Florida Department of
Environmental Protection
South District Office
P.O. Box 2549
Fort Myers, FL 33902-2549

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

Permittee/Authorized Entity:
Florida Fish and Wildlife Conservation Commission
620 S. Meridian Street
Tallahassee, Florida 32399

Fisheating Creek Trail Restoration
Cowbone Marsh Hydrologic Restoration

Authorized Agent:
Mahmoud S. Madkour, Ph.D., P.E.
Florida Fish and Wildlife Conservation Commission
620 S. Meridian Street
Tallahassee, Florida 32399
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Environmental Resource Permit
State-owned Submerged Lands Authorization – Granted

U.S. Army Corps of Engineers Authorization – Separate Corps Authorization Required

File No.: 22-0303652-002
Modification of Permit No.: 22-0303652-001
Lease No.: 4257

Permit Issuance Date: May 6, 2011
Modification Date: September 10, 2012
Permit Construction Phase Expiration Date: May 6, 2016

Consolidated Environmental Resource Permit and State-owned Submerged Lands Authorization

Permittee: Florida Fish and Wildlife Conservation Commission
File No.: 22-0303652-002, modification of Permit No: 22-0303652-001

For the purposes of this modification, additions are shown in underline, and deletions are ~~stricken through~~.

PROJECT LOCATION

The activities authorized by this Permit and state-owned submerged lands authorization are located within Fisheating Creek Wildlife Management Area, and Parcel A27-40-31-A00-0010-0000 Sections 27, 28, 32, and 33, Township 40 South, Range 31 East, Glades County, as shown on attachments.

AUTHORIZATIONS

Fisheating Creek Trail Restoration and Cowbone Marsh Hydrologic Restoration

Project Description

~~The permittee is authorized to install 6 earthen check dams, at equidistant intervals from the existing weir to the cut channel mouth and to remove the existing temporary weir within Fisheating Creek, a Class III Waterbody and to temporarily deposit vegetative debris associated with the ongoing management of the navigation trail within unnamed wetlands, the landward extent of Fisheating Creek.~~ The Permittee was originally authorized to install 6 earthen check dams and to temporarily deposit vegetative debris within Fisheating Creek. This permit is now modified to maintain those authorized activities. Additionally, to complete the restoration of Cowbone Marsh, the permittee is authorized to backfill the channel to match the surrounding grade (+/- 6-inches) with approximately 27,000 cubic yards of material, commencing at the downstream end and working upstream. To accomplish this restoration, this permit also authorizes the construction of a temporary access road, approximately 1.164 miles, through uplands and wetlands, the construction of a 100-foot square staging area in wetlands, within the Fisheating Creek Wildlife Management Area, and the construction of a borrow pit within uplands, approximately 2 acres in size and up to 30 feet deep, on Parcel A27-40-31-A00-0010-0000, owned by a private entity. Authorized activities are depicted on the attached drawings.

The project described above may be conducted only in accordance with the terms, conditions and attachments contained in this permit. The issuance of this permit does not infer, nor guarantee, nor imply that future permits or modifications will be granted by the Department.

Please be advised that this permit does not constitute the issuance of a NPDES Stormwater Permit or acceptance of an NPDES Stormwater Pollution Prevention Plan. For additional information regarding this matter please contact the NPDES Stormwater Notices Center toll free at (866) 336-6312 or Department personnel in Tallahassee at (850) 245-7522.

Sovereignty Submerged Lands Authorization

The activity is located on submerged lands owned by the State of Florida. It therefore also requires authorization, from the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees), pursuant to Article X, Section 11 of the Florida Constitution, and Sections 253.002 and 253.77, Florida Statutes (F.S.).

As staff to the Board of Trustees, the Department has determined that the activity qualifies for a Letter of Consent, as long as the work performed is located within the boundaries as described herein and is consistent with the terms and conditions herein.

In addition, your project falls within the boundaries of lands subject to Board of Trustees Lease Agreement No. 4257 ("Lease"). Pursuant to paragraph No. 4, "Purpose" of the Lease: "Lessee shall manage the leased premises only for the establishment and operation of the Fisheating Creek Wildlife Management Area, along with other related uses necessary for the accomplishment of this purpose as designated in the Management Plan required by paragraph 7 of this lease. Provided, however, that all management activities shall be in strict compliance with the terms and conditions of the Settlement Agreement in Board of Trustees of the Internal Improvement Trust Fund of the State of Florida et al. v Lykes Bros., Inc., No. CA 93-136 (Fla. 20th Cir. Ct., ("Settlement Agreement") attached hereto as Exhibit "B"."

As staff to the Board of Trustees, the Department has determined that the activity is consistent with the Management Plan referenced in the Lease and does not violate the conditions of the Settlement Agreement, as long as the work performed is located within the boundaries as described herein and is consistent with the terms and conditions herein.

Federal Authorization

A copy of this permit has been sent to the U.S. Army Corps of Engineers (USACE). The USACE may require a separate permit. Failure to obtain any required federal permits prior to construction could subject you to enforcement action by that agency.

