



**ATLANTIC INTRACOASTAL
WATERWAY
MAINTENANCE DREDGING
NASSAU COUNTY REACH I, FLORIDA**

APPENDIX D

DMMA NA-1 Site Reconnaissance Report
DMMA DU-2 Site Reconnaissance Report



June 8, 2016

Mr. Mark Crosley
Executive Director
Florida Inland Navigation District
1314 Marcinski Road
Jupiter, FL 33477

Re: Professional Engineering Services, Task 1.2 DMMA Reconnaissance (NA-1)
Maintenance Dredging of Nassau Reach I and Applicable Portions of Fernandina Harbor Project,
Nassau County, FL
FIND Work Order 15-08; TE Contract C2015-048

Dear Mr. Crosley:

This letter report documents the results of our April 19, 2016 site visit to Dredged Material Management Area (DMMA) NA-1 in Fernandina Beach, FL. Primary goals of the site visit included evaluation and documentation of geotechnical conditions, weir structural issues, and overall environmental site conditions. The sections below detail our findings. Attachment A provides plan views of the site and Attachment B contains photographs of referenced site features from the site visit.

Geotechnical Conditions and Weir Structural Issues

Taylor Engineering staff observed the site to evaluate and document any readily visible geotechnical issues (e.g., erosion, settling, and cracking of the existing DMMA dike and access road) and weir structural issues. Staff walked the crest and toe of all dikes to document the condition of the interior and exterior dike faces and perimeter access road. Overall, staff did not identify any critical issues of immediate concern. A summary of our observations follows below.

- (1) The primary access road to the site was blocked by ongoing culvert construction (Attachment B, Image 1). At the time of our visit the construction crew, employed by the Crane Island land developer, indicated that culvert construction would be complete within two weeks. Access to the site is critical to completion of geotechnical and maintenance tasks required prior to use of the site.
- (2) In general, the containment basin and dikes are well vegetated; however, portions of the site are becoming overgrown with vegetation due to lack of access to the site (Attachment B, Images 2, 3, and 6-8).
- (3) The dike exterior contains a large number (15+) of armadillo (*Dasypus novemcinctus*) burrows (Attachment A, Images 19 and 20) that will require repair prior to dredging commencement.

The overall weir condition appeared excellent. The timber decking and weir structure showed no readily visible evidence of settling, cracking, or warping. In addition, the HDPE weir outfall pipes showed no signs of decay and the flanged outfall end is readily accessible with stainless hardware in good condition (Attachment B, Image 15).

Environmental Conditions

Taylor Engineering staff observed the 19.6-acre containment basin and adjacent areas associated with the placement of a temporary pipeline to identify potential environmental issues. As noted above, active armadillo burrows were documented around the dike exterior. The following sections discuss other

particular environmental conditions that were observed during the site visit which may require further action during the ongoing permitting process:

Eagle Nest

The U.S. Fish and Wildlife Service (USFWS) issued an Eagle Take Permit (MB37624A-4) on September 25, 2012 for project activities associated with the construction of DMMA NA-1. After construction was completed in 2013, the USFWS issued an amendment to the original permit in June 2015 which changed the Principal Officer from David Roach to Mark Crosley, changed the required monitoring seasons following construction completion from three (3) to two (2) and changed the expiration date of the permit from June 30, 2016 to June 30, 2015.

During the site visit Taylor Engineering staff identified eagle nest NA911 in its described location (Appendix B, Image 31). Staff members also observed the presence of one juvenile and one adult bald eagle in close proximity to the nest (Appendix B, Image 32). No nesting activities were observed during the site visit. Through ongoing permitting activities for the upcoming construction project, Taylor Engineering is coordinating with USFWS and Environmental Services, Inc., FIND's environmental consultant for the eagle nest, to ensure that proper measures are taken to limit disturbance to the eagles.

Temporary Pipeline Placement

The placement of temporary pipeline access associated with the use of the DMMA NA-1 was not permitted in the originally issued construction permits (FDEP ERP No. 45-291060-002-EI / SAJ-2008-03402 [SP-BAL]). Temporary pipeline placement is typically addressed in a dredging permit. Future use of NA-1 requires permitting a temporary pipeline access corridor through state and federal jurisdictional wetlands.

