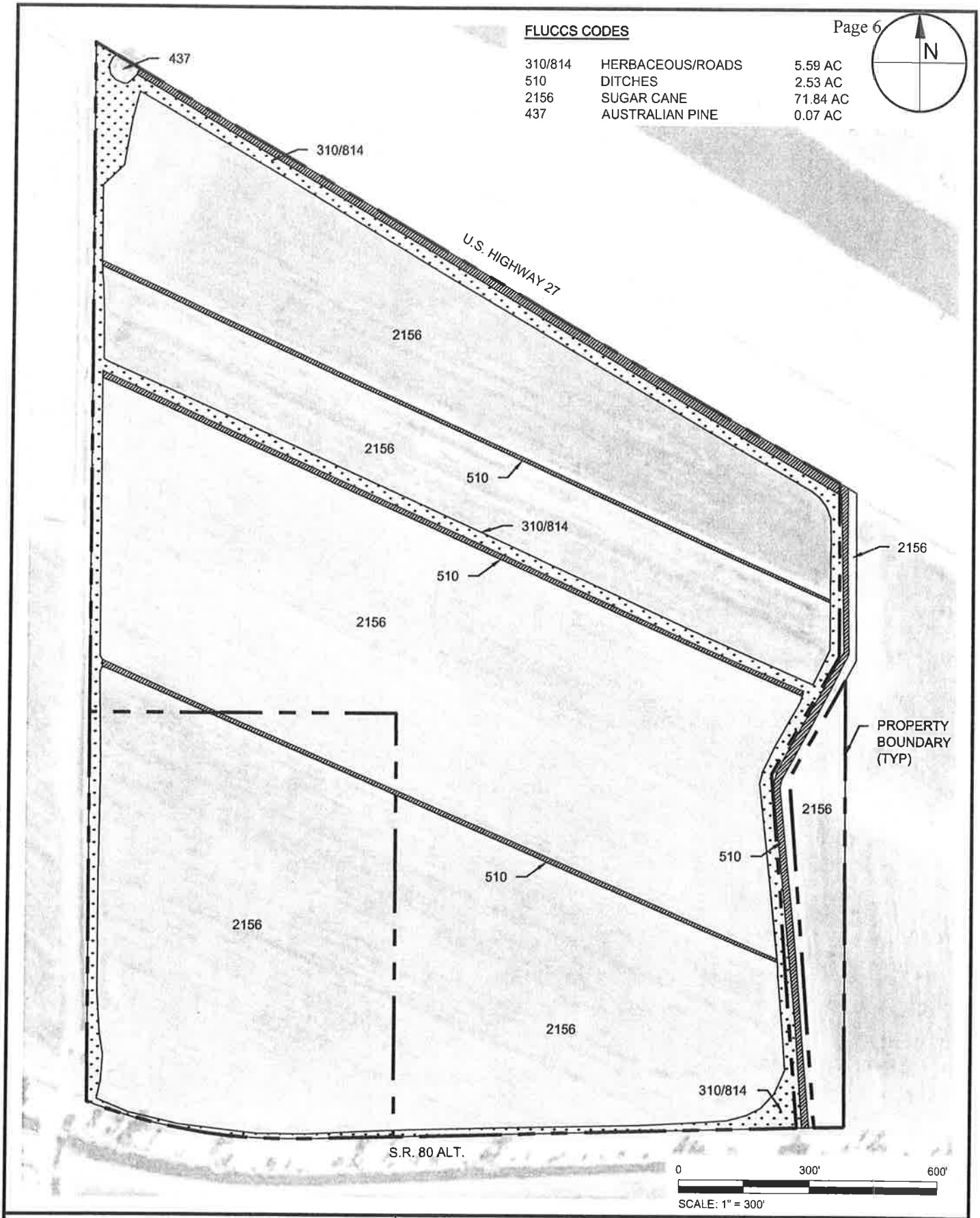


TAYLOR ENGINEERING INC.
10151 DEERWOOD PARK BLVD.
BLDG. 300, SUITE 300
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

FIGURE 2.2
HD-4 & HD-6 REACH LIMITS
FIND OWW DREDGED MATERIAL MANAGEMENT AREA LT-13
PALM BEACH COUNTY, FLORIDA

PROJECT	C2010-038
DRAWN BY	AF
SHEET	3 of 6
DATE	APR 2011

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



TAYLOR ENGINEERING INC.
10151 DEERWOOD PARK BLVD.
BLDG. 300, SUITE 300
JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

FIGURE 2.1
EXISTING FLUCCS CODE MAP
FIND OWW DREDGED MATERIAL MANAGEMENT AREA LT-13
PALM BEACH COUNTY, FLORIDA

PROJECT	C2010-038
DRAWN BY	AF
SHEET	2 of 6
DATE	APR 2011

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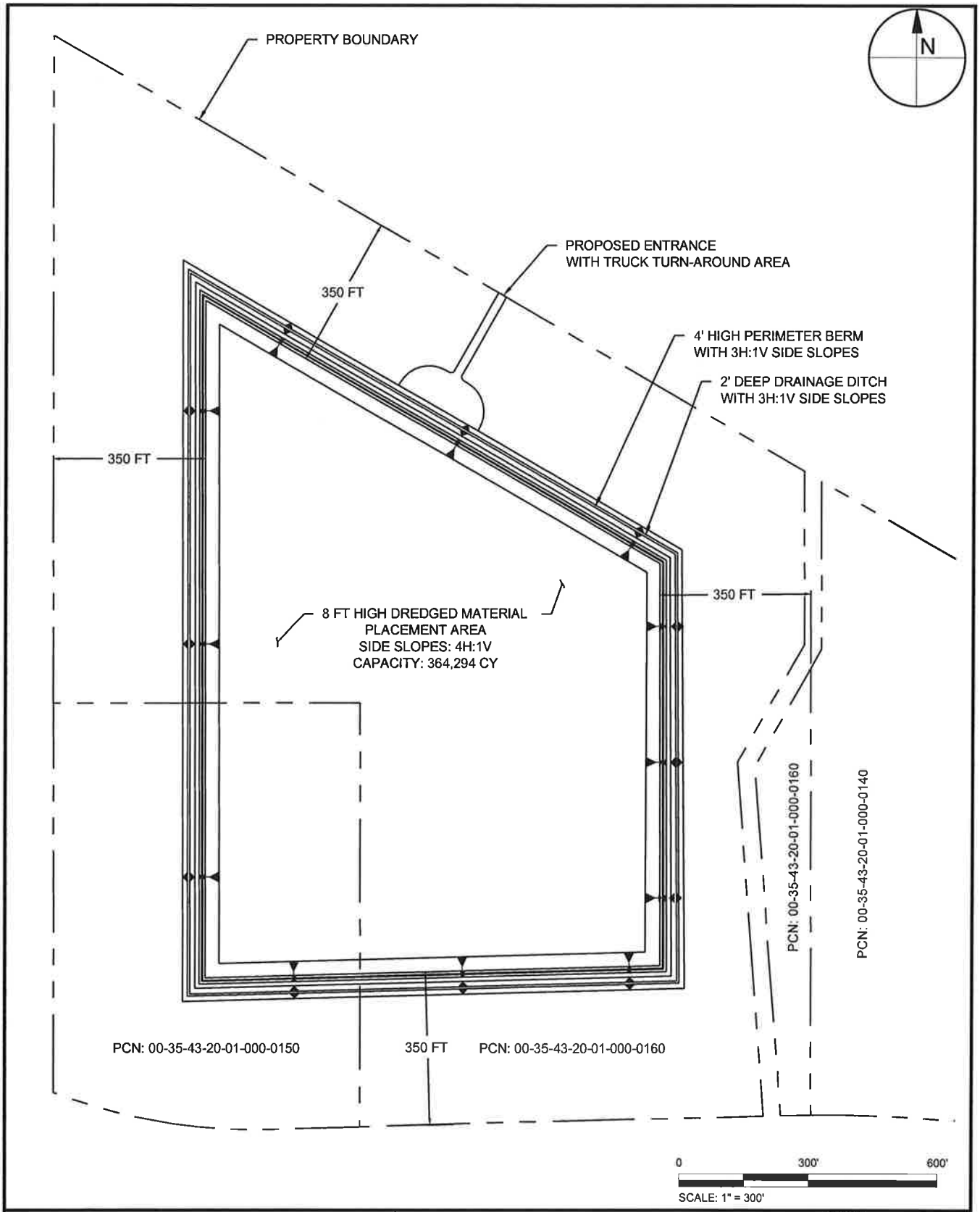
PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.



ROBERT DIMENZIO X:\SVS\PROJECTS\C2010-038 LT-13\FIGURES\C2010-038-F-SITE PLAN.DWG 10/4/2010 10:33:57 AM

TAYLOR ENGINEERING INC. 10151 DEERWOOD PARK BLVD. BLDG. 300, SUITE 300 JACKSONVILLE, FL 32256 CERTIFICATE OF AUTHORIZATION # 4815	FIGURE 2 CONCEPTUAL DMMA LAYOUT FIND LT-13 PALM BEACH COUNTY, FLORIDA	PROJECT: C2010-038 DRAWN BY: AF SHEET: 2 of 2 DATE: OCT 2010

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

S.F. HOLDEN, INC.

REAL ESTATE APPRAISERS AND CONSULTANTS
Licensed Real Estate Broker

Square Lake Centre, Suite 10 8259 North Military Trail Palm Beach Gardens, Florida 33410-6352
(561) 626-2004 Fax (561) 622-7631

October 9, 2012

David K. Roach, Executive Director
Florida Inland Navigation District
1314 Marcinski Road
Jupiter, Fl 33477

Re: A summary appraisal of farmland proposed to be acquired by FIND known as Site LT-13 containing 79.678 acres located along the south side of SR 80/US 27 and along Old US Hwy 27/Corkscrew Blvd., 1.15 miles east of the Palm Beach / Hendry County Line, in western Palm Beach County, FL

Dear Mr. Roach:

We have inspected, investigated and analyzed the property owned by Bunevall, Inc., Enerwall, Inc., Haiko, Inc., and Tenerling, Inc., for the purpose of estimating the market value of the property's fee simple interest as of September 20, 2012, the date of our off-site property inspection. The purpose of this analysis was to estimate the value of the area proposed to be acquired by the Florida Inland Navigational District (FIND) for storage and management of dredged materials from the Okeechobee Waterway and consider damages to the remainder of the ownership if applicable.

The parent property and the proposed acquisition are described in the body of the attached appraisal report. This analysis has considered all factors believed relevant to the appraisal, including current market conditions and the highest and best use of the parent property before and after the proposed acquisition.

The intended use/function of the attached appraisal is to assist the Florida Inland Navigation District in acquisition of the tract. The scope of this analysis included an off-site inspection of and collecting and analyzing data about the ownership, collecting and analyzing sales of comparable properties, and applying the applicable approach or approaches to value. Our analysis is based on fee simple interest, as we are unaware of any significant easements encumbering the subject. Accordingly, only the sales comparison approach was utilized in our valuation.

David K. Roach, Executive Director
Florida Inland Navigation District
Page Two
October 9, 2012

Our opinion of the market value due to the landowners is summarized in the body of the appraisal and in the Certificate of Value. Note: No crops or equipment were considered in this analysis. The opinions of value, or compensation, are qualified by certain definitions, assumptions and limiting conditions set forth in the report. Specific attention is directed to the following Extraordinary Assumptions. Note: The use of the following extraordinary assumptions might have affected the assignment results.

1. The market values estimated in this analysis do not include crops, equipment, or personal property.

2. We did not receive written or verbal permission from the landowners to enter onto the parent tract. We therefore conducted an off-site inspection from the abutting road right-of-ways and assume that the organic (muck) soils were deep and consistent with the depths of surrounding lands, and that all farm infrastructure was in good condition and typical for the area.

3. We have assumed that the existing 40' wide DOT easement/drainage ditch extending north-south in the eastern portion of the taking (Lateral Ditch No. 3, Section No. 93100-2113, dated 6/2/1959) will be relocated (as per the project) along the east boundary of the proposed acquisition, and continues to function in the same capacity as in the before situation. Therefore we assume no impact on the drainage of the eastern remainder.

4. We have assumed for purposes of this appraisal report that the remainder parcels have or will be provided adequate access.

The attached appraisal was prepared for a professional fee billed to Florida Inland Navigation District. The report is intended only for use by our client or its designated agent(s) and may not be relied on for any other use or distributed to another unintended user without permission. The property owner was informed of our appraisal.

The attached report represents a summary appraisal in accordance with the Uniform Standards of Professional Appraisal Practice (USPAP). This letter of transmittal must remain attached to the appraisal report in order for the value opinions to be considered valid.

Thank you for the opportunity to be of service to the Florida Inland Navigation District.

David K. Roach, Executive Director
Florida Inland Navigation District
Page Three
October 9, 2012

Respectfully submitted,
S. F. HOLDEN, INC.

Philip M. Holden, MAI
State-Certified General Real Estate Appraiser RZ 1666

Timothy S. Holden
State Registered Trainee Appraiser RI 22882

/tsh

EXECUTIVE SUMMARY

Parent Tract Parcel Numbers	

Parcel ID Numbers	
00-35-43-20-01-000-0160	00-35-43-19-00-000-5000
00-35-43-20-01-000-0140	00-35-43-19-00-000-5050
00-35-43-20-01-000-0150	00-35-43-19-00-000-5040
00-35-43-19-00-000-5010	00-35-43-19-00-000-7010
00-35-43-19-00-000-5020	

Owner(s) of Record	Bunevall, Inc. Enerwall, Inc. Haiko, Inc. Tenerling, Inc. P.O. Box 220 Pahokee, FL 33476
Acquisition Location	Located along the south side of State Road 80/US 27 and along Old US Hwy 27/Corkscrew Blvd, 1.15 miles east of the Palm Beach/Hendry County line, western Palm Beach County, FL
Size of Parent Property	335.0792 acres Note: This size differs slightly from the Palm Beach County Property Appraiser's records as the acreage of the proposed acquisition was based on the Morgan & Eklund, Inc. survey provided.
Size of Proposed Acquisition	79.678 acres, based on the survey provided
Land Use Plan/ Zoning Limitations	AP, Agricultural Production by Palm Beach County
Current Use	Sugarcane Production
Highest and Best Use	Before — Continued agricultural use After — Same as before the acquisition

EXECUTIVE SUMMARY (Continued)

Improvements

None noted, although the Palm Beach County Property Appraiser states that a 576 Sq.Ft. warehouse built in 1954 is located on one of the parcels to be acquired, but could not be found during our off-site inspection or review of aerial photographs.

Dates

Date of Inspection	September 20, 2012
Date of Value	September 20, 2012
Date of Report	October 9, 2012

Interest Appraised

Fee Simple

Market Value Conclusions

STATE RULE CALCULATIONS		
1	Value before taking (as part of parent tract)	$3,183,252
2	Less value of part taken (as part of the parent tract)	-$756,941
3	Equals value of remainder after taking	$2,426,311
4	Less remainder after taking	-$2,426,311
5	Equals damages to remainder	$0
6	Plus special benefits to the remainder	$0
7	Equals damages to remainder	$0
8	Plus value of part taken (as part of parent tract)	$756,941
9	**Equals market value of the acquisition**	**$756,941**

Extraordinary Assumptions

Note: The use of the following extraordinary assumptions might have affected the assignment results.