Water Quality Certification

This permit constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341.

Other Authorizations

You are advised that authorizations or permits for this project may be required by other federal, state or local entities including but not limited to local governments and homeowner's associations. This permit does not relieve you from the requirements to obtain all other required permits or authorizations.

In addition, you are advised that your project may require additional authorizations or permits from the municipality/county in which the project is located. Please be sure to contact the local county building and environmental department to obtain these required authorizations.

PERMIT/SOVEREIGNTY SUBMERGED LANDS CONDITIONS
The activities described herein must be conducted in accordance with:

- **The Specific Conditions**
- **The General Conditions**
- **The General Consent Conditions for Sovereignty Submerged Lands Authorization**
- **The limits, conditions and locations of work shown in the attached drawings**
- **The term limits of this authorization**

You are advised to read and understand these conditions and drawings prior to commencing the authorized activities, and to ensure the work is conducted in conformance with all the terms, conditions, and drawings. If you are utilizing a contractor, the contractor also should read and understand these conditions and drawings prior to commencing the authorized activities. Failure to comply with these conditions, including any mitigation requirements, shall constitute grounds for revocation of the Permit and appropriate enforcement action by the Department.

Operation of the facility is not authorized except when determined to be in conformance with all applicable rules and this permit/certification/authorization and sovereignty submerged lands authorization, as specifically described above.

SPECIFIC CONDITIONS - PRIOR TO CONSTRUCTION

1. If the permit attachments conflict with the specific conditions herein, then the specific conditions shall prevail.

2. The Department has determined that, pursuant to Section 373.413(4), F.S., and Section 62-343.090(2)(k), F.A.C., you (the Permittee) are required to publish at your own expense the enclosed Notice of Permit. The notice is required to be published one time within thirty (30) days from date of issuance of this permit modification, in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S.,

in the county where the activity is to take place. The Permittee shall reference Permit No 28-0303652-002, when providing proof of publication to:

Department of Environmental Protection
South District Office
Submerged Lands and Environmental Resource Permitting
P.O. Box 2549
Fort Myers, Florida 33902-2549

The proof of publication shall be provided to the above address within seven (7) days of publication. Failure to publish the notice and provide proof of publication within the allotted time shall be grounds for revocation of the permit.

3. **Within 60 days prior to the commencement of the permitted activities, the permittee shall designate an Environmental Compliance Officer ("ECO")** who will be responsible to observe all aspects of construction, ensure their compliance with the conditions of this authorization and with water quality standards as set forth in Chapter 62-302, F.A.C. The permittee shall submit the name and telephone number of the ECO to the South District Office prior to commencement of construction for Department review and approval. The permittee shall keep the Department informed of all changes to the ECO.

4. Prior to the commencement of construction, the Permittee shall obtain any necessary authorization from the current landowner for those activities located outside of those lands managed by the Permittee.

5. The permittee shall ensure that the permit conditions are explained to all construction personnel working on the project and shall give a copy of this permit to each contractor and subcontractor before the authorized work begins. Prior to construction, the permittee shall schedule a pre-construction meeting for attendance by the contractor(s), representative from the Department, and other environmental regulatory agencies, as applicable.

6. The issuance of this Permit does not constitute coverage under the National Pollutant Discharge Elimination System (NPDES) Generic Permit for Stormwater Discharges from Large and Small Construction Activities (CGP) pursuant to Rule 62-621.300(4)(a), F.A.C. Permittee is advised to contact the Department's NPDES Stormwater Program at (850) 245-7522 or toll free at (866) 336-6312 or to download application information at http://www.dep.state.fl.us/water/stormwater/npdes/construction3.htm#permit prior to the commencement of any construction.

7. The issuance of this permit does not constitute coverage under the NPDES General Permit for the Discharge of Produced Ground Water from any Non-Contaminated Site Activity pursuant to Rule 62-621.300(2), F.A.C. or any other NPDES General Permit. If any offsite discharges will occur due to construction dewatering activities, then coverage under the aforementioned General Permit may be required and the permittee is advised to review Rule 62-621.300(2), F.A.C.

8. Best management practices (primarily turbidity screens) for erosion and turbidity control shall be implemented prior to construction and maintained at all times during construction and operation of the permitted activity to prevent siltation and turbid discharges in excess of State water quality standards pursuant to Chapter 62-302, F.A.C. The permittee shall be responsible for ensuring that erosion and turbidity control devices and procedures are inspected and maintained daily during all phases of construction authorized by this permit until all areas that were disturbed during construction are sufficiently stabilized to prevent erosion, siltation, and turbid discharges. ~~This permit authorizes the relocation of the existing temporary weir at points downstream of the check dams, if necessary, to prevent siltation and turbid discharges in excess of State water quality standards pursuant to Chapter 62-302, F.A.C. The existing temporary weir is not authorized to stay permanently within Fisheating Creek and shall be removed in accordance with Specific Condition 4~~.