The site visit pertaining to the pipeline access was designed around the information provided in the management plan authorized under FDEP Permit No. 45-291060-002-EI. Taylor Engineering staff observed the present condition of the wetland areas immediately west of the DMMA. As stated in the management plan this area consists predominantly of vegetated salt marsh, however, there are areas of un-vegetated sand flats and a small circular upland area located between the uplands of the mainland and the edge of the Atlantic Intracoastal Waterway (AIWW).

The placement of the temporary pipeline through the salt marsh and sand flats will result in what is considered a temporary wetland impacts. As mentioned in the management plan, biological monitoring may be required to identify temporary impacts to the salt marsh vegetation associated with the placement of the pipeline and to formulate remedial action if impacts occur. Biological monitoring could include baseline monitoring prior to the placement of any pipeline into the salt marsh and subsequent yearly monitoring of the same areas once the pipeline has been removed to verify that impacted areas return to pre-placement condition. A permit modification request was submitted to FDEP on 5/27/2016 requesting necessary modifications for the temporary pipeline corridor.

Summary and Recommendations

The site visit proved useful in determining potential geotechnical, structural, and environmental on-site issues. Moving forward, Taylor Engineering recommends the following actions:

- (1) Coordinate with the Crane Island land developer to ensure permanent access will be available for the upcoming dredging project and future DMMA operation and maintenance. This is critical path for the upcoming maintenance dredging job.
- (2) Prior to use of the site:

- a. Mow all dikes, roads, and exterior areas, including areas leading to the two western pipeline access gates.
- b. Within 90 days of construction commencement, complete a biological survey to identify all animal burrows within site embankments. Backfill all burrows prior to use of the site. Restoration measures for the burrows can be found in “Technical Manual for Dam Owners, Impacts of Animals on Earthen Dams”, FEMA 473; page 58 Section 5.3.1 Restoration Measures.

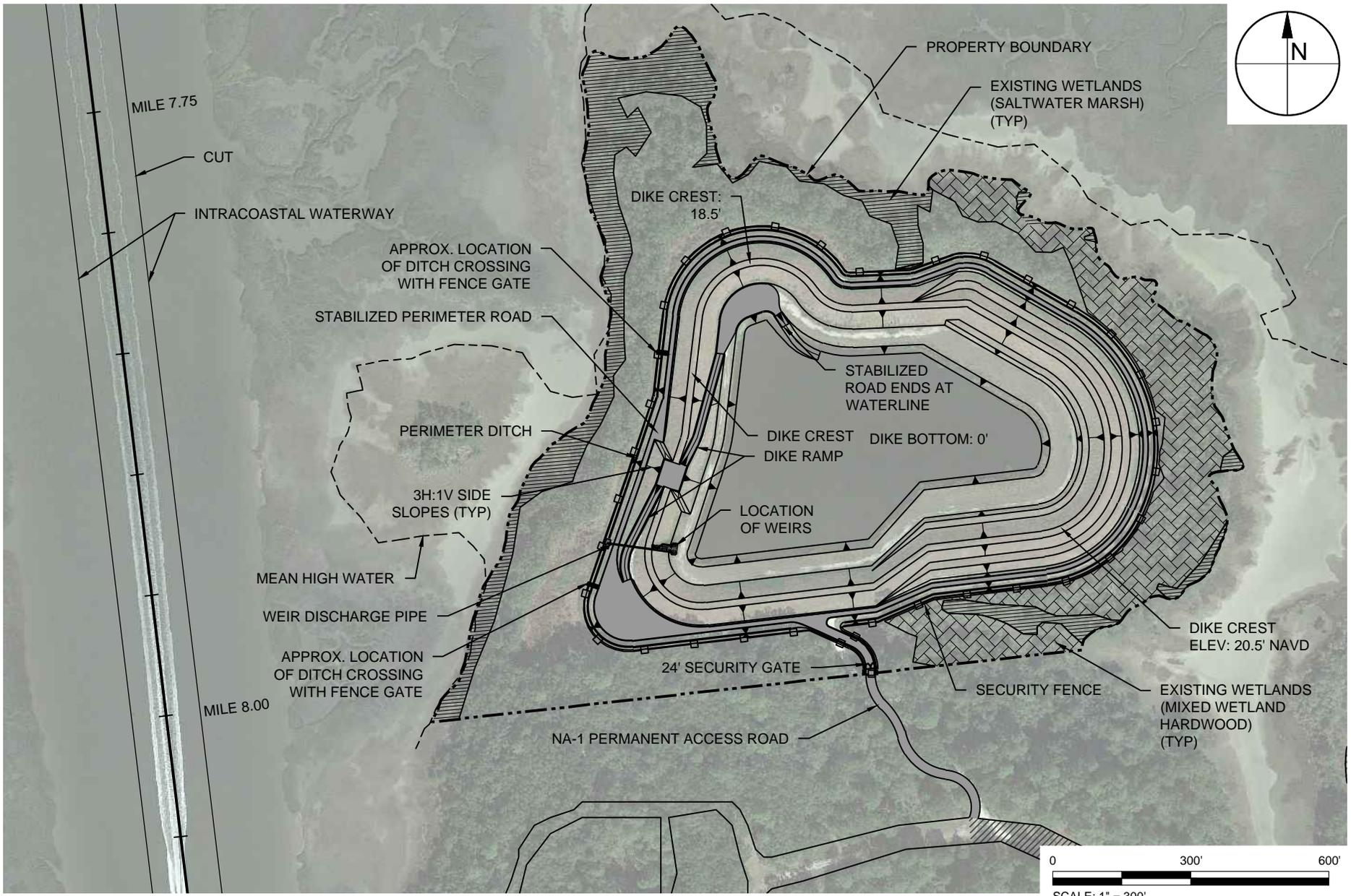
Please contact me with any questions you have regarding this report.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jerry Scarborough", with a long horizontal flourish extending to the right.