1. The market values estimated in this analysis do not include crops, equipment, or personal property.

2. We did not receive written or verbal permission from the landowners to enter onto the parent tract. We therefore conducted an off-site inspection from the abutting road right-of-ways and assume that the organic (muck) soils were deep and consistent with the depths of surrounding lands, and that all farm infrastructure was in good condition and typical for the area.

EXECUTIVE SUMMARY (Continued)

3. We have assumed that the existing 40' wide DOT easement/drainage ditch extending north-south in the eastern portion of the taking (Lateral Ditch No. 3, Section No. 93100-2113, dated 6/2/1959) will be relocated (as per the project) along the east boundary of the proposed acquisition, and continues to function in the same capacity as in the before situation. Therefore we assume no impact on the drainage of the eastern remainder.

4. We have assumed for purposes of this appraisal report that the remainder parcels have or will be provided adequate access.

Appraisers	Philip M. Holden, MAI State-Certified General Real Estate Appraiser RZ 1666 Timothy S. Holden State Registered Trainee Appraiser RI 22882

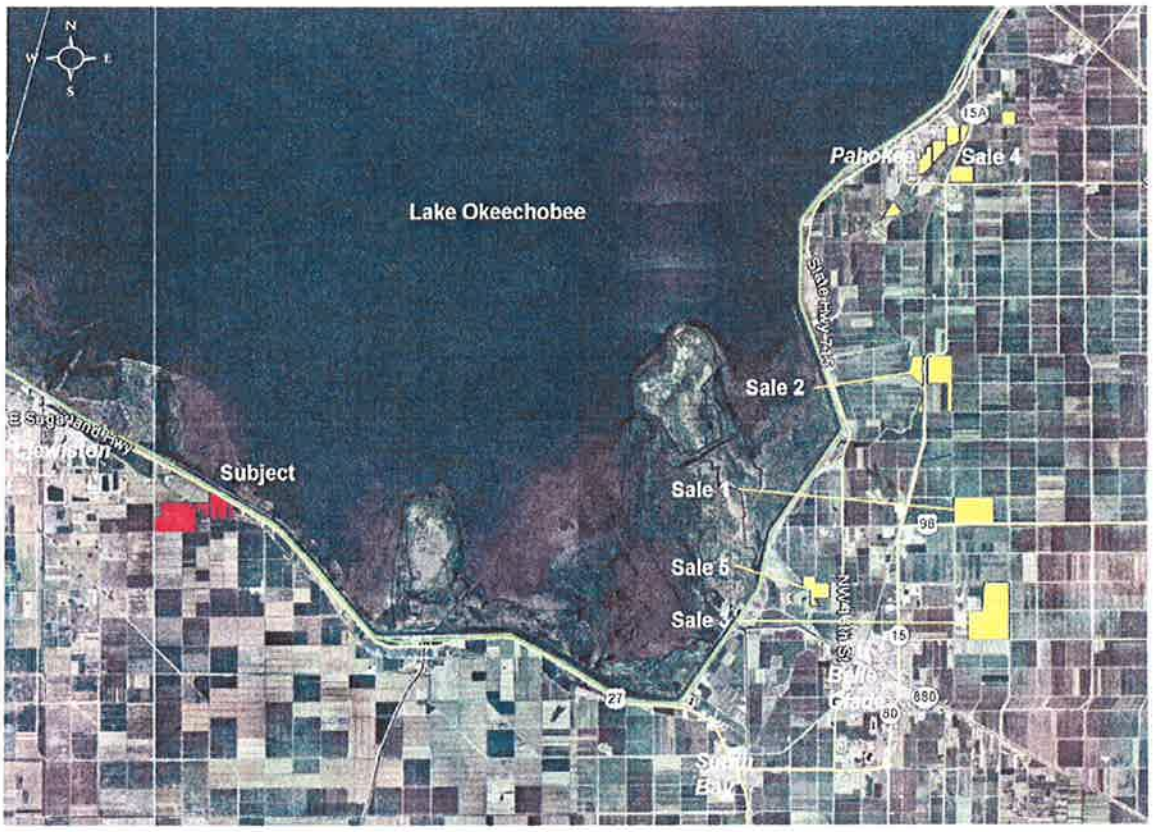
VALUE ANALYSIS

Parent Tract Before The Acquisition

EAA LAND SALES SUMMARY CHART						
Sale No.	*Subject*	Sale 1	Sale 2	Sale 3	Sale 4	Sale 5
ORBk/Page	*N/A*	23506/0062	23498/1051	23557/1784	24824/757	25381/565
Grantor	*Bunevall, Inc. Enerwall, Inc. Haiko, Inc. Tenerling, Inc.*	A. Duda & Sons, Inc.	Roth Farms	Wachovia Bank N.A. as Trustee	Oasis Pelican Limited	Gold Dobrow Bramson Farms
Grantee	*N/A*	Eastgate Farms, Inc.	Philip Tiedtke	Sugar Cane Growers Cooperative of Florida	H&A Farming and Leasing, LLC.	Jane B. Evans Farms, LTD.
Location	*Located along the south side of SR 80, and along the north and south sides of Corkscrew Blvd/Old SR 80, with the western portion abutting the Palm Beach/Hendry County line, western Palm Beach County, Fl.*	North side of State Road 80, 1 mile east of State Road 15, northeast of Belle Glade, EAA portion of Palm Beach County, Fl.	East and west sides of State Road 15/US 441, 5 miles north of Belle Glade, EAA portion of Palm Beach County, Fl.	Abutting the Sugar Cane Cooperative raw sugar refinery mill to the east. It is located along the north side of Airport Road, approximatley 1.50 miles east of SR 15, just northeast of Belle Glade.	4 parcels within Pahokee area located on E side of McClure Road, SWC of Larrimore Road & State Market Road, E side of State Market Road, & N side of Muck City Road	The property is located along the east, north, and south sides of Teddar Road/Canal 1 along its curve, approx 0.35 miles north of W Canal Street N, just northwest of Belle Glade, in the EAA portion of Palm Beach County.
Sale Date	*September 20, 2012*	September 23, 2009	October 8, 2009	November 12, 2009	October 26, 2011	July 25, 2012
Sale Price	*N/A*	$1,758,905	$2,204,460	$3,639,450	$2,081,116	$874,638
Size (Acres)	*335.0792*	205.69	243.44	383.1	213.40	84.29
Price/Acre	***N/A***	**$8,551**	**$9,055**	**$9,500**	**$9,752**	**$10,377**
Comments	*Farmland planted in sugarcane*	Soil depths of 2' to 3'	Purchased by abutting land owner though no premium was paid. Soil depths approximatley 5' deep	Purchased by abutting land owner.	Properties were tree farms. Buyer redeveloping land for vegetable farming at a cost of $500 to $700 per acre. The sales price depicted is the effective amount that included the additional land clearing costs.	Gross sales price: $969,335 Effective sales price shown above excludes the contribution to value of the crop estimated at $94,697.
QUALITATIVE ANALYSIS						
Conditions of Sale		Similar	Similar	Superior	Similar	Similar
Market Conditions		Inferior	Inferior	Inferior	Similar	Similar
Location		Similar	Similar	Similar	Similar	Superior
Size/Shape		Similar	Similar	Similar	Similar	Superior
Soil Conditions		Similar	Similar	Similar	Similar	Similar
Overall Comparability		**Inferior At $8,551 per Acre**	**Inferior At $9,055 per Acre**	**Similar at $9,500 per Acre**	**Similar at $9,752 per Acre**	**Superior at $10,377 per Acre**

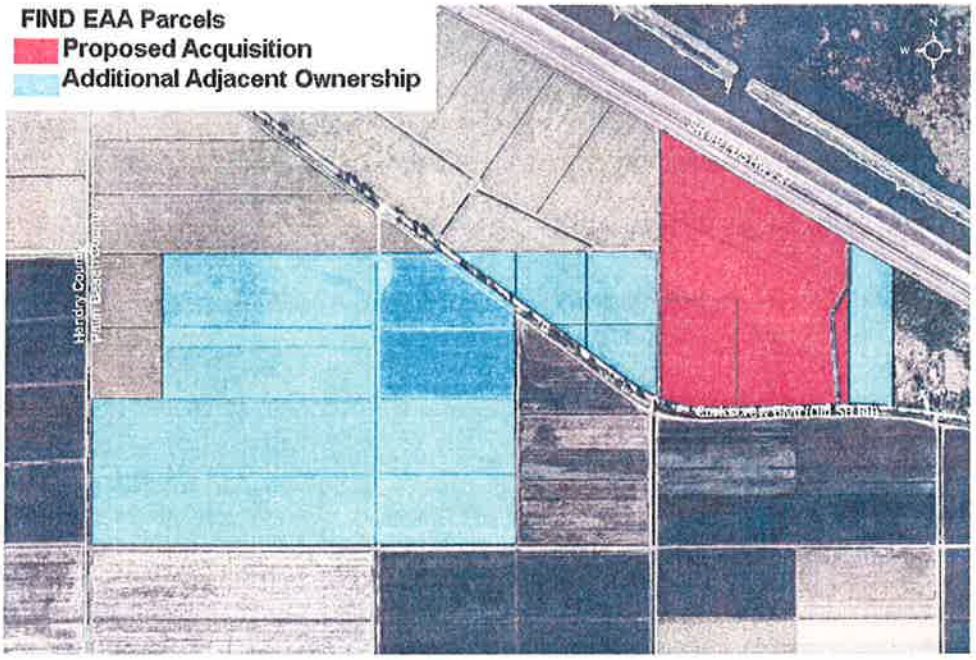
VALUE ANALYSIS (Continued)

Parent Tract Before The Acquisition (Continued)



VALUE ANALYSIS (Continued)

Part Taken



As stated earlier in this report, the acquisition consists of a 79.678-acre portion of the 335.0792 acre parent tract (shaded in red above).

The fee simple value estimated for the parent property before the acquisition was $9,500 per acre. Therefore, the value of the acquisition as part of the whole is calculated at:

VALUE OF PART TAKEN AS PART OF THE WHOLE		
Acres	Market Value per Acre	Value of Part Taken
79.678	**$9,500**	**$756,941**

Callaway & Price, Inc.
Real Estate Appraisers And Consultants
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Fax (561)686-3705

Daniel P. Hrabko, MAI
Cert Gen RZ48

September 7, 2012

David K. Roach, Executive Director
Florida Inland Navigation District
1314 Marcinski Road
Jupiter, FL 33477-9427

Dear Mr. Roach:

We have made an investigation and analysis of the vacant agricultural property located southeast of Clewiston (Site LT-13) in Palm Beach County, Florida. The Subject Property will be further described both narratively and legally within the following Summary Appraisal Report. The purpose of this investigation and analysis was to provide our opinion of the Market Value of the Fee Simple Estate of the 334.17-acre Parent Tract (Before Acquisition), the 254.49-acre Remainder (After Acquisition) and the 79.68-acre Part Taken (Acquisition), as of September 5, 2012. The appraisal was made and the appraisal report prepared in conformity with the Uniform Appraisal Standards for Federal Land Acquisitions.

This report has been prepared for our client and intended user, Florida Inland Navigation District. The intended use of this appraisal is to assist the client in legal matters. The scope of work performed is specific to the needs of the intended users and the intended use. No other use is intended, and the scope of work may not be appropriate for other uses.

The scope of work performed included a complete analysis of the Subject Property. A detailed scope of work description can be found in the body of this report.

Based upon the scope of the assignment, our investigation and analysis of the information contained within this report, as well as our general knowledge of real estate valuation procedures and market conditions, it is our opinion that:

The Market Value of
The Fee Simple Estate of
The 334.17-Acre Parent Tract
as of September 5, 2012 was: **$2,010,000**

The Market Value of
The Fee Simple Estate of
The 254.49-Acre Remainder
as of September 5, 2012 was: **$1,530,000**

The Market Value of
The Fee Simple Estate of
The 79.68-Acre Part Taken
as of September 5, 2012 was: **$480,000**

A description of the property appraised, together with an explanation of the valuation procedures utilized, is contained in the body of the attached report. For your convenience, an Executive Summary follows this letter. Your attention is directed to the Limiting Conditions and underlying assumptions upon which the value conclusions are contingent.

Respectfully submitted,

CALLAWAY & PRICE, INC.