SPECIFIC CONDITIONS – CONSTRUCTION ACTIVITIES

9. The project shall comply with applicable State Water Quality Standards, namely:
   a. Rule 62-302.500, F.A.C. – Surface Waters: Minimum Criteria, General Criteria; and
   b. Rule 62-302.530, F.A.C. – Table: Surface Water Quality Criteria, Class III Waters.

10. The construction of the temporary access road and staging area shall be constructed from interlocking composite mats in wetland areas. This permit does not authorize any permanent wetland impacts at these locations.

11. The check dams shall be ~~constructed of~~ maintained with natural and synthetic materials consisting of sand bags, marine-grade plywood, coconut matting, palm trees and pressure treated lumber.

12. Storage of construction materials may occur ~~adjacent to each check dam location~~ within the proposed staging area and within the channel after it has been backfilled. ~~All other construction activities associated with the construction of the check dams restoration project shall occur within the existing backfilled channel. The sandbag wing walls are authorized to extend into the marsh in order to prevent erosion around the ends of the check dam in accordance with the specifications as shown on the attached~~

~~permit drawings.~~

~~13. Upon completion of construction of the six check dams, the existing temporary weir shall be permanently removed from Fisheating Creek. All portions of the weir shall be removed and relocated to uplands for appropriate disposal.~~ The temporary weir has been successfully removed.

14. Herbaceous debris associated with the ongoing management of the navigation trail, including herbiciding and removing vegetation, is authorized to be temporarily stored in wetlands for a maximum of 6 months. The herbaceous debris shall be removed from the wetland areas adjacent to the navigation trail during the wet season when access is not restricted. ~~The debris may be deposited between check dam locations to facilitate the restoration.~~ Any temporary impacts to wetland areas associated with debris removal, outside of the navigation trail, shall be restored to existing grade within 30 days of project completion.

15. Those properties adjacent to the navigational channel that are considered surface waters or wetlands, as defined in Chapter 62-340, F.A.C., and not subject to impacts authorized by this permit shall be left in their natural state. These areas shall not be used for parking, equipment storage, building supply storage or as a staging area for construction. These areas shall not be filled or cleared without prior written consent from the Department in the form of an Environmental Resource Permit or a modification of this permit.

SPECIFIC CONDITIONS - POST-CONSTRUCTION

16. The Permittee is hereby relieved from the requirement to submit as-built drawings prepared by a registered professional, as required by General Condition number 6, except where the services of a registered professional are used in the construction of the system. However, the Permittee is still required, **within ~~thirty (30)~~ sixty (60) days of completion of construction**, to submit a written notice to the Department of the date construction was completed, together with a copy of the permit drawings, modified as appropriate, to reflect the actual condition of the restoration activities ~~as-built structure~~. Such condition also shall not relieve the Permittee from the responsibility for submitting all other information required by this permit.

SPECIFIC CONDITIONS – MONITORING/REPORTING REQUIREMENTS

17. The Cowbone Marsh system and Fisheating Creek project area shall be monitored in accordance with the attached ~~hydrologic restoration plan.~~ "Cowbone Marsh Cut Restoration Plan, August 7, 2012". Any modifications to this plan require modification of this permit. In addition to the monitoring specified in the restoration plan, the quarterly monitoring shall also identify and record the percent coverage of

exotic or undesirable species found within the footprint of the restored road. Exotic and undesirable (native invasive) species shall be treated if they exceed the percent coverage of the adjacent marsh by 10%. The results of this monitoring shall be included with the monitoring reports and shallow follow the same Compliance Reporting Schedule as specified in Specific Condition 19.

18. If success criteria are not met as described in the Cowbone Marsh Cut Restoration Plan, August 7, 2012", additional measures as described in the Plan shall be employed. The Permittee shall submit a report to the Department that includes:

a. Date of Inspection;
b. Color photographs from the same locations;
c. Daily rainfall data;
d. The number of plantings replanted (if required) to reach the 95% coverage rate; and,
e. Any corrective measures taken to ensure continued stability of the restored areas and those areas used for access.

19. All restoration and monitoring reports required by the ~~hydrologic restoration plan~~ "Cowbone Marsh Cut Restoration Plan, August 7, 2012" shall be submitted to the Department in accordance with the following Compliance Reporting Schedule: ~~within 30 days of finalizing the report(s)~~.