Jerry Scarborough
Senior Advisor, Waterfront Engineering

Attachments (2)



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FIGURE C-7
 DMMA NA-1 PLAN
 NASSAU CO. ICWW MAINT. DREDGING PERMIT
 NASSAU COUNTY, FLORIDA

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| PROJECT | C2015-048 |
| DRAWN BY | AF |
| SHEET | 7 of 8 |
| DATE | JAN 2016 |

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



Image 1. View towards west northwest of access road box culvert installation in progress



Image 2. View towards east of southern perimeter road



Image 3. View towards west of southern perimeter road



Image 4. View toward north of a wick drain outlet in southern stability berm



Image 5. View towards northwest of piezometer data logger at eastern stability berm



Image 6. View towards west along northeastern perimeter road



Image 7. View looking west, toward Intracoastal Waterway, of eastern site access gate



Image 8. View looking west, toward Intracoastal Waterway, of western site access gate



Image 9. View looking southeast of weirs and timber deck walkway



Image 10. View looking west of weirs and timber deck (picture is from a previous site visit and shown for context)

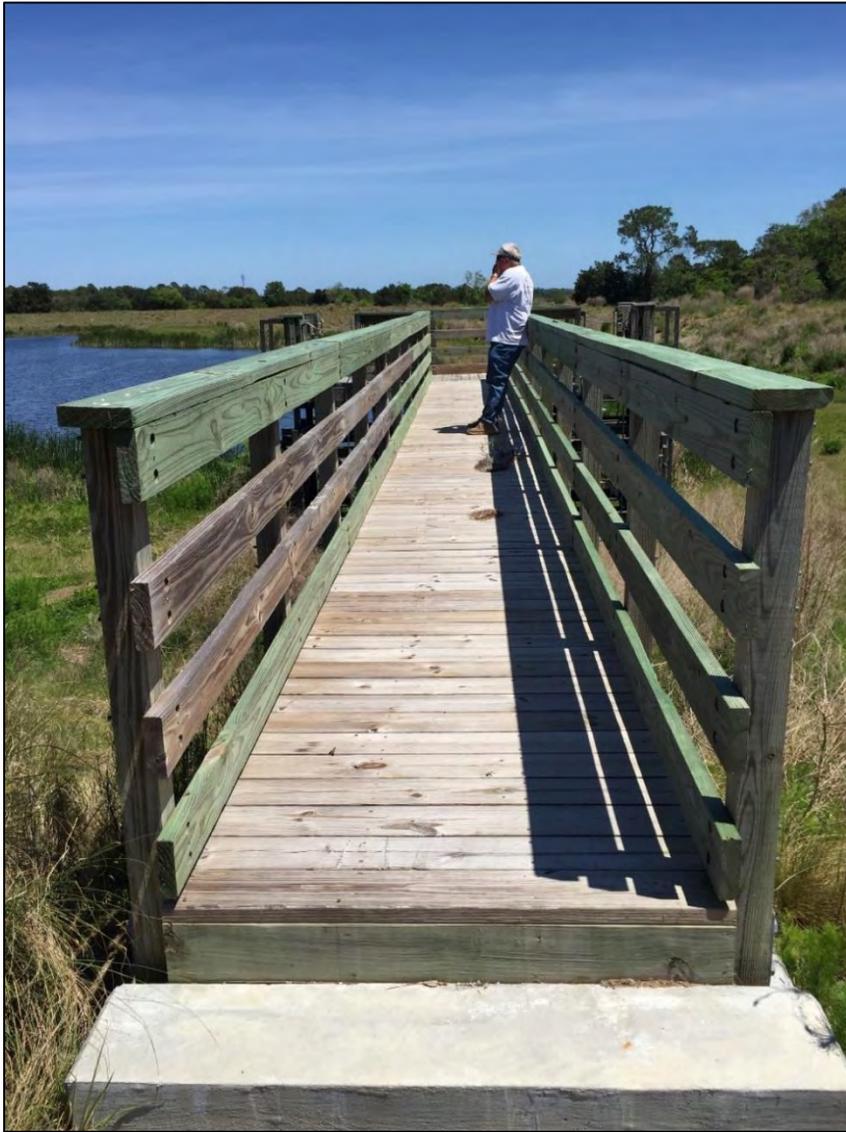


Image 11. View looking east from entrance to weir timber walk



Image 12. Looking down at HDPE weir outlet pipe prior to its crossing through the western dike



Image 13. View from weir deck looking north along western dike



Image 14. Looking southeast from weir deck at southern dike



Image 15. Looking east at flanged end of weir outlet pipe



Image 16. looking east at piezometer data logger on western dike



Image 17. Looking north along western perimeter ditch and fence line



Image 18. Looking south along western perimeter ditch and fence line



Image 19. Animal burrow into southern stability berm



Image 20. Animal burrow into eastern stability berm



Image 21. Looking north from the Intracoastal Waterway from the planned pipeline corridor



Image 22. Looking south from the Intracoastal Waterway from the planned pipeline corridor



Image 23. Looking north from salt marsh fringe along the planned pipeline corridor