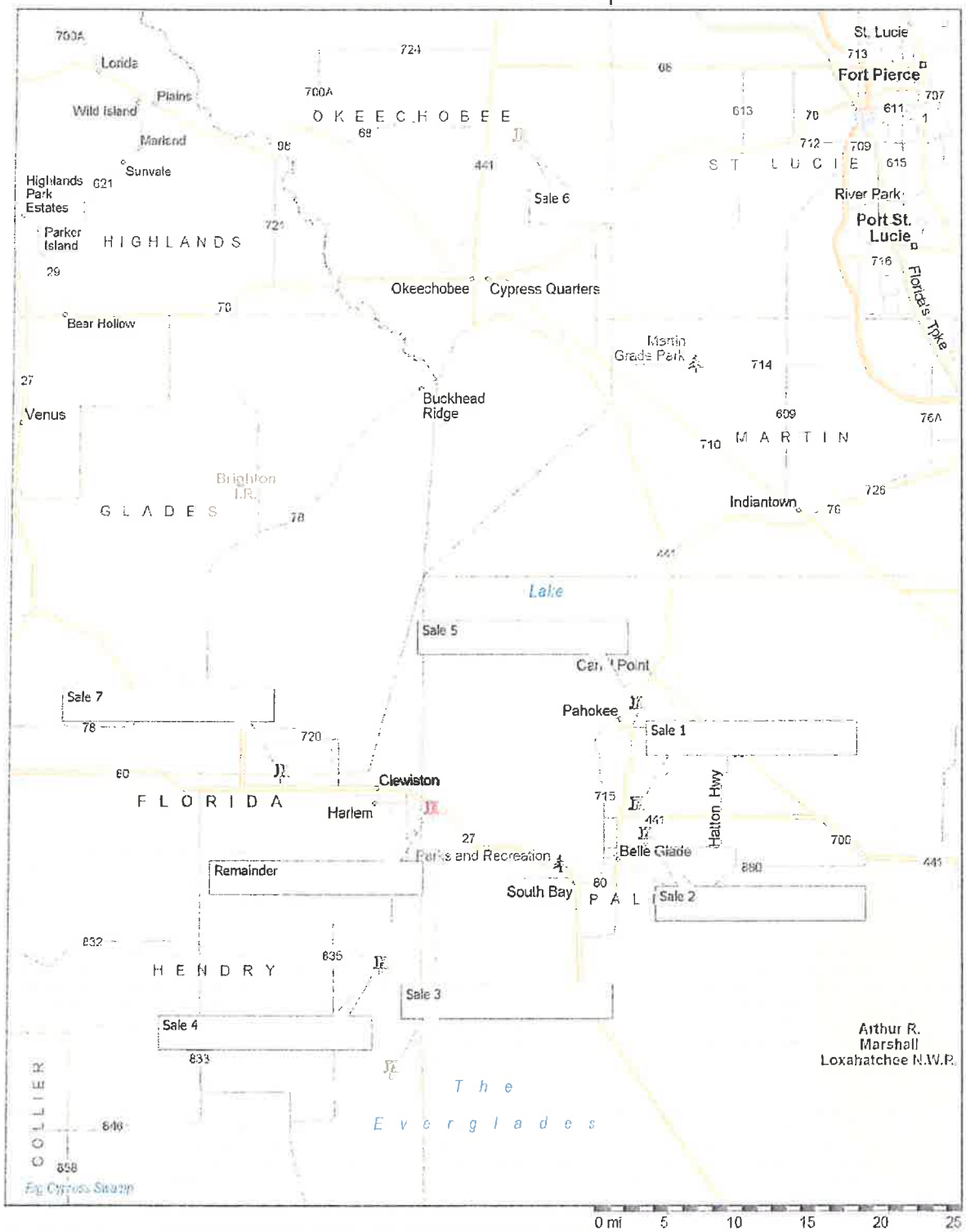
Daniel P. Hrabko, MAI
Cert Gen RZ48

Joe M. Merritt, Associate Appraiser
Cert Gen RZ672

DPH/JMM/js/12-67588
Attachments

PROPERTY TYPE	:	Vacant Agricultural Land (Sugar Cane).
LOCATION	:	The Subject Property is located south side of U.S. Highway 27 (State Road 80), approximately 3 miles southeast of the City of Clewiston in an area of unincorporated Palm Beach County, Florida. The property is vacant and has no mailing address.
DATE OF VALUATION	:	September 5, 2012
PROPERTY DESCRIPTION:		
PARENT TRACT LAND	:	334.17 acres
REMAINDER LAND	:	254.49 acres
PART TAKEN LAND	:	79.68 acres
IMPROVEMENTS	:	The Subject Property consists of leveled and ditched sugar cane land. There are no building improvements.
ZONING	:	AP, Agricultural Production, by Palm Beach County.
LAND USE PLAN	:	AP, Agricultural Production, by Palm Beach County
HIGHEST AND BEST USE	:	Continued agricultural use.
MARKET VALUE OF THE FEE SIMPLE ESTATE OF THE 334.17-ACRE PARENT TRACT AS OF SEPTEMBER 5, 2012	:	$2,010,000
MARKET VALUE OF THE FEE SIMPLE ESTATE OF THE 254.49-ACRE REMAINDER AS OF SEPTEMBER 5, 2012	:	$1,530,000
MARKET VALUE OF THE FEE SIMPLE ESTATE OF THE 79.68-ACRE PART TAKEN AS OF SEPTEMBER 5, 2012	:	$480,000

Vacant Land Sales Map



Discussion of Vacant Land Sales

Our search revealed seven sales of vacant agricultural properties that were considered to be suitable for direct comparison to the Subject. As shown below, the comparable sales indicated non-adjusted values ranging from $4,198 to $10,500 per acre.

Vacant Land Sales
Callaway & Price, Inc. #12-67588

Sale Number	Remainder	1	2	3	4	5	6	7
Record ID Number		**7375**	**7376**	**8036**	**7820**	**7936**	**8035**	**8034**
ORBK/PG		23509/0062	23557/1784	812/647	828/79	24824/757	705/1898	848/555
Effective Sale Price		$1,758,905	$3,669,204	$5,350,000	$12,500,000	$1,931,737	$2,700,000	$1,300,000
Size - Acres	254.49	205.70	383.10	1,274.37	2,504.33	183.97	608.10	233.34
Price Per Acre		**$8,551**	**$9,578**	**$4,198**	**$4,991**	**$10,500**	**$4,440**	**$5,571**
Location	South side of U.S. Highway 27, 3 mile southeast of the City of Clewiston	North side of State Road 80, 1 mile east of Main Street	Northeast corner of Gator Boulevard and East Sugarhouse Road	East side of Blumberg Road, 10 miles south of CR 835	One mile west of Blumberg Road and 4 miles south of CR 835	Southwest corner of County Road 729 and Larrimore Road	South side of NE 144th Street, 2 miles east of U.S. Highway 441	North side of U.S. Highway 27, 3 miles west of Clewiston
County	Palm Beach	Palm Beach	Palm Beach	Hendry	Hendry	Pam Beach	Okeechobee	Hendry
Date of Sale		Sep-09	Nov-09	Dec-09	Dec-10	Oct-11	Sep-11	May-12
Date of Value	Aug-12							
Zoning	AP	AP	AP	A-2	A-2	IL	AG	A-2
Conditions of Sale Adj.		0%	-20%	0%	0%	0%	0%	0%
Market Condition Adj.		0%	0%	0%	0%	0%	0%	0%
Adjusted Price Acre		**$8,551**	**$7,662**	**$4,198**	**$4,991**	**$10,500**	**$4,440**	**$5,571**
Physical Adjustments								
Location		-20%	-20%	10%	10%	-20%	10%	0%
Size		0%	0%	10%	10%	0%	0%	0%
Zoning		0%	0%	0%	0%	-20%	0%	0%
Site Quality		0%	0%	0%	0%	0%	20%	0%
Total Physical Adjustment		-20%	-20%	20%	20%	-40%	30%	0%
Adjusted Price Per Acre		**$6,841**	**$6,130**	**$5,038**	**$5,990**	**$6,300**	**$5,772**	**$5,571**

Low	$5,038
High	$6,841
Average	$5,949

TAYLOR ENGINEERING, INC.
Delivering Leading-Edge Solutions

February 27, 2013

Mr. David Roach
Executive Director
Florida Inland Navigation District
1314 Marcinski Rd
Jupiter, FL 33477

RE: BV-24A Phase II Documentation
Scope of Professional Engineering Services

Mr. Roach:

Per your request, we have enclosed a Scope of Work (Attachment A) and Cost Proposal (Attachment B) for engineering services required to generate the BV-24A Phase II Documentation. As detailed in the enclosed documents, originally submitted August 2009, our proposed services include preparatory documentation, an evaluation of existing site conditions, preliminary design and analysis, and reporting (i.e., Site Management Plan, Engineering Narrative, and Cost Report) for the BV-24A site.

Taylor Engineering will perform these services on a cost-plus basis, for a total cost not-to-exceed fee of $167,831.75. Of this amount, $89,034.00 represents the proposed fee for our surveying ($59,114.00) and environmental ($29,920.00) sub-consultants. Attachments C and D provide the individual Scope of Services and Cost Proposals for our selected sub-consultants. Notably, the cost of the scrub jay survey has increased from our 2009 proposal. The sub-consultant we intended to retain had existing data that we could apply to this project. Pursuant to agency criteria, that data is now outdated. In addition, we have been unable to contact that consultant. For these reasons and their special expertise dealing with scrub jays, we have chosen Normandeau Associates for this work.

Please contact me with any questions you have regarding this effort. We can begin work upon your notice to proceed.

Sincerely,

John Adams, P.E.
Senior Advisor, Waterfront Engineering

Attachments (4)

SCOPE OF PROFESSIONAL ENGINEERING SERVICES
BV-24A PHASE II DOCUMENTATION
BREVARD COUNTY, FLORIDA

INTRODUCTION

The 119.5-acre BV-24 Florida Inland Navigation District (FIND) site lies within Brevard County's Florida Forever Project boundary. In 1998 the U.S. Fish and Wildlife Service (USFWS) identified the FIND property as critical scrub jay habitat. Subsequently, the USFWS recommended that Brevard County exchange the BV-24 property with adjacent parcels, including portions lying within Environmentally Endangered Lands (EEL) boundary, to preserve the critical habitat area.

FIND obtained the USFWS permit in 1997 and completed the Phase II documents in 1992 necessary to prepare and submit a dredged material management area (DMMA) permit application for BV-24. Given the pending exchange, the FIND requested Taylor Engineering to prepare the following proposal to evaluate the resulting ±117-acre parcel (now known as BV-24A) and update the Phase II documents. This proposal describes the Scope of Work associated with updating the Phase II documents for the BV-24A site.

EXCLUSIONS

The Scope of Work excludes the following:

1. An on-site geotechnical field investigation;
2. A formal delineation of jurisdictional wetland boundaries;
3. Analysis of the four elements required as part of the Draft June 2007 FDEP ERP *Engineering Review Criteria/Information Needs for Dredged Material Management Areas* memorandum;
4. Final permit drawings (requires the completion of exclusions No. 1 – 3 listed above); and,
5. Final engineering design or other similar plans, engineering specifications, and all permit-related application fees.

TASK 1 PREPARATORY DOCUMENTATION

This task includes collection of information and authorizations to facilitate the detailed documentation of site conditions and facilities design in Task 3. Task efforts also include documentation of public record information concerning land use and zoning restrictions, taxes and assessed values, easements, and property ownership.

1.1 Public Information

Taylor Engineering will review Brevard County tax rolls and related public records to verify and update site ownership and tax information including parcel size, boundaries, and assessed value for the BV-24A site. We will provide this information to the FIND at the earliest possible date to facilitate the FIND obtaining written permission from all relevant property owners for site access, survey work, field testing, and data collection.

1.2 Zoning

Taylor Engineering will verify and update existing zoning classification and permitted uses under that classification for the BV-24A site.

1.3 Other Site Encumbrances

We will identify other possible restrictions that may limit use of the site (for eventual permitting and construction of a DMMA) such as local or regional planning constraints, rights-of-way, easements, adjacent property constraints, or potential damages to adjacent properties.

1.4 Site Reconfiguration

We will modify expected preliminary site boundaries within the BV-24A property boundary to achieve a balance between the desired storage capacity, minimum buffer requirements, and minimization of impacts to natural resources. Taylor Engineering will eliminate unusable or unnecessary acreage and recommend the anticipated BV-24A DMMA site configuration for a boundary survey (Task 2.1).

TASK 2 EVALUATE EXISTING SITE CONDITIONS

This task involves collection of existing site conditions data necessary for preliminary engineering design and permitting of the BV-24A site.

2.1 Boundary and Topographic Survey

Morgan & Eklund, Inc., under subcontract to Taylor Engineering, will perform a boundary and topographic survey for the BV-24A site. The boundary survey will establish the legal description for the entire ±117-acre BV-24A area, including the portion that intersects the FIND pipeline easement. For the topographic survey, we will focus only on the ±84-acre area within the expected placement area of the BV-24A DMMA. Morgan & Eklund will perform the topographic survey at a 100-ft grid density. Both surveys will meet the necessary requirements to support legal and engineering actions required to acquire, permit, and develop the site as a DMMA. Morgan & Eklund will provide horizontal and vertical control of the data in the Florida State Plane NAVD 88 coordinate system.

2.2 Environmental Surveys

This subtask includes an environmental field survey and desktop analyses necessary to develop an Environmental Site Documentation Report and Phase I Environmental Site Assessment (ESA) for the BV-24A site.

2.2.1 Environmental Site Documentation

The Environmental Site Documentation Report will include (1) aerial photo-interpretation of wetlands and field verification of wetland locations and boundaries; (2) review of readily available literature concerning habitats and listed species in the project area; (3) documentation of existing vegetation communities and collection of on-site animal species observations, including endangered or threatened species, and pertinent habitat information; and, a (4) summary of the scrub-jay survey findings and resulting discussion with the USFWS staff.

2.2.1.1 Wetland Community Evaluation

Taylor Engineering biologists will photo-interpret wetland communities from aerial photographs. Biologists will field-verify dominant wetland community photographic signatures. Site wetlands likely include wet prairies, which expand and contract significantly with changing rainfall patterns. An examination of historic photographs will help assess the potential extent of the wetlands should an extended (i.e., multi-year) period of higher than average rainfall ensue before project design and permitting. Additionally, examination of historic photographs may identify small pocket wetlands not easily visible in a single aerial photograph.

Based on this assessment of historical photographs, Taylor Engineering environmental staff will ground-truth wetland boundaries in the field; verify the location of smaller, less obvious wetlands identified by aerial mapping; and perform a grid-based survey of the entire site to locate and map small pockets of wetland communities. The ground-truth effort will focus on identifying conservative wetland boundaries to develop a "worst case" estimate of wetland extent on the BV-24A property.

2.2.1.2 Land Use/Land Cover Classification

Taylor Engineering will classify land uses and ecological habitats (land cover) within the BV-24A area in accord with the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999). We will draw from FLUCFCS data from the South Florida Water Management District as baseline data and will use field observation data to update the land use/land cover classifications and boundaries when necessary. If updates are warranted, we will transfer revised FLUCFCS boundaries and classifications to a Geographic Information Systems (GIS) database to produce an updated land use/land cover classification shape file and exhibit.

2.2.1.3 Listed Species Surveys

Taylor Engineering will estimate the likelihood of listed species occurrence within the BV-24A area by applying GIS database queries, Florida Fish and Wildlife Conservation Commission (FFWCC) data, literature review, and a field survey to identify suitable listed species habitat in the project area. Taylor Engineering will combine the habitat suitability results with Brevard County-specific listed species information obtained from the Florida Natural Areas Inventory (FNAI) and FFWCC databases.

Taylor Engineering will list the reported occurrences and relative abundances (if available) of species considered endangered, threatened, or listed as a species of special concern within the BV-24A area. Listed plant species will include those plants listed by the USFWS under Title 50, Part 17 of the Code of Federal Regulations (50 CFR 17), or by the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened, of special concern, or commercially exploited. Listed animal species include those animals classified as endangered, threatened, or of special concern by the USFWS under 50 CFR 11-12, or by the FFWCC under Chapter 68-27, F.A.C.

As part of the fieldwork efforts, Taylor Engineering biologists will conduct a reconnaissance-level listed flora and fauna species survey within the BV-24A area. They

will record the presence of listed species based on sight, call, burrow, nest, track, scat, and probable habitat, in accord with standard FFWCC methodologies. They will mark on an aerial photograph the general locations of any listed species observed during fieldwork and if feasible record these locations with a DGPS unit.

2.2.1.4 Scrub Jay Survey

Taylor Engineering will subcontract the services of Normandeau Associates to provide GIS-based maps of the scrub jay territories in the BV-24A area. Following the prescribed methods of the USFWS scrub-jay survey guidelines, Normandeau Associates staff will perform both habitat and scrub jay population mapping of the ±117 acre (property) + 3.5 acre (easement) areas specific to the area of the proposed DMMA construction). If Normandeau's results show scrub jay territories within the proposed construction footprint, Taylor Engineering will lead a teleconference discussion with USFWS and FWC staff to discuss this finding and its potential effect (impact and mitigation) on site construction issues.

2.2.1.5 Report

Taylor Engineering will provide an overall Environmental Site Documentation Report detailing results of Subtasks 2.2.1.1 – 2.2.1.4. The report will discuss the methodology, data sources, field surveys, and findings of surveys in a format suitable for submittal to the FDEP and USACE. The report will include an evaluation of the differences in the environmental resources identified for the current FIND BV-24 property and those identified within the BV-24A boundary.

2.2.2 Phase I Environmental Site Assessment

2.2.2.1 Review of Historical Use and Property Records

We will review reasonably ascertainable background and historical information such as aerial photographs, topographic maps, city directories, fire insurance maps, geologic and hydrogeologic information, geotechnical reports, or other historical sources to identify past uses or occupancies of each property composing BV-24A. We will also review our files for boundary surveys, legal description, and recorded land title records of each property.

We will obtain local, state, and federal environmental regulatory records, lists, or other readily available sources that would help determine the potential for past or present environmental concerns at each site. We will review reasonably ascertainable Standard Environmental Record Sources in the ASTM standard.