Monthly Repots (Construction Phase Completed by June 1, 2013)	**As-Built Survey**	**Quarterly Reports (Year One)**	**Biannual Reports (Years 2 and 3)**
15-Dec-12 15-Jan-13 15-Feb-13 15-Mar-13 15-Apr-13 15-May13 15-Jun-13	Within 60 days of project completion or no later than Aug 1, 2013 (if project completed by first dry season)	15-Sept-13 15-Dec-13 15-Mar-14 15-June-14	15-Dec-14 15-Jun-15 15-Dec-15 15-Jun-16
Monthly Reports (If not completed by June 1, 2013. Scheduled as follows or until construction phase has been completed)	**As-Built Survey**	**Quarterly Reports (Year One)**	**Biannual Reports (Years 2 and 3)**
15-Jul-13 15-Aug-13 15-Sep-13 15-Oct-13 15-Nov-13 15-Dec-13	Within 60 days of project completion or no later than Aug 1, 2014 (if project is not completed within	15-Sep-14 15-Dec-14 15-Mar-15 15-Jun15	15-Dec-15 15-Jun-16 15-Dec-16 15-Jun-17

15-Jan-14 15-Feb-14 15-Mar-14 15-Apr-14 15-May-14 15-Jun-14	the first dry season)		

20. All reports and submittals required by this permit shall include the permit number and be submitted to the Department at:

Florida Department of Environmental Protection
South District Office
Submerged Lands and Environmental Resource Permitting
P.O. Box 2549
Fort Myers, Florida 33902-2549

GENERAL CONDITIONS:

1. All activities authorized by this permit shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit and a violation of Part IV of Chapter 373, (F.S.).

2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by the Department staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.

3. Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The permittee shall implement best management practices for erosion and pollution control to prevent violations of state water quality standards. Temporary erosion control shall be implemented prior to and during construction and permanent control measures shall be completed within seven (7) days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving water-body exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established. All practices shall be in accordance with the guidelines and specifications described in Chapter Six of the Florida Land Development Manual; A Guide to Sound Land and Water Management (Department of Environmental Regulation, 1988), unless a project-specific erosion and sediment control plan is approved as part of the permit. Thereafter, the permittee shall be responsible for

the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.

4. The permittee shall notify the Department of the anticipated construction start date within thirty (30) days of the date that this permit is issued. **At least forty-eight (48) hours prior** to commencement of the activity authorized by this permit, the permittee shall submit to the Department an "Environmental Resource Permit Construction Commencement" notice (Form No. 62-343.900(3), Florida Administrative Code (F.A.C.)) indicating the actual start date and expected completion date.

5. When the duration of construction will exceed one year, the permittee shall submit construction status reports to the Department on an annual basis utilizing an "Annual Status Report Form" (Form No. 62-343.900(4), F.A.C.). Status Report Forms shall be submitted the following June of each year.

6. **Within thirty (30) days after completion of construction** of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law utilizing the supplied "Environmental Resource Permit As-Built Certification by a Registered Professional" (Form No. 62-343.900(5), F.A.C.). The Statement of completion and certification shall be based on on-site observation of construction or review of as-built drawings for the purpose of determining if the work was completed in compliance with permitted plans and specifications. This submittal shall serve to notify the Department that the system is ready for inspection. Additionally, if deviations from the approved drawings are discovered during the certification process, the certification must be accompanied by a copy of the approved permit drawings with deviations note. Both the original and revised specifications must be clearly shown. The plans must be clearly labeled as "as-built" or "record" drawing. All surveyed dimensions and elevations shall be certified by a registered surveyor.

7. The operation phase of this permit shall not become effective; until the permittee has complied with the requirements of condition number six (6) above, has **submitted a "Request for Transfer of Environmental Resource Permit Construction Phase to Operation Phase" (Form 62-343.900(7), F.A.C.);** the Department determines the system to be in compliance with the permitted plans and specifications; and the entity approved by the Department in accordance with Sections 9.0 and 10.0 of the Basis of Review for Environmental Resource Permit Applications Within the South Florida Water Management District—August 1995, accepts responsibility for operation and maintenance of the system. The permit shall not be transferred to such approved operation and maintenance entity until the operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the Department, the permittee shall initiate transfer of permit to the approved responsible operation entity if different from the permittee. Until the permit is transferred pursuant

to Rule 62-343.110(1) (d), F.A.C., the permittee shall be liable for compliance with the terms of the permit.

8. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the initiation of the permitted use of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of the phase or portion of the system to a local government or other responsible entity.

9. For those systems that will be operated or maintained by an entity that will require an easement or deed restriction in order to enable that entity to operate or maintain the system in conformance with this permit, such easement or deed restriction must be recorded in the public records and submitted to the Department along with any other final operation and maintenance documents required by Sections 9.0 and 10.0 of the Basis of Review for Environmental Resource Permit Applications Within the South Florida Water Management District—August 1995, prior to lot or unit sales or prior to lot or unit sales or prior to the completion of the system, whichever occurs first. Other documents concerning the establishment and authority of the operation entity must be filed with the Secretary of State where appropriate. For those systems which are proposed to be maintained by the county or municipal entities, final operation and maintenance documents must be received by the Department when maintenance and operation of the system is accepted by the local government entity. Failure to submit the appropriate final documents will result in the permittee remaining liable for carrying out maintenance and operation of the permitted system and any other permit conditions.

10. Should any other regulatory agency require changes to the permitted system, the permittee shall notify the Department in writing of the changes prior to implementation so that a determination can be made whether a permit modification is required.

11. This permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any activity approved by this permit. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40E-4 or Chapter 40E-40, F.A.C.