Image 24. Looking south from the salt marsh fringe along the planned pipeline corridor



Image 25. Looking east, toward DMMA, from the planned pipeline corridor



Image 26. Looking west, toward Intracoastal Waterway, from planned pipeline corridor



Image 27. Looking west, toward Intracoastal Waterway, from planned pipeline corridor



Image 28. Looking west, toward Intracoastal Waterway, from planned pipeline corridor



Image 29. Looking south along salt marsh/upland transition from planned pipeline corridor



Image 30. Looking east into uplands surrounding the DMMA site



Image 31. Looking south toward active eagle nest at southwestern corner of DMMA site



Image 32. Juvenile eagle flying around the site



May 27, 2016

Mr. Mark Crosley
Executive Director
Florida Inland Navigation District
1314 Marcinski Road
Jupiter, FL 33477

Re: Professional Engineering Services, Task 1.2 DMMA Reconnaissance (DU-2)
Maintenance Dredging of Nassau Reach I and Applicable Portions of Fernandina Harbor Project,
Nassau County, FL
FIND Work Order 15-08; TE Contract C2015-048

Dear Mr. Crosley:

This letter report documents the results of our April 19, 2015 site visit to Dredged Material Management Area (DMMA) DU-2 in Jacksonville, FL. Primary goals of the site visit included evaluation and documentation of geotechnical conditions, weir structural issues, and overall environmental site conditions. The sections below detail our findings. Attachment A provides plan views of the site and Attachment B contains photographs of referenced site features from the site visit.

Geotechnical Conditions and Weir Structural Issues

Taylor Engineering staff observed the site to evaluate and document any readily visible geotechnical issues (e.g., erosion, settling, and cracking of the DMMA dike and access road) and weir structural issues. Staff walked the crest and toe of all dikes to document the condition of the interior and exterior dike faces and perimeter access road. Overall, staff did not identify any critical issues of immediate concern related to the dikes. However, significant concerns were noted in relation to the condition of the half pipe weirs and northeastern shoreline. A summary of our observations follows.