2.2.2.2 Field Investigation and Interviews

One of our professionals experienced in similar environmental site assessments will conduct a site visit of each property. Our representative will look for apparent surface indications of past or present waste handling or storage activities, underground storage tanks, waste burial conditions, unusual surface conditions, or stressed vegetative growth.

We will inspect areas around each site to verify the location of any listed solid waste, hazardous waste, or petroleum facility to help determine whether nearby land use activities represent potential environmental concerns to the BV-24A site.

Lastly, we will interview available past and present owners of each property to gain their knowledge of site activities and operations which currently or in the past may have affected the environmental conditions of each site.

2.2.2.3 Report

On completion of Subtasks 2.3.2.1 and 2.3.2.2, we will prepare a final ESA report. The report will include documentation to support the findings, opinions, and conclusions presented in the report. The report will also include a list of referenced sources and credentials of the environmental professionals involved in the assessment. If required, the report will include recommendations for additional assessment services.

TASK 3 PRELIMINARY DESIGN AND ANALYSIS

Taylor Engineering will design the preliminary DMMA site layout and perform associated volume calculations for the overall site plan. Based on the updated information noted in Task 2, we will develop the project site plan consistent with the site's Phase II preliminary design as well as environmental and buffer requirements. In addition to the central containment basin, the site plan will include access ramp locations, ingress/egress points, and access road locations. We will construct a detailed 3-D terrain model to complete a site design with the goal of obtaining balanced cut and fill earth volumes (to avoid the expense of having an off-site borrow material source).

We will prepare preliminary permit-level drawings for the various site elements. If appropriate, the drawings will include photo-based sheets depicting the project areas. We will obtain existing aerial photography for this purpose. These drawings will provide plan, cross section, and detail views of the proposed DMMA and its return water control structure as well as any necessary seepage, drainage, and erosion control features.

TASK 4 UDPATE ORIGINAL REPORT DOCUMENTATION

Under this subtask, we will update the existing 1992 BV-24 Management Plan, Engineering Narrative, and Opinion of Probable Cost to current operation and maintenance design standards for the BV-24A site.

4.1 Site Management Plan

Taylor Engineering will update the previous 1992 BV-24 Site Management Plan for the revised site placement and design of the BV-24A site. Major design features will include the design and analysis of pre-dredging site preparation and major design features, operation considerations during dredging, and post-dredging site management.

4.2 Engineering Narrative

Based on the updated Site Management Plan for the BV-24A site, we will update the Engineering Narrative for eventual incorporation into the BV-24A permit application package.

4.3 Cost Report

This subtask involves the update of the 1992 BV-24 cost report. An evaluation of the opinion of probable cost for BV-24A site will include costs related to site improvement, operation, and maintenance.

DOCUMENTS AND DELIVERABLES

Based on the completion of Tasks 1 – 4, Taylor Engineering will prepare and submit the following project documents for the BV-24A site:

A. Site boundary and topographic survey with legal description
B. Environmental Documentation Report
C. Phase I Site Environmental Assessment Report
D. Preliminary Permit-Level Drawings
E. Site Management Plan
F. Engineering Narrative
G. Cost Report

ATTACHMENT B

TAYLOR ENGINEERING, INC.
COST SUMMARY BY TASK
P2009-118 / P2013-023: BV-24A PHASE II DOCUMENTATION

TASK 1: PREPARATORY DOCUMENTATION

Labor	Hours	Cost	Task Totals
Senior Advisor	2.00	354.00	
Senior Professional	4.00	516.00	
Staff Professional	16.00	1,376.00	
Senior Technician	8.00	720.00	
Total Man-Hours	30.00		
Labor Cost			2,966.00
Total Task 1			2,966.00

TASK 2: EVALUATE EXISTING SITE CONDITIONS

Labor	Hours	Cost	Task Totals
Senior Advisor	4.00	708.00	
Director	14.50	2,233.00	
Senior Professional	110.00	14,190.00	
Staff Professional	162.00	13,932.00	
Technical Editor	10.00	990.00	
Senior Technician	4.00	360.00	
Staff Technician	8.00	520.00	
Administrative Support	10.00	560.00	
Total Man-Hours	322.50		
Labor Cost			33,493.00

Non-Labor	Units	Cost
2.1 Boundary & Topo Survey	1.0	53,740.00
ENVIRONMENTAL SITE DOCUMENTATION	-	-
2.2.1.1 ATV rental and gas (per week)	2.0	600.00
2.2.1.1 GPS use rental (days)	5.0	500.00
Meals (2 people 5 days)	10.0	450.00
Hotel - 2 people 4 nights	8.0	800.00
Field Supplies	5.0	50.00
Vehicle gas (5 days)	50.0	125.00
ATV Trailer Rental (7 days-Uhaul	7.0	192.50
2.2.1.4 Normandeau Scrub Jay Survey	1.0	27,200.00
2.2.1.4 Teleconference (1 hour)	1.0	300.00
2.2.2.1 Records Search (EDR)	1.0	175.00
Car Rental	2.0	170.00
Per Diem (2 people for 2 days)	4.0	140.00
Historical Map/Aerial Purchase	1.0	50.00

ATTACHMENT B

P2009-118 / P2013-023: BV-24A PHASE II DOCUMENTATION

Non-Labor Cost	84,492.50	
Fee @ 10.0%	8,449.25	
Total Non-Labor Cost		92,941.75
Total Task 2		126,434.75

TASK 3: PRELIMINARY DESIGN AND ANALYSIS

Labor	Hours	Cost	Task Totals
R. Bruce Taylor, Ph.D.	4.00	1,224.00	
Senior Advisor	5.00	885.00	
Senior Professional	36.00	4,644.00	
Staff Professional	88.00	7,568.00	
Senior Technician	60.00	5,400.00	
Total Man-Hours	193.00		
Labor Cost			19,721.00
Total Task 3			$ 19,721.00

TASK 4: UPDATE ORIGINAL REPORT DOCUMENTATION

Labor	Hours	Cost	Task Totals
R. Bruce Taylor, Ph.D.	1.50	459.00	
Senior Advisor	5.00	885.00	
Senior Professional	36.00	4,644.00	
Staff Professional	124.00	10,664.00	
Technical Editor	14.00	1,386.00	
Administrative Support	12.00	672.00	
Total Man-Hours	192.50		
Labor Cost			18,710.00
Total Task 4			$ 18,710.00

Project Total $ 167,831.75

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

25 Nashua Road
Bedford, New Hampshire 03110
Tel (603) 472-5191 Fax (603) 472-7052
www.normandeau.com

13 February 2013

Dr. David Stites
Taylor Engineering, Inc.
10151 Deerwood Park Blvd.
Bldg. 300, Suite 300
Jacksonville, FL 32256

Re: Brevard County Scrub-jay Survey

Dear Dr. Stites,

Normandeau Associates, Inc. appreciates the opportunity to propose on completing this Scrub-jay assessment in Brevard County. The project will be led by Adam Kent, MS, a senior ornithologist and the former Florida Scrub-jay coordinator for the FFWCC.

Normandeau will be able to complete the project for a not to exceed amount of $27,200.

Task 1: Habitat Mapping- $4,700
Task 2: Scrub Jay Population Mapping- $15,100
Task 3: Final Products Development- $7,400

We will map habitat within BV-24A property the property using a minimum 0.1 acre mapping unit, following methods described by Breininger et al. (2006). In addition to analysis of aerial imagery that will be conducted before the scrub-jay surveys, we will conduct a limited on-site ground evaluation of habitat types in the afternoons after jay surveys have finished for the day.

We conservatively estimate 60 scrub-jay survey points within the BV-24A property. We estimate 15 minutes to complete each point including travel time between points which equates to 3 field staff being needed to complete all the points in the morning per the prescribed methods. We plan to follow the USFWS Florida Scrub-Jay Survey Guidelines, which stipulates that each point be surveyed 5 times. If after being awarded the project, we determine through consultation with you Taylor Engineering, the Client, or USFWS that less than 60 points are needed to be surveyed or that the USFWS Guidelines don't need to be strictly adhered to, we will be able to reduce the overall budget. Our cost proposal assumes that all the field work is completed over a consecutive 6 day period. In addition, our scope does not include any in-person meetings with Taylor Engineering, the Client, or the USFWS other than what might occur onsite during the field work.

At the conclusion of the project, we will provide the following 2 products both in paper format and on CD:

1. A final report containing a Methods section summarizing mapping and fieldwork methods as well as a table with a total scrub-jay population estimate for the site, including number of scrub-jay

family groups and number of birds per group. This table will be linked to shapefiles showing locations of scrub-jay family groups.

2. ESRI software format shapefiles with metadata file providing source spatial, tabular, and projection information for the following habitat types for the BV-24A area:
    - Oak scrub (>50% scrub oak cover).
    - Oak-palmetto scrub (30-49% scrub oak cover)
    - Pine flatwoods (<30% scrub oak cover)
    - Ruderal
    - Marsh

Subsequent to review of these two products by Taylor Engineering, Normandeau staff will address comments and provide a final report and shapefiles within 7 working days.

Regards,

Christian Newman, MS, MBA
Vice-President

Adam M. Kent
Ornithologist/Ecologist

Adam Kent is an Ornithologist/Ecologist with Normandeau Associates with more than 20 years of professional experience. His background includes conducting a variety of bird surveys including for Florida Scrub-Jays and others. He has instructed on many ecological topics for diverse audiences, including lectures on Florida Scrub-Jay natural history and land management, and has written educational materials, bird management plans and risk assessments. He wrote "Scrub management guidelines for Peninsular Florida: using the scrub-jay as an umbrella species" in cooperation with the Florida Natural Areas Inventory while with the FWC.

With the Florida Fish and Wildlife Conservation Commission he worked as a wildlife biologist in various capacities including as the statewide Scrub-Jay Conservation Coordinator, with the State Wildlife Grants Program, on the development of the Great Florida Birding Trail, creating bird lists for wildlife management areas statewide and developing educational programs about birds.

When not working on a wide variety of environmental projects, Mr. Kent leads natural history tours throughout the Americas. Recordings he made in southern Mexico led to the description of a new species of bird.

SELECTED PROJECT EXPERIENCE

Coordinator of Scrub-Jay Conservation, Florida Fish and Wildlife Conservation Commission (2006-2008)— Censused and mapped territories of Florida Scrub-Jays throughout their range, including habitat mapping and vegetation characterization. Organized and led three scrub/upland working groups; Northeast, Southwest, and West Central Florida. Developed website for Scrub-Jay conservation. Wrote "Scrub Management Guidelines" and advised land managers on scrub management. Reviewed scrub-jay grant proposals and reports. Scrub-Jay Conservation Coordinator.

Least Tern nesting characterization, Florida, confidential client (2012)—wrote report on Least Tern nesting behavior and substrates. Project Ornithologist.

Inland Avian Predation Management Plan, Washington, US Army Corps of Engineers (2012)—Wrote Caspian Tern adaptive management plan. Participated in working group meetings with stakeholders and agencies to develop management plan for breeding seabirds. Lead Ornithologist.

EDUCATION

M.S.	1995, Natural Resource Conservation, University of Florida
M.Ed.	1992, Social Studies Education, University of Florida
B.A.	1991, History, University of Florida

PROFESSIONAL EXPERIENCE

2012–Present	Ornithologist/Ecologist, Normandeau Associates
2000–2011	Wildlife Biologist, Florida Fish and Wildlife Conservation Commission
1998–2006	Associate Environmental Consultant, Pandion Systems, Inc.
2000–2006	Independent environmental consultant for various projects (USA, Brazil)
2005	Professor Environmental Science, Santa Fe Community College
1997–1998	Instructor, RARE Center for Tropical Conservation (Mexico)
1996–1997	Teacher (Spanish), P.K. Yonge Laboratory School
1996	Co-leader of Florida Museum of Natural History expedition to Bolivia
1995	Instructor, Silver Springs
1993–1995	Instructor, Indiana University Tropical Biology course (Costa Rica)
1993	Naturalist, Rara Avis (Costa Rica)
1983–Present	Natural history tour leader (USA, Canada, Central & South America)

PROFESSIONAL AFFILIATIONS

Florida Ornithological Society (President 2010–2012)

Alachua Audubon Society (Board member 2006–2012)

Society for the Conservation and Study of Caribbean Birds

Western Field Ornithologists

Seabird Database, Atlantic Outer Continental Shelf, Bureau of Ocean Energy Management (BOEM), US Department of Interior (2012)—Designed database to assess the relative vulnerability of seabirds and other migratory birds to offshore renewable energy products. Project Ornithologist.

Environmental Sensitivity Analysis, all BOEM offshore planning areas, BOEM (2012)—Contributed to development of new method to assess environmental sensitivity (vulnerability and resilience) of seabirds for oil, gas and renewable energy activities. Project Ornithologist.

Avian Risk Assessment, three southeastern states, Wind Capital Group (2012)—Developed, compiled and authored avian risk assessments for all species of birds in several project areas. Project Ornithologist.

Avian Risk Assessment, Florida, Wind Capital Group (2012)—Developed and authored avian risk assessments for two species of birds and assisted in project data analyses. Project Ornithologist.

Acoustic/Thermographic Offshore Monitoring, US, BOEM (2012)—Contributed to design of bird monitoring system components, including information gathering and synthesis; technology development, testing, system characterization, and deployment; data gathering for offshore wind wildlife risk characterization; data analysis and interpretation. Project Ornithologist.

Bald Eagle Nest Monitoring, Louisiana and Alabama, Wind Capital Group (2012)—Conducted aerial searches for nesting Bald Eagles and assessed habitat suitability. Collected detailed data on potential nest tree structure and other habitat characteristics. Maintained data sheets and coordinated with local biologists on data collection and reporting. Project Manager.

Monk Parakeet Surveys, Florida, Florida Power and Light (2003-2004)—Conducted Monk Parakeet status assessments including searching for nests on transmission towers, distribution poles, and substations. Conducted analysis of nest abundance. Developed detailed report describing results. Project Ornithologist.

Grant Proposal Development and Review, Florida, Florida Fish and Wildlife Conservation Commission (2008–2011)—Sought and assisted with writing grants. Reviewed proposals and grant reports. Wildlife Legacy Biologist.

Support of various wildlife and biodiversity projects including Wildlife Conservation Prioritization and Recovery; and shorebird, upland, and climate change working groups; and species habitat management plans for the Florida Fish and Wildlife Conservation Commission (2008–2011)—Developed and lead, co-lead, or was member of Coastal Team, Shorebird Team, Nature Coast Shorebird Partnership, Upland Goal Team, and Climate Change working groups. Contributed to revising and implementing Florida's State Wildlife Action Plan; project lead on Salt Marsh Songbird Management Plan. Team member on team for evaluating Best Management Practices for biodiversity on agricultural lands. Monitored coastal and upland birds at Wildlife Management Areas, for example, conducted point counts at Hickory Mound WMA. Assisted with vegetation surveys. Wildlife Legacy Biologist.

Breeding Bird Surveys, U.S. Geological Survey (1993-present)—Conducted Breeding Bird Surveys in North Florida. Bird surveyor.

Tour leader for natural history trips for Alaska Wildland Adventures and other groups at sites from the Arctic to the southern South America, including; Canada, Costa Rica, Mexico, Peru, Spain, Chile and the United States. Trained new guides. Managed budgets. Responsible for trip logistics, transportation, contracted services. Conducted bird surveys and entered information in database during tours (1983–present).