12. The permittee is hereby advised that Section 253.77, F.S. states that a person may not commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, the title to which is vested in the Board of Trustees

of the Internal Improvement Trust Fund without obtaining the required lease, license, easement, or other form of consent authorizing the proposed use. Therefore, the permittee is responsible for obtaining any necessary authorization from the Board of Trustees prior to commencing activity on sovereignty lands or other state owned lands.

13. The permittee is advised that the rules of the South Florida Water Management District require the permittee to obtain a water use permit from the South Florida Water management District prior to construction dewatering, unless the work qualifies for a general permit pursuant to Rule 40E-20.302(4), F.A.C., also known as the "No Notice" rule.

14. The permittee shall hold and save the Department harmless from any and all damages, claims or liabilities which may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any system authorized by this permit.

15. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under Section 373.421(2). F.S., provides otherwise.

16. The permittee shall notify the Department in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of a permitted system or the real property on which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of Rule 62-343.130, F.A.C. The permittee transferring the permit shall remain liable for corrective actions that may be required as a result of any violations prior to the sale, conveyance or other transfer of the system.

17. Upon reasonable notice to the permittee, Department authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with the plans and specifications approved by the permit.

18. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the appropriate Department office.

19. The permittee shall immediately notify the Department in writing of and previously submitted information that is later discovered to be inaccurate.

GENERAL CONDITIONS FOR SOVEREIGNTY SUBMERGED LANDS AUTHORIZATION

Any use of sovereignty submerged lands is subject to the following general conditions are binding upon the permittee and are enforceable under Chapter 253, F.S., and, as applicable, Chapter 258, F.S.:

1. Sovereignty submerged lands may be used only for the specified activity or use. Any unauthorized deviation from the specified activity or use and the conditions for undertaking that activity or use will constitute a violation. Violation of the authorization shall result in suspension or revocation of the permittee's use of the sovereignty submerged land unless cured to the satisfaction of the Board of Trustees.

2. Authorization under Rule 18-21.005, F.A.C., convey no title to sovereignty submerged land or water column, nor does it constitute recognition or acknowledgment of any other person's title to such land or water.

3. Authorizations under Rule 18-21.005, F.A.C., may be modified, suspended or revoked in accordance with its terms or the remedies provided in Sections 253.04, F.S., and Chapter 18-14, F.A.C.

4. Structures or activities will be constructed and used to avoid or minimize adverse impacts to resources.

5. Construction, use, or operation of the structure or activity will not adversely affect any species which is endangered, threatened or of special concern, as listed in Rules 68A-27.003, 68A-27.004, and 68A-27.005, F.A.C.

6. Structures or activities shall not unreasonably interfere with riparian rights. When a court of competent jurisdiction determines that riparian rights have been unlawfully affected, the structure or activity will be modified in accordance with the court's decision.

7. Structures or activities will not create a navigational hazard.

8. Structures will be maintained in a functional condition and will be repaired or removed if they become dilapidated to such an extent that they are no longer functional.

9. Structures or activities will be constructed, operated, and maintained solely for water dependent purposes.

10. The permittee agrees to indemnify, defend and hold harmless the Board of Trustees and the State of Florida from all claims, actions, lawsuits and demands in any form arising out of the authorization to use sovereignty submerged lands or the permittee's use and construction of structures on sovereignty submerged lands. This

duty to indemnify and hold harmless will include any and all liabilities that are associated with the structure or activity including special assessments or taxes that are now or in the future assessed against the structure or activity during the period of the authorization.

11. Failure by the Board of Trustees to enforce any violation of a provision of the authorization or waiver by the Board of Trustees of any provision of the authorization will not invalidate the provision not enforced or waived, nor will the failure to enforce or a waiver prevent the Board of Trustees from enforcing the unenforced or waived provision in the event of a violation of that provision.

12. Permittee binds itself and its successors and assigns to abide by the provisions and conditions set forth in the authorization. If the permittee or its successors or assigns fails or refuses to comply with the provisions and conditions of the authorization, the authorization may be terminated by the Board of Trustees after written notice to the permittee or its successors or assigns. Upon receipt of such notice, the permittee or its successors or assigns will have thirty (30) days in which to correct the violations. Failure to correct the violations within this period will result in the automatic revocation of this authorization.

13. All costs incurred by the Board of Trustees in enforcing the terms and conditions of the authorization will be paid by the permittee. Any notice required by law will be made by certified mail at the address shown on page one of the authorization. The permittee will notify the Board of Trustees in writing of any change of address at least ten days before the change becomes effective.

14. This authorization does not allow any activity prohibited in a conservation easement or restrictive covenant that prohibits the activity.

NOTICE OF RIGHTS

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice.