- (1) Around the center of the eastern embankment, there are two stands of medium sized bay trees growing near the top of the exterior of the embankment (Attachment B, Image 12).
- (2) The timber decking of the weir walkway is rotted, with broken or missing boards in many places (Attachment B, Images 13-16).
- (3) There is no guard rail or chain along the western timber deck platform (Attachment B, Image 14).
- (4) 3 out of 4 of the weir inlets are blocked with sandbags. One weir inlet is blocked with sediment (Attachment B, Images 17 and 18).
- (5) There are no individual weir boards (removable flashboards). It appears that the last user controlled the weirs using plywood sheets backed by vinyl tarps (Attachment B, Image 20).
- (6) The exterior of the existing half-pipe weirs appear in poor condition and highly corroded.
- (7) The shoreline at the northern pipeline access area (outfall) is severely eroded (Attachment B, Images 25-27).
- (8) A gopher tortoise burrow and several mammal burrows occurred in the exterior slopes of the western embankments (Attachment B, Images 31 and 32).

From the above observations, the overall weir condition appeared poor and in need of significant repair or replacement prior to the next use. The main structure of the weir showed no readily visible evidence of settling, cracking, or warping; however, it was relatively overgrown with vegetation (Attachment B, Images 19-21) and the exterior of the standpipes appeared in poor condition.

It appears that previous users of the site have allowed discharge water to flow out of the main outfall pipe (Attachment B, Image 22) and into an outfall ditch back toward the Intracoastal Waterway (ICWW). This has caused significant shoreline erosion at the northern pipeline access point. There is evidence of a previous use of temporary gabions as a shore protection measure, however these gabions have failed and are no longer effective. The shoreline at the northeastern corner of the site is eroded under the fence and access gate (Attachment B, Image 27).

On May 12, 2016, Taylor Engineering communicated with the USACE North Florida Area Office and the Jacksonville District design engineer regarding their previous assessments and uses of the site. The USACE engineers stated that their structures team completed an inspection of the exterior of the weirs prior to the last disposal event (2013) at the site. Based on the observed poor condition of the visible areas of the standpipes, they considered the risk of having the same or worse deterioration in the through-dike discharge pipes too great to consider using the system. The four main discharge pipes tie into a single manifold under the dike. This configuration complicates weir operation and prevents looking through the pipes from one end to the other to observe their interior condition. The USACE concluded that there was significant risk of the failure of a corroded discharge pipe under the dike which could result in a piping failure or severe erosion of the exterior dike toe. Due to this perceived risk, USACE required their dredging contractor to block all weir outfalls and pump effluent water over the dike and back to the channel rather than use the weirs and outfall pipes.

Environmental Conditions

Taylor Engineering staff also observed the entire site to identify potential environmental issues within the containment basin. As noted above, a gopher tortoise burrow and several mammal burrows were documented in the exterior slopes of the western embankments. Additionally, previous uses of the weir outfall ditch have caused severe shoreline erosion, including complete loss of the shoreline vegetation fringe at the northern ICWW access area.

Summary and Recommendations

The site visit proved useful in determining potential geotechnical, structural, and environmental on-site issues. Moving forward, Taylor Engineering recommends the following actions prior to the next use of the site:

- (1) Prior to the next use of DU-2, replace the weir system.
 - When weirs are replaced, the upgrades should consider steel frame boxes, composite weir boards, and HDPE discharge pipes
- (2) During future uses, require the dredging contractor to extend the existing corrugated metal outfall pipe such that discharge occurs in the ICWW channel, in compliance with the DU-2 management plan, to prevent further shoreline erosion.
- (3) Consider shoreline restoration for the eroded shoreline that has resulted from the discharge.
- (4) Within 90 days of construction commencement, complete a gopher tortoise survey. Either trap and relocate tortoises or mark and fence off a 25-foot radius around any tortoise burrows.
- (5) Backfill all mammal burrows in the embankments.