Naturalist Training Workshops, Florida, Pandion Systems, Inc. (1998–2006)—Co-led naturalist training workshops, for The Nature Conservancy and other organizations. Associate Environmental Consultant.

Ecotourism consultant, Brazil, private client (2006)—Evaluated tourism potential (particularly for birds) of remote fishing lodge in Brazilian Amazon. Ecotourism consultant.

Marbled and Kittlitz's Murrelet Surveys, Alaska, US Fish and Wildlife Service (2005)—Surveyed for both species of murrelet by boat. Volunteer Bird Identification Expert.

Taught Environmental Science, Santa Fe Community College (2004) —Taught students of all ages on main campus. Professor.

Naturalist Guide Trainings, Baja California, Mexico, RARE Center for Tropical Conservation (1997–1998)—Taught guiding skills, natural history, shorebird identification, and English components of a naturalist guide training program. Coordinated remote community-based guide-training segments of course.

Ornithological Expedition to Bolivian Altiplano, Florida and Bolivia, Florida Museum of Natural History (1996)—Investigation of present and past avifauna of the region. Conducted censuses, mist netted, collected, and prepared study skins of birds, published paper on results. Expedition Co-leader.

Silver Springs Environmental Education Program. Silver Springs, Florida (1995)—Instructed and supervised within a zoo environment, developed educational material, created curricula for all ages. Instructor.

Evaluation of Interpretation, J. N. "Ding" Darling National Wildlife Refuge, Florida, US Fish and Wildlife Service (1995)—For Master's Thesis, developed, administered and analyzed a survey that evaluated all ways the refuge presented information to the public. Studied environmental interpretation and recreational use of natural areas. Master's Candidate.

Collections assistance in Ornithology Collection, Florida Museum of Natural History, Gainesville, Florida (1993–1995)—Catalogued bird skins and sounds and reference materials. Curatorial Assistant.

Indiana University Field Biology Program, Costa Rica, Indiana University (1993–1995)—Taught tropical biology course, organized group field activities, led workshops on ecological principles, provided plant and animal identification. Instructor.

Bird surveyor, University of Florida (1994-1995)—Surveys birds in logged and unlogged cypress domes. Bird surveyor.

Resident Naturalist at Rara Avis in Costa Rica. Managed lodge, developed interpretive programs, trained guides, led nature walks (June–August 1993).

Volunteer bird expert for ECOSFERA/Pronatura in Chiapas, Mexico (1992)—Conducted research on rare of wren. Made recording of wren's song that led to elevation of wren to full species status. Lived in cloud forest reserve for two months and conducted censuses of birds.

In addition to the above position, worked as an independent Environmental Consultant or Independent Contractor for such organizations as:

Florida Fish and Wildlife Conservation Commission. Projects included conducting field surveys of birds and compiling bird lists for Wildlife Management Areas; identifying and evaluating important sites for the Great Florida Birding Trail; writing *Bird Detective: A Guide for Identification of Florida Birds*; and conducting Junior Birder activities both in classrooms and in the field with children ages 3 to 18 (2000–2006).

Center for Avian Conservation: Mapped Florida Scrub-Jay territories and documented jay behaviors (2001–2002).

Taylor County Tourism Development Board. Developed an inventory of birds at sites around the county and evaluated birding tourism potential at these sites (2001).

Florida State Park System. Monitored shorebird disturbances at a state park (2001) and presented bird identification and natural history classes to park personnel (2005-present).

SPECIAL TRAINING

Red Cross First Aid and CPR Certified (2012)

Florida Fish and Wildlife Conservation Commission Facilitator Trained (2010)
Florida Teacher Certification Exam passed (1995)

SELECTED PRESENTATIONS

More than 100 presentations on bird identification (including shorebirds and other coastal birds), ecology and conservation, both in the US and abroad (1992-present).

Distribution, relative abundance, and prehistory of birds on the Taraco Peninsula, Bolivian altiplano (1996) in Spanish at National Museum in La Paz, Bolivia.

SELECTED PEER-REVIEWED ARTICLES AND PUBLICATIONS

Kent, A. M., and C. Kindell. 2009. Scrub management guidelines for Peninsular Florida: using the scrub-jay as an umbrella species. Florida Fish and Wildlife Conservation Commission.

Kent, A. M., T. Webber, and D. W. Steadman. 1999. Distribution, relative abundance, and prehistory of birds on the Taraco Peninsula, Bolivian altiplano. Ornitología Neotropical. 10:151–178.

Atkinson, P. W., M. J. Whittingham, H. G. De Silva G., A. M. Kent, and R. T. Maier. 1993. The taxonomic status of the genus *Hylorchilus* with notes on its ecology and conservation. Bird Conservation International. 3:75–85.

LANGUAGE PROFICIENCY AND INTERNATIONAL EXPERIENCE

Languages
- English (first language)
- Spanish (fluent)
- Portuguese (conversational)
- Japanese (basic)

Countries in which research and/or other work performed
- Bolivia
- Brazil
- Canada
- Chile
- Costa Rica
- Ecuador
- Mexico
- Peru
- USA

MORGAN & EKLUND, INC.
PROFESSIONAL SURVEY CONSULTANTS

February 18, 2013

Taylor Engineering, Inc.
ATTN: Ms. Lori Brownell, P.E
10151 Deerwood Park Blvd., Bldg. 300, Suite 300
Jacksonville, Florida 32256

RE: Boundary and Topographic survey of Dredged Material Management Area BV-24A, Brevard County, Florida

Dear Lori:

Morgan & Eklund, Inc. is pleased to provide you with the following proposal to furnish professional survey services for the above-referenced project.

In accordance with the scope of work as provided, I estimate our costs to be as follows:

I. Boundary survey of 117 acre parcel as shown on the attached exhibit together with sketch of description for the remainder of Area 3

A. Field work

Chief Surveyor
4 hours @ $135/hr..... $ 540.00

Project Surveyor
20 hours @ $75.00/hr..... $ 1,500.00

Three Man Survey Crew
80 hours @ $135/hr..... $10,800.00

Trimble RTK
5 days @ $450.00/day..... $ 2,250.00
Total A..... $15,090.00

B. Data reduction & plotting

Chief Surveyor
8 hours @ $135/hr..... $ 1,080.00

Project Surveyor
32 hours @ $75.00/hr..... $ 2,400.00

8745 U.S. HIGHWAY 1, P.O. BOX 701420, WABASSO, FL 32970-1420 • PHONE: (772) 388-5364 • FAX: (772) 388-3165 • jmorgan@morganeklund.com
1500 S.E. COURT, SUITE 110, DEERFIELD BEACH, FL 33441 • PHONE: (954) 421-6882 • FAX: (954) 421-0451 • pvoute@morganeklund.com

Computer Technician
40 hours @ $65/hr .....$ 2,600.00
Total B.....$ 6,080.00

Total Cost I A & B .....$ 21,170.00

II. Topographic survey of 84 acre parcel for the Dredged Material Management Area (DMMA) as shown on the attachment exhibit

A. Field work

Chief Surveyor
8 hours @ $135/hr .....$ 1,080.00

Project Surveyor
40 hours @ $75.00/hr .....$ 3,000.00

Three Man Survey Crew
120 hours @ $135/hr $16,200.00

Trimble RTK
9 days @ $450.00/day .....$ 4,050.00
Total A .....$ 24,330.00

B. Data reduction & plotting

Chief Surveyor
8 hours @ $135/hr .....$ 1,080.00

Project Surveyor
40 hours @ $75.00/hr .....$ 3,000.00

Computer Technician
64 hours @ $65/hr .....$ 4,160.00
Total B.....$ 8,240.00

Total Cost II A & B .....$ 32,570.00

Total Cost I - II .....$ 53,740.00

Taylor Engineering
February 18, 2013
Page (3)

As always, Morgan & Eklund, Inc. appreciates this opportunity to work with you and the Florida Inland Navigation District on this project.

Sincerely,

John R. Morgan, II, PLS
President

JRM:adf

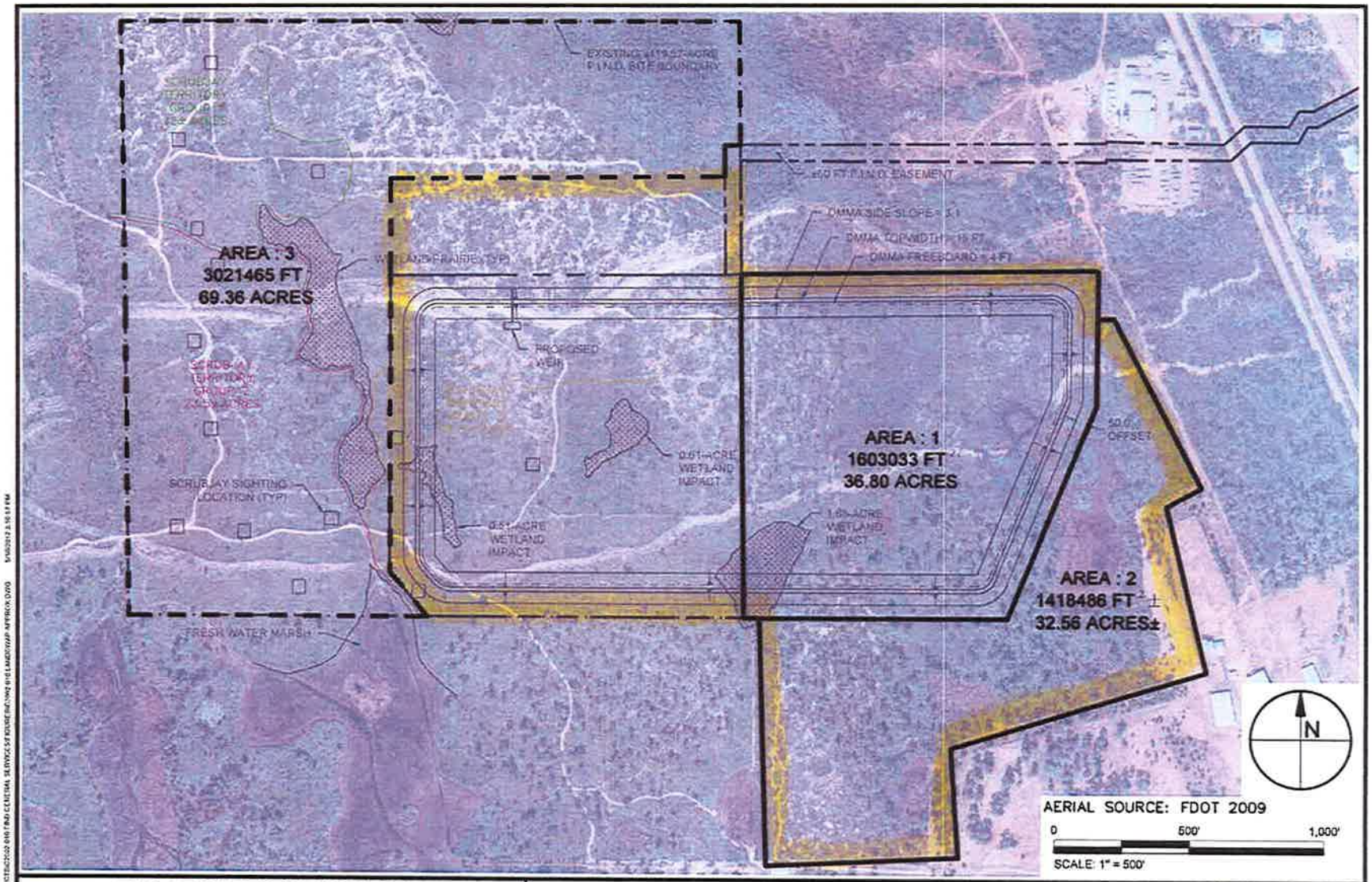


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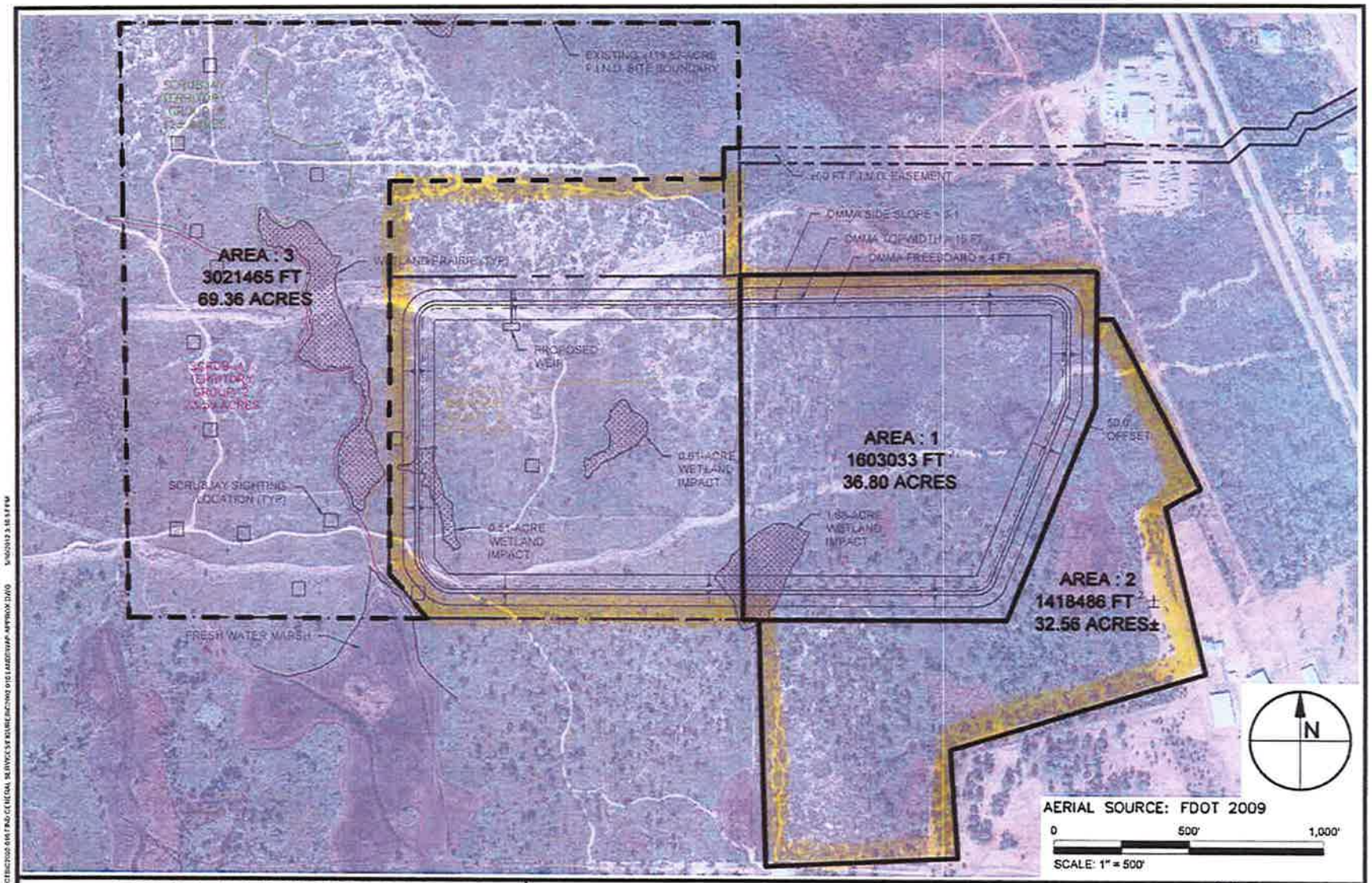
FIGURE 1
OPTIONAL LAND SWAP
BV-24 DREDGED MATERIAL MANAGEMENT AREA
BREVARD COUNTY, FL

PROJECT	C2002-016
DRAWN BY	CAS
SHEET	1 of 1
DATE	MAY 2012



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JACKSONVILLE, FL 32256
CERTIFICATE OF AUTHORIZATION # 4615

FIGURE 1
OPTIONAL LAND SWAP
BV-24 DREDGED MATERIAL MANAGEMENT AREA
BREVARD COUNTY, FL

PROJECT	C2002-016
DRAWN BY	CAS
SHEET	1 of 1
DATE	MAY 2012

FLORIDA INLAND NAVIGATION DISTRICT

February 6, 2013

To: Monitoring Well Sampling Bidders
From: Mark M. Tamblyn, Field Projects Coordinator
Subject: Duval & St. Johns County Dredge Material Management Areas Sites DU-2, 6, 8, 9 & SJ- 14.