<u>Petition for Administrative Hearing</u>
A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57,

F.S. Pursuant to Rule 28-106.201, F.A.C., a petition for an administrative hearing must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;

(c) A statement of when and how the petitioner received notice of the agency decision;

(d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;

(e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action; and

(f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and

(g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

The petition must be filed (received by the Clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000. Also, a copy of the petition shall be mailed to the permittee at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with Rule 62-110.106(3), F.A.C., petitions for an administrative hearing by the permittee must be filed with 14 days of receipt of this written notice. Petitions filed by any persons other than the permittee, and other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of the notice or within 14 days of receipt of the written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who has asked the Department for notice of agency action may file a petition with 14 days of receipt of such notice, regardless of the date of publication. The failure to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

Extension of Time

Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Mediation

Mediation is not available in this proceeding.

FLAWAC Review

The permittee, or any party within the meaning of Section 373.114(1)(a) or 373.4275, F.S., may also seek appellate review of this order before the Land and Water Adjudicatory Commission under Section 373.114(1) or 373.4275, F.S. Requests for review before the Land and Water Adjudicatory Commission must be filed with the Secretary of the Commission and served on the Department within 20 days from the date when the order is filed with the Clerk of the Department.

Judicial Review

Any party to this action has the right to seek judicial review pursuant to section 120.68, F.S., by filing a Notice of Appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, M.S. 35, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal.

[THIS SECTION INTENTIONALLY LEFT BLANK]

The Notice of Appeal must be filed with 30 days from the date this action is filed with the Clerk of the Department.

Executed in Lee County, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Jon M. Iglehart
District Director
South District Office

JMI/mm

Attachments:
Notice of Permit Issuance, 1 page
Project Drawings and Design Specs., ~~4 pages~~ 24 pages
Cowbone Marsh Hydrologic Restoration Plan, ~~49 pages~~ 161 pages
Commencement notice /62-343.900(3)*
Annual status report/62-343.900(4)*
As-built certification/62-343.900(5)*
Inspection certification/62-343.900(6)*
Transfer construction to operation phase/ 62-343.900(7)*
Application for transfer of an ERP permit/62-343.900(8)*
*Can be downloaded at: http://www.dep.state.fl.us/water/wetlands/erp/forms.htm

Copies furnished to:
DEP, Office of General Counsel
U.S. Army Corps of Engineers, File # 2008-4055
FWC, Imperiled Species Management Section
Glades County Property Appraiser
Bureau of Public Land Administration, Lease Agreement No. 4257

CERTIFICATE OF SERVICE

The undersigned hereby certifies that this permit and authorization to use sovereignty submerged lands, including all copies, were mailed before the close of business on **September 11, 2012,** to the above listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, under 120.52(7) of the Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Marie Vidrine
Clerk

September 11, 2012
Date

INDEX OF PLANS

SHEET NO.	SHEET DESCRIPTION
C1.01	KEY SHEET AND VICINITY MAP
C2.01	TEMPORARY ACCESS ROAD LAYOUT
C2.02	TEMPORARY ACCESS ROAD SHEETS LAYOUT
C2.03–C2.08	TEMPORARY ACCESS ROAD PLAN AND CROSS SECTIONS
C2.09	COMPOSITE MAT DETAILS
C2.10	TEMPORARY ACCESS ROAD ALTERNATIVES TAR–1 & TAR–2
C2.11	TEMPORARY ACCESS ROAD ALTERNATIVES TAR–2 & TAR–3
C3.01	CHANNEL SHEETS LAYOUT
C3.02–C3.10	CHANNEL PLAN VIEW AND CROSS SECTIONS
C4.01–C4.02	EROSION CONTROL DETAILS

STATE OF FLORIDA
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

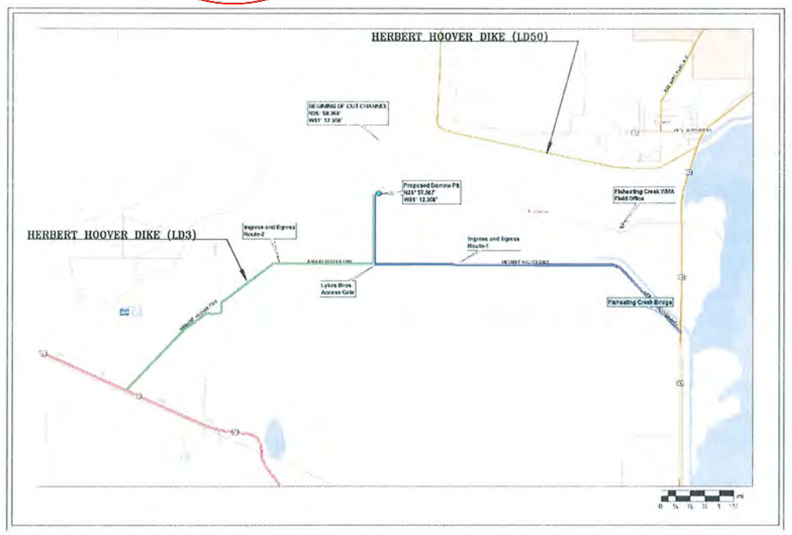
CONSTRUCTION PLANS FOR FISHEATING CREEK WMA COWBONE MARSH TEMPORARY ACCESS ROAD

PROJECT NUMBER FWC 11/12–

SECTIONS (26–28, 32–34), TOWNSHIP 40 SOUTH, RANGE 31 EAST
SECTIONS (3–8), TOWNSHIP 41 SOUTH, RANGE 31 EAST

RECEIVED
JUN 28 2012
D.E.P. South District

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers



LOCATION STREET MAP



NOT TO SCALE



LOCATION AERIAL MAP
SCALE: 1" = 10,000'