Finally, the following recommendations regarding the removal of trees and other woody vegetation fall in general accordance with Federal Emergency Management Agency's (FEMA's) Technical Manual for Dam Owners; Impacts of Plants on Earthen Dams, FEMA Publication No. 534, September 2005, and Dunkelberger Engineering & Testing, Inc. previous recommendations for a similar DMMA dike (DMMA M-5):

- (7) All trees and woody vegetation should be removed from the embankment slopes and crest to a minimum distance of 25 feet beyond the exterior toe of the embankment.
- (8) Cut all trees and woody vegetation having a trunk diameter less than 4 inches flush with the ground and treat the stumps with a wood preservative to slow decay.
- (9) Remove the stumps and root bulbs of all trees having a trunk diameter of 4 inches or greater. Backfill the bulb excavations with sand and compact to a minimum of 95% of the soil's maximum dry density as determined by ASTM D 698.

Please contact me with any questions you have regarding this report.

Sincerely,

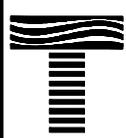
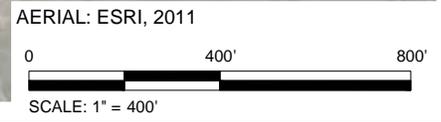
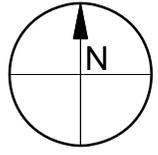
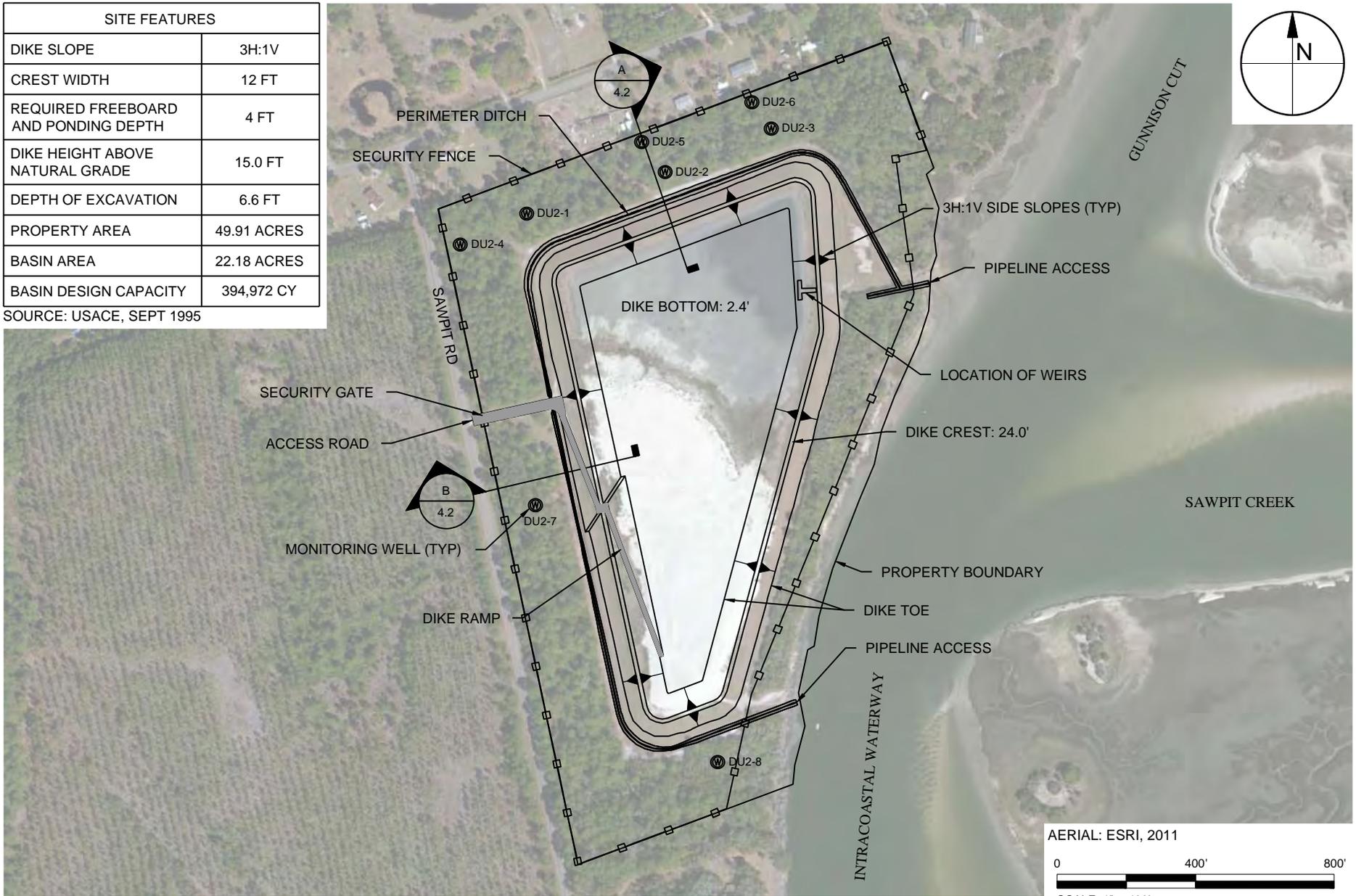