Enclosed are the bid documents for the referenced project. **Bids are due in the District office no later than 2:00 PM on March 6, 2013.** A bid will consist of the completed bid submittal form. Bids may be faxed, mailed or hand delivered.

There will be one award of this contract to the lowest qualified bidder, however, the District reserves the right to not award a contract based on its discretion. The District also reserves the right to expand or reduce the scope of work of this contract upon negotiation with contractor.

Please contact me should you have any questions concerning this matter.

FLORIDA INLAND NAVIGATION DISTRICT
Duval & St. Johns County
Monitoring Well Sampling
Bid Package
February 6, 2013

SCOPE OF WORK
MONITORING WELL SAMPLING
DMMA'S DU-2, 6, 8, & 9 & SJ-14
Duval & St. Johns County, Florida
February 6, 2013

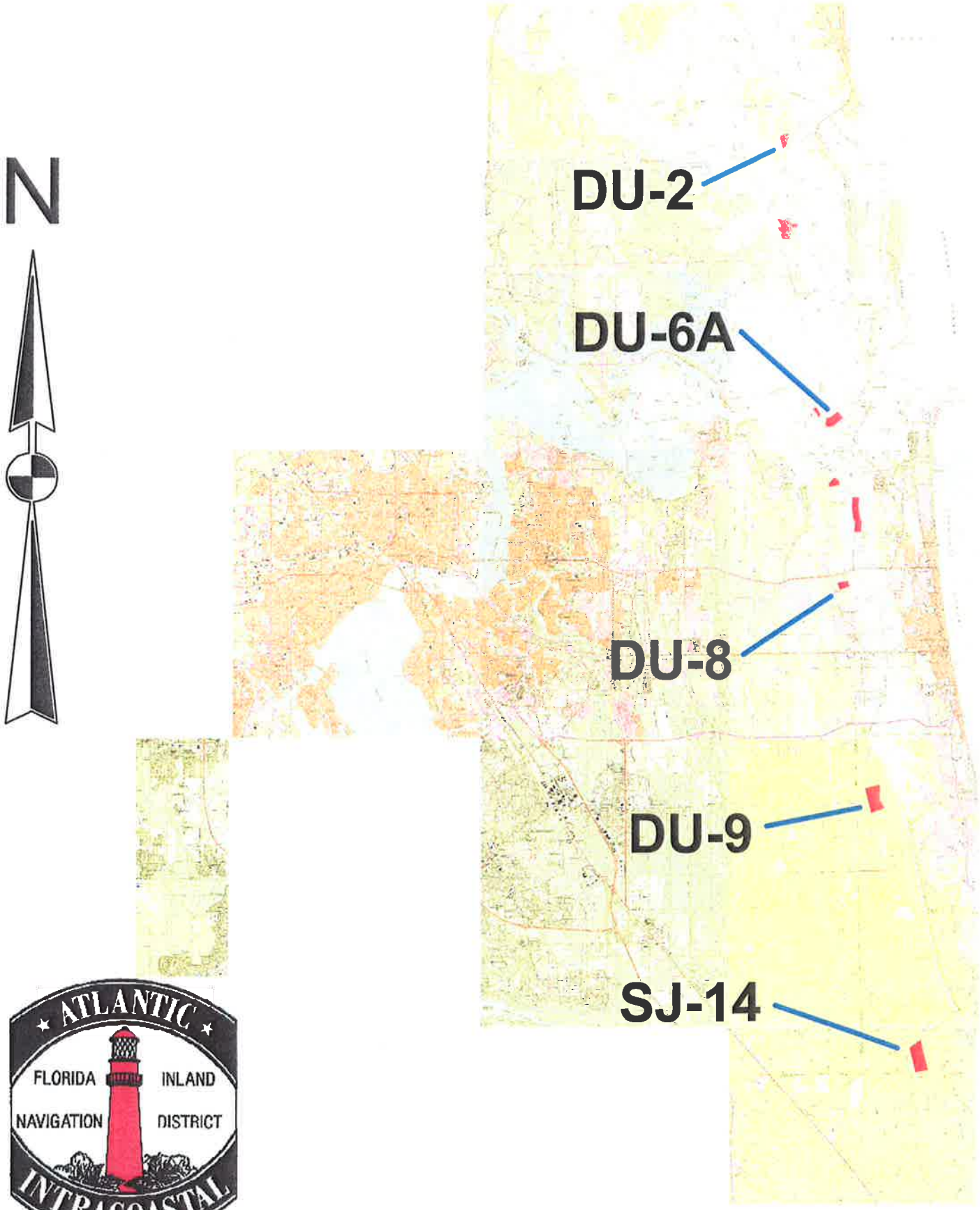
Dredge Material Management Areas DU-2, DU-6, DU-8, DU-9 are located in Duval County, and SJ-14 is located in St. Johns County Florida. The specific locations of the five sites are referenced in Attachments A, B, C, D, E, and F.

The contractor will sample the thirty (30) monitoring wells located on the subject sites on a quarterly basis for (3) three years. The sampling will be conducted under Florida Department of Environmental Protection, Standard Operating Procedures (FDEP-SOP-001/01), FS-2200 for groundwater sampling. The sampling analysis will consist of chloride, PH, TDS, and turbidity.

A field sampling data sheet will be prepared for each well sampled that will include depth to water and a calculation of well volume for purging. One field equipment blank and one duplicate sample will be taken during each quarterly sampling round in order to meet Quality Assurance/Quality Control (QA/QC) requirements. Each sample will be analyzed by a state certified testing laboratory in accordance to the following: EPA Method 300 for dissolved chloride, EPA Method 150.1 for PH, EPA Method 160.1 for TDS, and EPA Method 180.1 for turbidity. A Chain of Custody form will be completed properly identifying sample locations, sample type, sampler, etc.

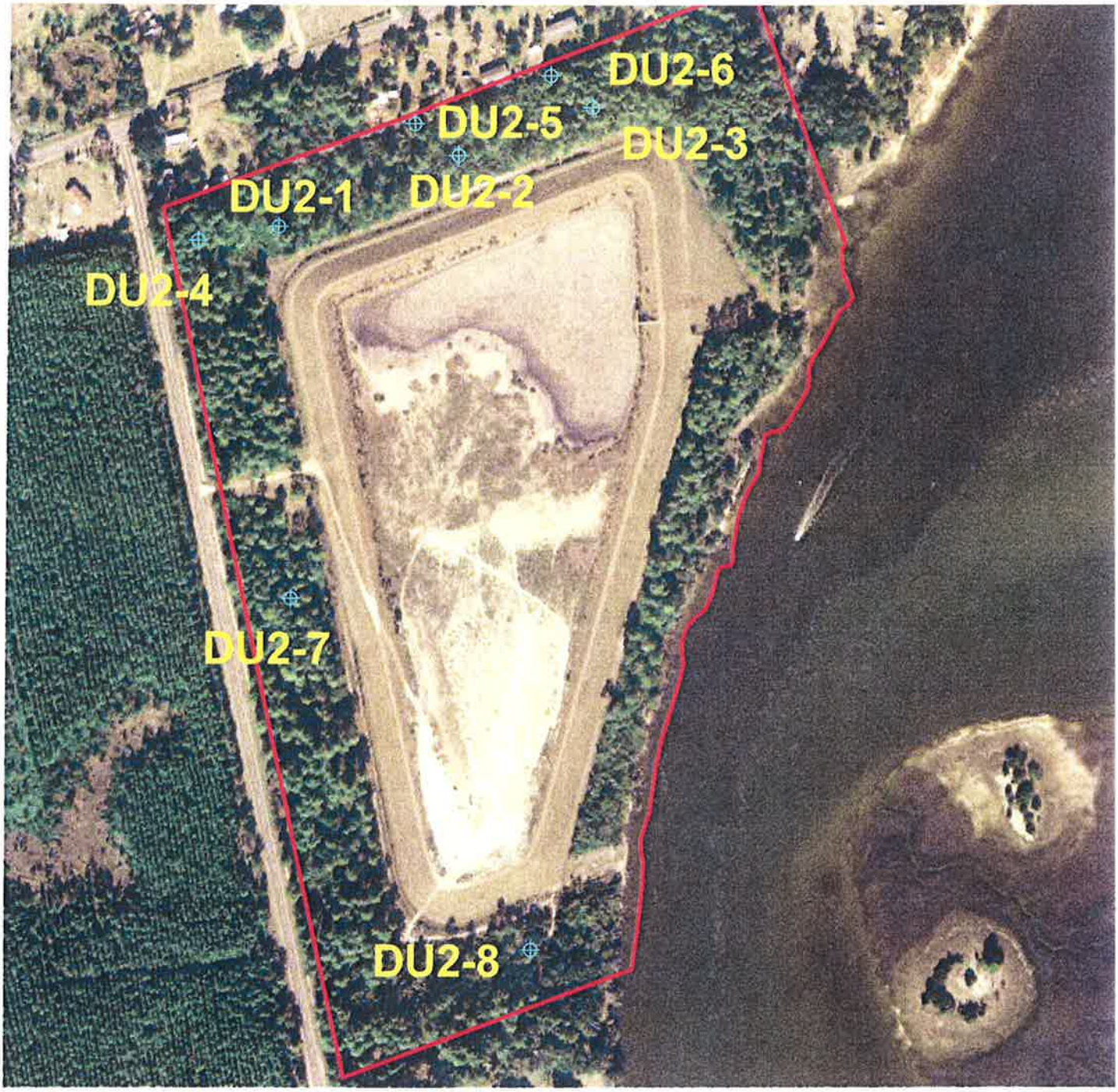
Quarterly results will be reported in a cumulative table. Original copies of laboratory data and field sampling sheets will be attached to the quarterly report. Each quarterly report will be reviewed, signed and sealed by a State of Florida licensed Professional Geologist. The District requires the report be submitted within 15 days of completion of sampling.

ATTACHMENT A
DISTRICT WELL MONITORING SITES



ATTACHMENT B

DUVAL COUNTY DU-2 MONITORING WELLS



ATLANTIC FLORIDA INLAND NAVIGATION DISTRICT INTRACOASTAL

N
W E
S

LEGEND

WELL LOCATION

FIND PROPERTY

ATTACHMENT C
DUVAL COUNTY DU-6 MONITORING WELLS

ATLANTIC FLORIDA INLAND NAVIGATION DISTRICT INTRACOASTAL

N
W E
S

LEGEND

WELL LOCATION

FIND PROPERTY

ATTACHMENT D

DUVAL COUNTY DU-8 MONITORING WELLS

ATLANTIC FLORIDA INLAND NAVIGATION DISTRICT INTRACOASTAL

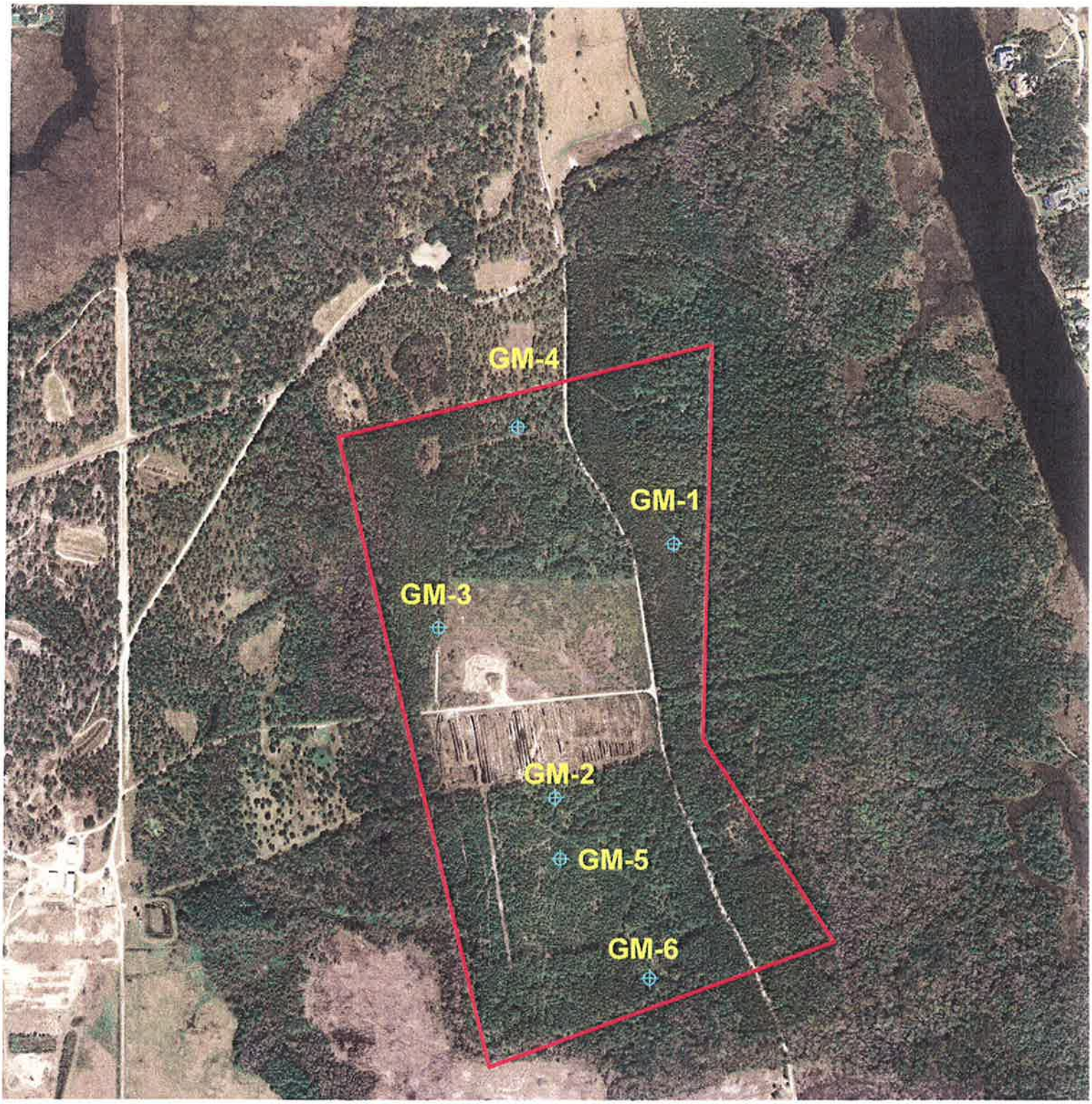
N
W E
S

LEGEND

- WELL LOCATION
- FIND PROPERTY

ATTACHMENT E

DUVAL COUNTY DU-9 WELL MONITORING



ATLANTIC FLORIDA INLAND NAVIGATION DISTRICT INTRACOASTAL

N
W E
S

LEGEND

WELL LOCATION

FIND PROPERTY

ATTACHMENT F

ST.JOHNS COUNTY SJ-14 MONITORING WELLS

ATLANTIC FLORIDA INLAND NAVIGATION DISTRICT INTRACOASTAL

N
W E
S

LEGEND

WELL LOCATION

FIND PROPERTY

FLORIDA INLAND NAVIGATION DISTRICT

MONITORING WELL SAMPLING
DUVAL & ST. JOHNS COUNTY DMMA'S
DU-2, 6, 8, and 9, SJ-14

Bid Submittal Form

Bids are to be made on a total cost basis with an award made to the low qualified bidder.