NATIONAL GEODETIC SURVEY
BENCHMARK W 523
PID AJ6185
SPC FL NAD 83 E, FOOT
NORTH = 952,835.43'
EAST = 616,430.67'
ELEV. = 19.44' NAVD 88

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN ALTERED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

GOVERNING SPECIFICATIONS:
SPECIFICATIONS AS ISSUED WITH THESE PLANS.

NOTES

POINT COORDINATES ARE IN FEET, AND ARE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983.

VERTICAL INFORMATION DEPICTED HEREON, UNLESS NOTED OTHERWISE, IS BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD 88).

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

REVISIONS:		
DATE	BY	DESCRIPTION

SHEET TITLE
KEY SHEET AND VICINITY MAP

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5601

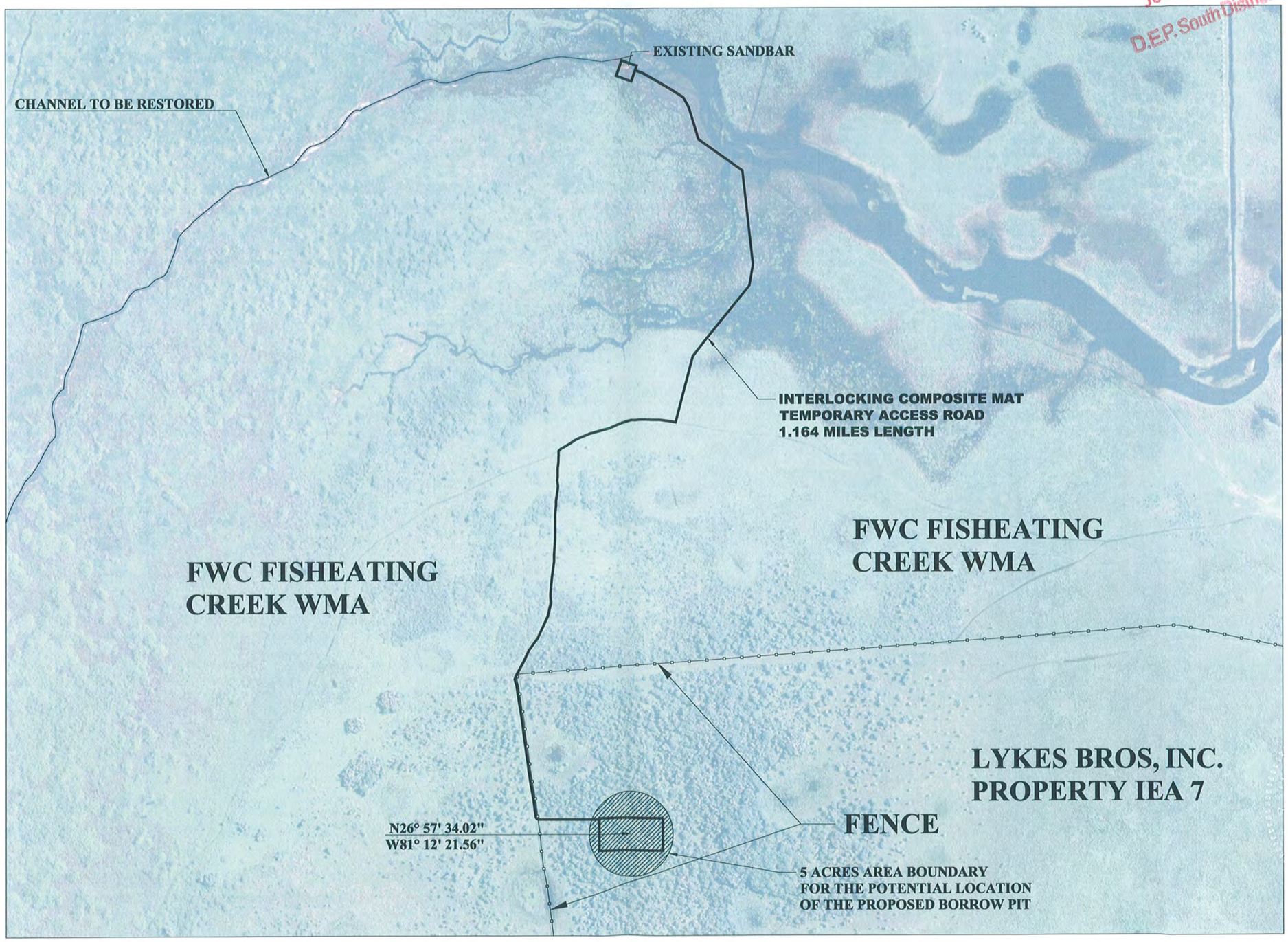
PROJECT NO.
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C1.01