Jerry Scarborough
Senior Advisor, Waterfront Engineering

Attachments (2)

| SITE FEATURES | |
|--------------------------------------|-------------|
| DIKE SLOPE | 3H:1V |
| CREST WIDTH | 12 FT |
| REQUIRED FREEBOARD AND PONDING DEPTH | 4 FT |
| DIKE HEIGHT ABOVE NATURAL GRADE | 15.0 FT |
| DEPTH OF EXCAVATION | 6.6 FT |
| PROPERTY AREA | 49.91 ACRES |
| BASIN AREA | 22.18 ACRES |
| BASIN DESIGN CAPACITY | 394,972 CY |

SOURCE: USACE, SEPT 1995



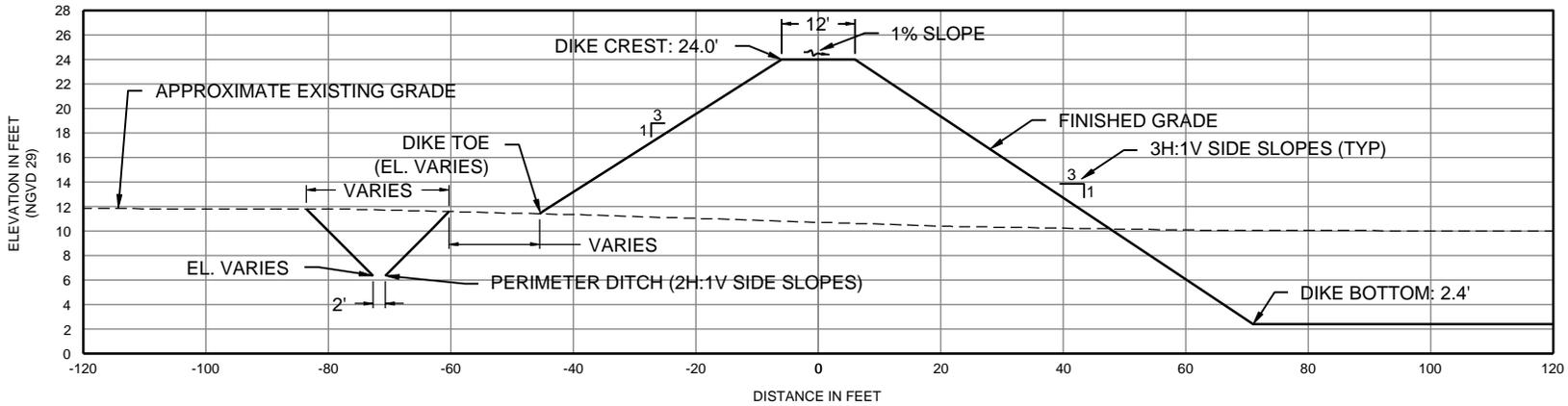
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FIGURE 4.1
 DMMA DU-2 PLAN VIEW
 ATLANTIC INTRACOASTAL WATERWAY
 DUVAL COUNTY, FLORIDA