NAME OF FIRM:_____

ADDRESS:_____

_____

TELEPHONE:_____

REFERENCES: (Name, Address, Phone, Contact Person)

1._____

_____

_____

2._____

_____

_____

COST PER SAMPLING EVENT **$**_____

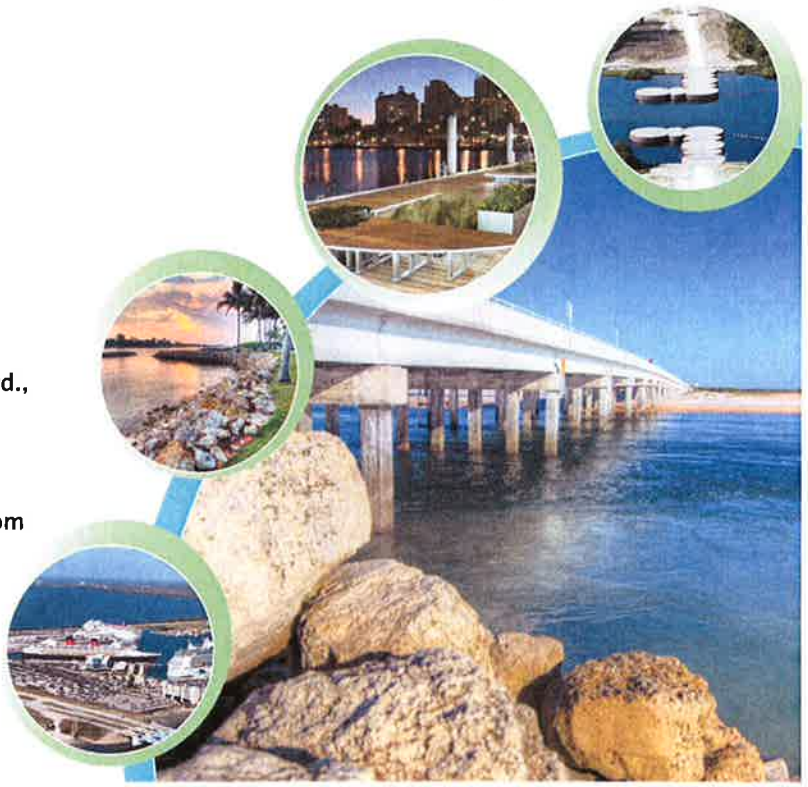
TOTAL PROJECT COST TWELVE (12) SAMPLING EVENTS **$**_____

_____
Signature

_____
Title

FIND Seagrass Mitigation Site Evaluation
Final Report
Martin County, Florida

February 2013



10151 Deerwood Park Blvd.,
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(904) 731-7040
www.taylorengineering.com

FIND Seagrass Mitigation Site Evaluation

Final Report

Martin County, Florida

Prepared for

Florida Inland Navigation District

by

Steven J. Schropp, Ph.D.
David L. Stites, Ph.D.
Christopher B. Ellis

Taylor Engineering, Inc.
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Bldg. 300, Suite 300
Jacksonville, FL 32256
(904) 731-7040

November 2012

C2012-038

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

The Florida Inland Navigation District (FIND) retained Taylor Engineering to perform a preliminary evaluation of FIND properties and easements in Martin County to identify potential opportunities for seagrass mitigation (i.e., creation or restoration of seagrass habitat). Future operations in the Intracoastal Waterway (ICWW) may require mitigation for unanticipated disturbance of seagrass beds. This report provides a preliminary estimate of FIND-controlled sites that could provide seagrass mitigation opportunities. FIND may elect to formally designate these sites as required for the future maintenance of the ICWW to ensure that these properties are not sold or released without a full understanding of their value to the waterway.

Taylor Engineering used readily available information about property ownership and environmental characteristics to perform a "desktop" evaluation of potential seagrass mitigation sites. Taylor Engineering focused on the following objectives to complete the desktop analysis.

- Review maps showing FIND-owned or controlled parcels within Martin County and identify those with potential for seagrass mitigation.
- Develop site-specific quantitative assessments of each potential seagrass mitigation location.
- Report on the assessments including summaries of each site and task.

2.0 METHODS

Taylor Engineering reviewed U.S. Army Corps of Engineers (USACE) real estate maps of Martin County that show FIND and USACE properties and easements. The real estate maps — originally prepared in the middle of the last century and updated at various times since — provide the best property information available. The maps — scanned, georeferenced, and defined as a layer in ARC GIS — formed the basis for an ARC GIS map from which Taylor Engineering environmental staff could identify and evaluate potential seagrass mitigation sites. FIND provided a GIS shape file of FIND easements and ownerships. Staff obtained available Florida Fish and Wildlife Conservation Commission (FWC) seagrass GIS data through FGDL (Florida GIS Data Library http://www.fgdl.org/metadataexplorer/explorer). Proximity of existing seagrass communities to a potential seagrass mitigation site provided useful information in evaluating the likelihood of seagrass recruiting into a newly created or restored seagrass habitat.

Our initial review of these materials focused on identifying sites potentially offering seagrass mitigation opportunity through conversion of upland to submerged habitat, based on the following attributes:

- Map information indicating that the property is under FIND ownership or easement
- Immediately adjacent to open water, preferably the Intracoastal Waterway (ICWW) navigation channel
- Occurrence of seagrass in the local area (based on FWC seagrass maps)
- Evidence of disturbance (e.g., spoil mounds) or exotic vegetation (e.g., Australian pine)

Notably, FIND has easements over hundreds of acres of open water next to the ICWW that may provide some additional opportunities for seagrass mitigation. These opportunities can only be determined through field investigation and are not evaluated in this report.

After identifying properties with seagrass mitigation potential, Taylor Engineering biologists examined current and historic aerial photography of the properties to develop the following information:

- Apparent floral and faunal communities associated with the property
- Area available for seagrass mitigation (i.e., upland area suitable for conversion to shallow submerged habitat
- Potential seagrass habitat creation or restoration methods
- Potential natural resource impacts associated with seagrass habitat mitigation at each site
- Other potential issues or analyses necessary to consider in developing the site

Google Earth™; National Wetland Inventory (NWI) maps; and Florida Land Use, Cover, and Forms Classification System (FLUCCS) descriptions provided the information used to evaluate the properties. Narrative descriptions and graphics below summarize the project findings.

The specific seagrass mitigation area estimates developed from the above information include a relatively large degree of uncertainty that only site visits could resolve. Verification of the mitigation area estimates would require a field investigation of each candidate site.

3.0 RESULTS AND DISCUSSION

3.1 Seagrass Mitigation Concept

FIND holds a number of properties and easements along the ICWW. Some of these properties and easements include overgrown spoil islands or other upland features. When adjacent to a water body, particularly (but not necessarily) the ICWW, removal of upland vegetation and excavation to elevations suitable for seagrass (about 1 – 3 ft below mean low water) could create seagrass habitat. Excavation would likely include intertidal areas connecting the created area with open water to allow the water circulation necessary to maintain water quality conditions and to provide access for seagrass propagules.

If viable seagrass patches occur near a mitigation site, seagrass propagules would likely colonize the newly created submerged substrate. The same sort of seagrass creation has had success elsewhere (e.g., Palm Beach County Snook Islands Restoration Project).

3.2 FIND Properties and Easements

Seven USACE real estate maps supplemented with ArcGIS shapefiles provided the locations of FIND-controlled properties for Taylor Engineering's review. Figure 1 (Appendix A) shows the properties reviewed as potentially having areas suitable for seagrass mitigation. GIS analysis identified 74.67 acres of potential seagrass mitigation areas at 15 different locations within these properties. We assigned a Mitigation Site Name, based on the FIND parcel designation, to each of the 21 potential seagrass mitigation sites. Figures 2 – 7 show the locations of the potential mitigation sites and seagrass beds mapped by the FWC. Table 1 lists potential seagrass mitigation sites on parcels controlled by FIND. For the reader's convenience, the table and related discussions present the sites from north to south.

Figures 1 – 7 also show the locations of FIND's open water easements. These easements, though not evaluated in this report, may also offer future seagrass mitigation opportunities.

The sites fall into a set of 6 large sites (greater than 4 acres) and a second set of 15 smaller sites (less than 3 acres). Generally, the larger sites likely offer better mitigation potential. All sites occur on properties bordering the ICWW or immediately adjacent waters. Mitigation site acres shown in Table 1 are approximate. Only a site visit will verify the assumed plant signatures and provide the information necessary to make a decision concerning construction of seagrass habitat at any particular site.

Table 1 Potential FIND Seagrass Mitigation Sites

Mitigation Site Name	FIND Control[1]	Mitigation Area (acres)
SG MSA 500-B-1[2]	O	12.46
SG MSA 500-B-2[2]	O	1.03
SG MSA 500-B-3[2]	O	0.83
SG MSA 500-B-4[2]	O	1.35
SG MSA 500-B-5[2]	O	1.32
SG MSA 500-B-6[2]	O	4.37
SG MSA 500-B-7[2]	O	2.89
SG MSA 501-B-1[2]	E	0.78
SG MSA 501-B-2[2]	E	7.99
SG MSA 501-B-3[2]	E	7.83
SG MSA 501-B-4[2]	E	9.41
SG MSA 502-C-1[2]	E	2.35
SG MSA 502-C-2[2]	E	1.49
SG MSA 504-A&D	O	3.71
SG MSA 504-B&E	O	2.27
SG MSA 505	E	5.72
SG MSA 506	E	0.74
SG MSA 507/507-A	E	3.83
SG MSA 508	E	3.29
SG MSA 519-B-N	O	0.37
SG MSA 519-B-S	O	0.64
Total FIND Seagrass Sites (acres)		**74.67**

[1]O = FIND owned; E = FIND easement
[2]Site is within St. Lucie Inlet Preserve State Park

The dominant vegetation of the sites included two relatively unambiguous signatures — mangrove and Australian pine — used to define possible seagrass mitigation sites. Australian pines clearly dominated the vegetation on some sites, particularly the smaller ones. Other sites, particularly the large ones, included a variety of upland plant signatures including but not necessarily dominated by Australian pine. Mangroves typically bordered the interior (away from the ICWW) edges of the sites and often bordered the edge associated with the ICWW.

Seagrass Mitigation Sites SG MSA 500-B-1 – SG MSA 500-B-6

These sites occur just south of FIND DMMA MSA M-5. They occur on old spoil sites immediately adjacent to the ICWW (Figures 2, 3). A fringe of mangrove likely occurs at the edges of the sites, including the waterward edge. Comprising 12.46 acres, SG MSA 500-B-1 is the largest of the potential seagrass mitigation sites. SG MSA500B-1, SG MSA 500-B-2, and SG MSA 500-B-6 sites include several plant signatures including Australian pine. Mangroves likely occur along the edges and may occur within the sites as well. SG MSA 500-B-2, SG MSA 500-B-3, and SG MSA 500-B-4 are smaller sites that have distinctive Australian pine signatures. Mangroves likely occur at the borders of these sites as well. Seagrass currently grows along the ICWW near these sites, with particularly abundant coverage immediately adjacent to SG MSA 500B-1.

Seagrass Mitigation Site SG MSA 500-B-7

This site is the only one situated at a location (Figure 2) not bordering the ICWW. A long, thin area on the northern end of MSA 500, the potential seagrass mitigation site borders a narrow channel in which seagrass currently grows. The site has water access and its long shoreline could make vegetation removal relatively easily.

Seagrass Mitigation Sites SG MSA 501-B-1, SG MSA 501-B-2, SG MSA 501-B-3, SG MSA 502-C-1, and SG MSA 502-C-2

These sites, just south of the SG MSA 500 sites, include three large and three small sites consisting of upland areas within a relatively large expanse of wetland (Figure 3). The sites are bordered by the ICWW to the west and otherwise surrounded by mangrove wetlands. SG MSA 501-B-1 has a vegetation signature dominated by Australian pine. The remaining SG MSA 501 sites appear to have a mixed upland vegetation signature, which includes Australian pine, cabbage palm, and shrubs. All have a relatively long border on the ICWW making for easy site access. Seagrasses currently grow along the ICWW bordering the sites.

Seagrass Mitigation Site SG MSA 504-A&D

This small site (Figure 4) appears in the aerial photographs to have a dominant Australian pine signature that suggests an area available for clearing and excavation to create seagrass habitat.

Seagrass Mitigation Site SG MSA 504-B&E

The potential seagrass mitigation site comprises a narrow shoreline along the west side of the ICWW (Figure 4). Australian pines dominate the site. A mangrove swamp separates the site from a nearby residential development. Seagrass occurs adjacent to the site; the site offers potential for expanding the seagrass habitat. Seagrass beds currently surround the site.

Seagrass Mitigation Sites SG MSA 505 and SG MSA 506

These two sites lie in the narrowest portion of Hobe Sound National Wildlife Refuge on Jupiter Island (Figure 5). Both are spoil mounds. If used for seagrass creation, conversion of Site SG MSA 505 would probably include only a fraction of the available site, as conversion of the entire site would create a very narrow section of Jupiter Island potentially at risk of overwash during storms. Site SG MSA 506 comprises about 0.74 acre of the edge of a spoil island next to the ICWW.

Seagrass Mitigation Site SG MSA 507/507-A

This potential mitigation site comprises part of a large spoil island associated with two FIND easements (Figure 5). A fringe of mangrove habitat between the edge of the upland and the ICWW channel reduces the overall usefulness of the site. Nevertheless, the FIND should consider this site for use due to its relatively large area available for mitigation.

Seagrass Mitigation Site SG MSA 508

Site SG MSA 508 provides a seagrass restoration opportunity with water on both sides (the ICWW and another water body connected to the ICWW) (Figure 6). Removing mangroves would allow connection to the other water body.

Seagrass Mitigation Sites SG 5MSA 519-B-N and SG MSA 519-B-S

These two very small sites lie on a small peninsula jutting out into Hobe Sound from its western shoreline (Figure 7). Mangroves separate the sites. Creation of seagrass habitat on either side of the mangrove stand would result in exposure of the mangrove stand to the waves and boat wakes of Hobe Sound. Design of any submersed habitat should consider these energy sources and their effect on the mangroves.