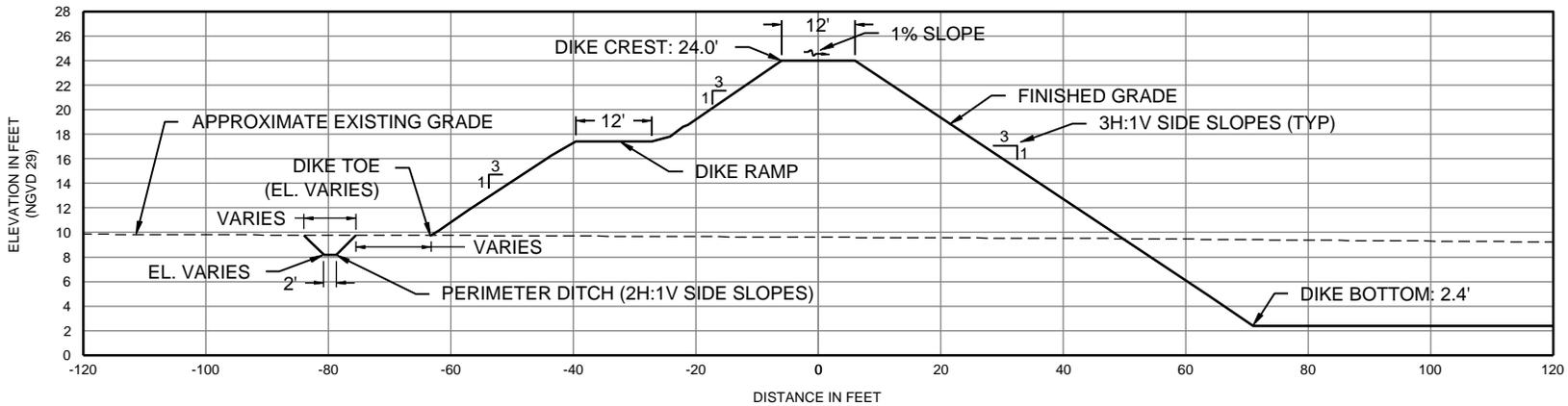
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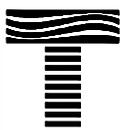
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A **DU-2 CROSS-SECTION A**
 4.1 SCALE: 1" = 30'



B **DU-2 CROSS-SECTION B**
 4.1 SCALE: 1" = 30'



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FIGURE 4.2
 DMMA DU-2 SECTION VIEW
 ATLANTIC INTRACOASTAL WATERWAY
 DUVAL COUNTY, FLORIDA

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| PROJECT | C2013-031 |
| DRAWN BY | AF |
| SHEET | 7 of 17 |
| DATE | JUNE 2014 |



Image 1. Looking south along the western dike



Image 2. Looking north from the top of the dike ramp



Image 3. Looking north from the southwestern corner of the DMMA



Image 4. Looking northwest from the southeastern corner of the DMMA



Image 5. Looking northeast toward the southern pipeline access gate



Image 6. Looking northeast from the southern dike crest



Image 7. Looking north along the toe of the eastern dike



Image 8. Looking south along the property line from the southern pipeline access



Image 9. Looking northeast along the shoreline of the southern pipeline access



Image 10. Looking southwest along the shoreline of the southern pipeline access



Image 11. Looking west toward southern pipeline access gate from AICW



Image 12. Looking along eastern dike crest toward two stands of bay trees on the dike exterior



Image 13. Looking west along weir timber deck walkway



Image 14. Looking south along weir walkway timber deck



Image 15. Broken board on weir walkway timber deck



Image 16. Broken, decaying, board on weir walkway timber deck



Image 17. Looking into weir #3 at sediment blocking inlet



Image 18. Looking down into sandbag blocked weir #1 inlet. Weirs 2, and 4 are in the same condition



Image 19. Looking southeast at timber deck walkway and eastern dike



Image 20. Looking east from DMMA interior at weirs



Image 21. Looking northeast at backside of weirs 1 and 2 and timber deck walkway



Image 22. Looking west at weir outfall pipe



Image 23. Looking north at weir outfall manifold pipe



Image 24. Looking west into weir outfall pipe



Image 25. Looking south from northern pipeline access point



Image 26. Looking north from northern pipeline access point



Image 27. Looking west at eroded shoreline of northern pipeline access point and weir outfall ditch



Image 28. Looking east from corner of northwestern dike crest



Image 29. Looking east from corner of northwestern dike crest



Image 30. Looking northeast, into the DMMA, at a scarp between eastern offloaded portion of DMMA and western portion of DMMA



Image 31. Looking east at a gopher tortoise burrow into the exterior of the southwestern embankment



Image 32. Mammal burrow in exterior embankment