Thirteen of the twenty-one mitigation sites identified occur within St. Lucie Inlet Preserve State Park (Table 1). The park management plan (FDEP 2002) states:

"A portion of the ruderal areas consists of sixteen spoil piles comprising material placed along the Intracoastal Waterway from dredging activities. The remaining areas are wash-over and man-altered areas that parallel the shore (landward of the beach communities). Most of the ruderal areas are dominated by Australian pines with an understory of native hammock species. The Florida Inland Navigation District has proposed to return most of the spoil piles to mangrove forest. The project would begin at the northern end of the park and proceed south. One or two of the larger spoil piles with a healthy understory of native species may be left as hardwood hammock. In the past some canals and ditches were dug in the park to control mosquitoes. These areas have re-vegetated naturally and require no further management actions are currently planned."

The potential seagrass mitigation sites (Table 1) include many of the spoil island sites mentioned in the management plan. The plan further indicates a strong desire to restore the ruderal sites owned by the FIND. The park includes other disturbed areas with exotic vegetation such as Australian pine (*Casuarina equisetifolia*) and Brazilian pepper (*Schinus terebinthifolius*).

4.0 SUMMARY AND RECOMMENDATIONS

Analysis of available data indicated that FIND-owned lands and easements in Martin County near the Intracoastal Waterway include about 75 acres of potential seagrass creation sites. The large majority of the sites occur within the St. Lucie Inlet Preserve State Park. The four largest sites within the park boundaries (SG MSA 500-B-1, SG MSA 501-B-2, SG MSA 501-B-3, and SG MSA 501-B-4) comprise about 38 acres. The park provides an accessible location for the necessary restoration activities (vegetation removal and scrape down to permanently submerged elevations). In addition, the park management plan includes a short discussion of the FIND easements and the expectation of FIND restoration activities on the spoil mounds created during construction of the ICWW. Two other large sites are less desirable than the four mentioned above. Site SG MSA 505 comprises the majority of the barrier island width. Conversion to seagrass habitat could provide a weak point in the barrier island during major storm conditions. Site SG MSA 508 provides an excellent location in terms of the physical location but lies much farther from facilities to dispose of removed materials than the park sites. Should any of these sites appear attractive for future seagrass mitigation, confirmation of their ownership and allowable use status must occur before including them in a seagrass mitigation plan.

FIND should consider formal designation of the sites listed above as potential seagrass mitigation sites to ensure that these properties are not sold or released without a full understanding of their potential to the management of the waterway. The probability of identifying other seagrass mitigation sites is extremely low, so these sites already controlled by FIND are a valuable resource and should be retained to support future ICWW seagrass mitigation needs.

5.0 REFERENCES

Florida Department of Environmental Protection (FDEP) Division of Recreation and Parks 2002. St. Lucie Inlet Preserve State Park Unit Management Plan. Approved 24 October 2002. Available at: http://www.dep.state.fl.us/parks/planning/parkplans/StLucieInletPreserveStatePark.pdf

APPENDIX A

Figures

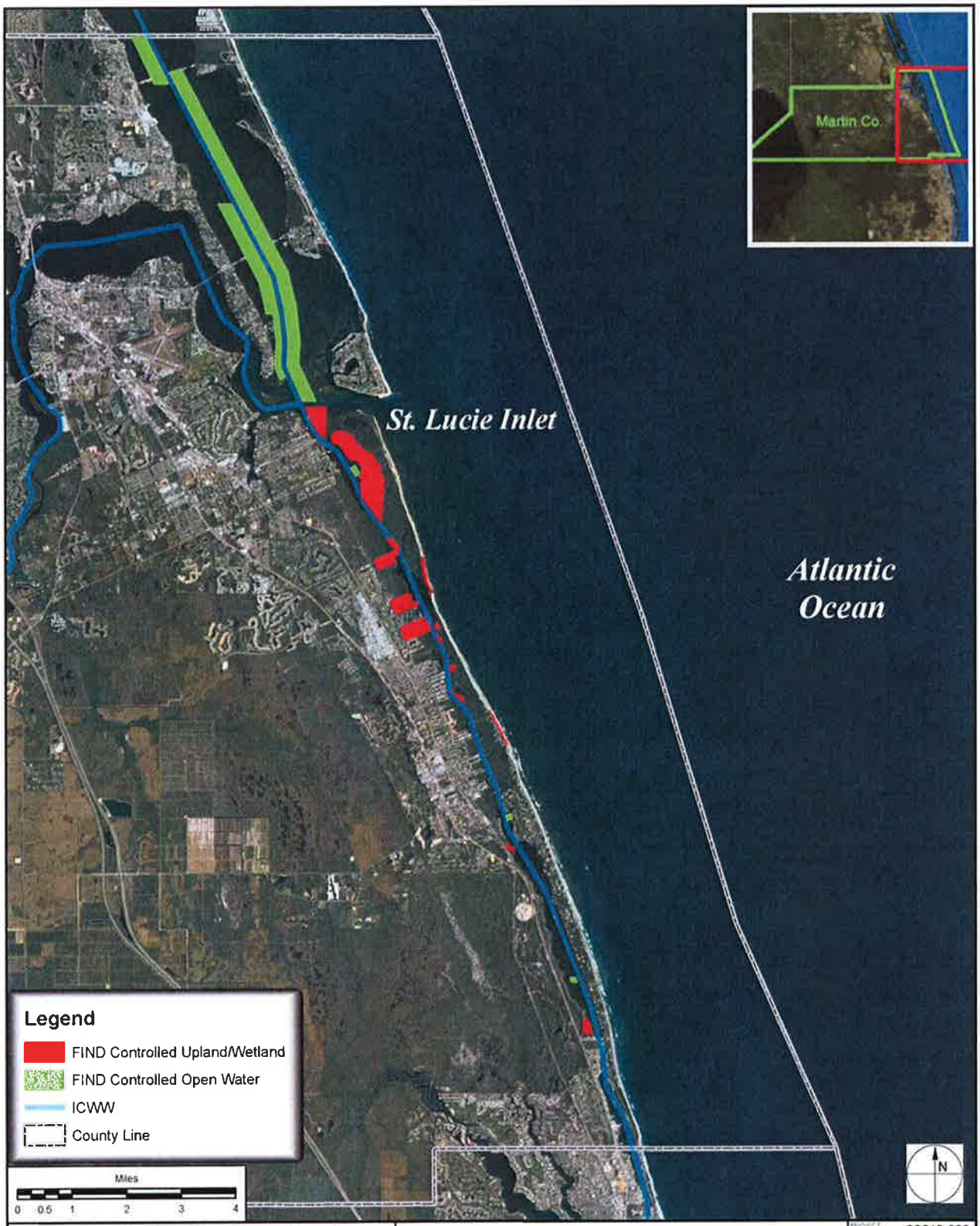

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Figure 1
FIND Properties Reviewed as
Potential Seagrass Mitigation Sites

PROJECT C2012-038
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DATE February 2013

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Figure 2
Potential Seagrass Mitigation Sites - St. Lucie Inlet

C2012-038
SS
February 2013

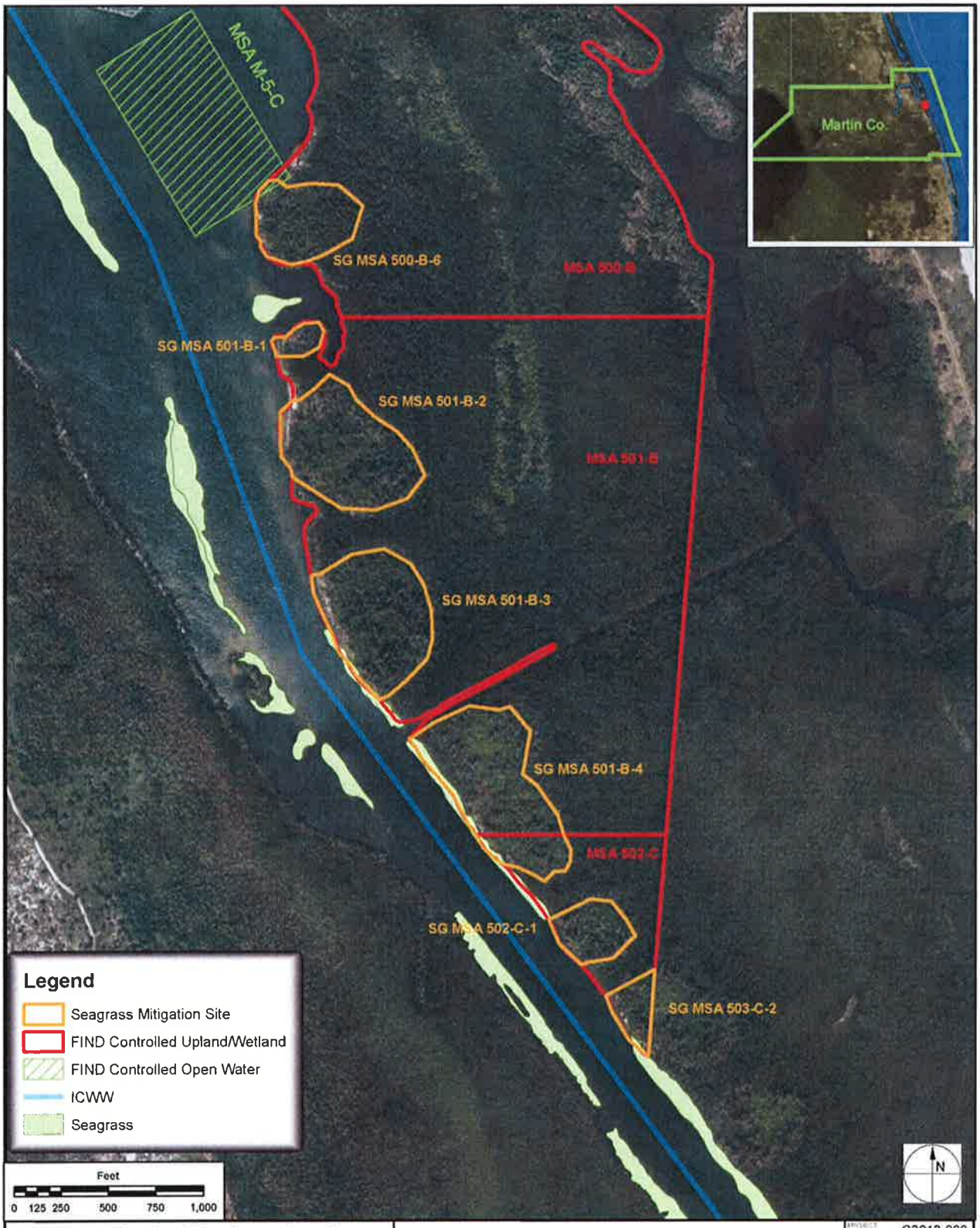

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Figure 3
Potential Seagrass Mitigation Areas - Great Pocket

C2012-038
SS
February 2013

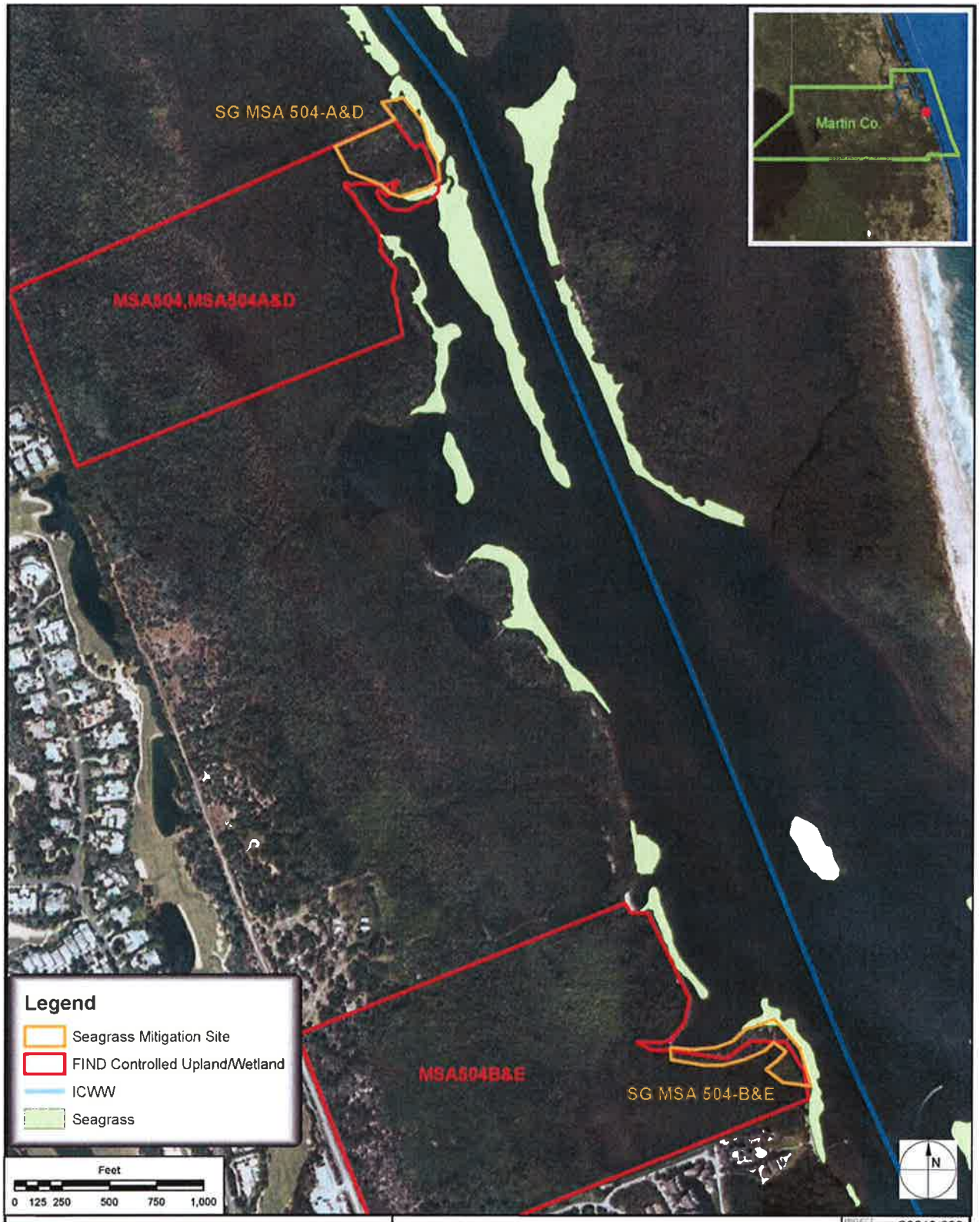

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Figure 4
Potential Seagrass Mitigation Areas - Peck Lake North

PROJECT C2012-038
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SHEET
DATE February 2013

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Figure 5
Potential Seagrass Mitigation Areas - Peck Lake South

C2012-038
SS
February 2013

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Figure 6
Potential Seagrass Mitigation Areas - Hobe Sound North

C2012-038
SS
February 2013

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Figure 7
Potential Seagrass Mitigation Areas - Hobe Sound South

C2012-038
SS
February 2013