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 500' 1,000' 1,500' 2,000' 2,500'

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers



NORTH

SHEET TITLE
TEMPORARY ACCESS ROAD
LAYOUT

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY :
M. MADKOUR

APPROVED BY :
M. MADKOUR

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 410-5681

PROJECT No. :

DATE :
MAY 2012

SCALE :
AS SHOWN

SHEET
C2.01

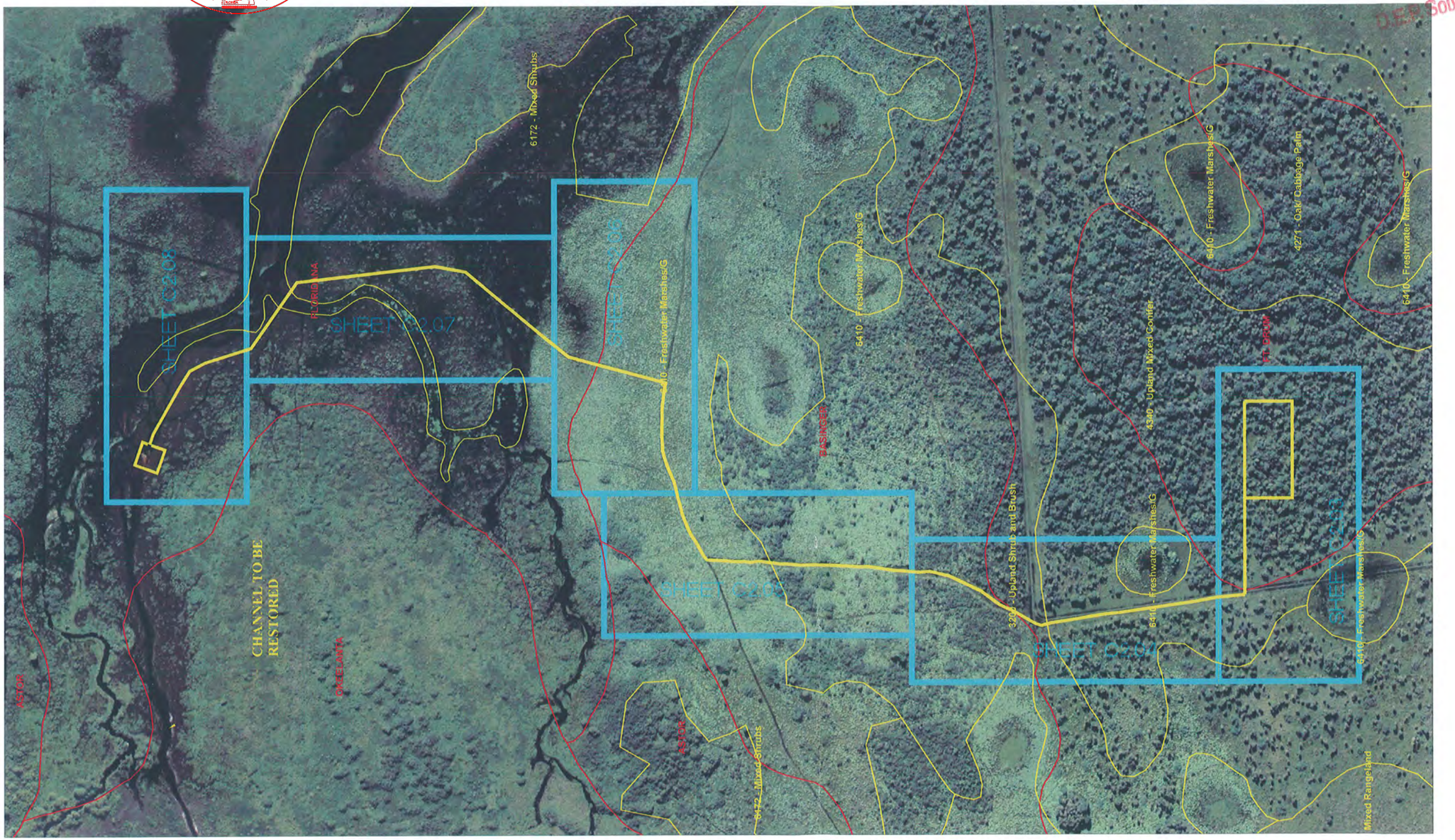
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

NORTH

0' 500' 1,000' 1,500' 2,000' 2,500'

RECEIVED
JUN 28 2012
D.E.P. South District



SHEET TITLE
TEMPORARY ACCESS ROAD
SHEETS LAYOUT

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY :
M. MADJOUR
APPROVED BY :
M. MADJOUR

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5521

PROJECT NO. :
DATE
MAY 2012
SCALE :
AS SHOWN

C2.02

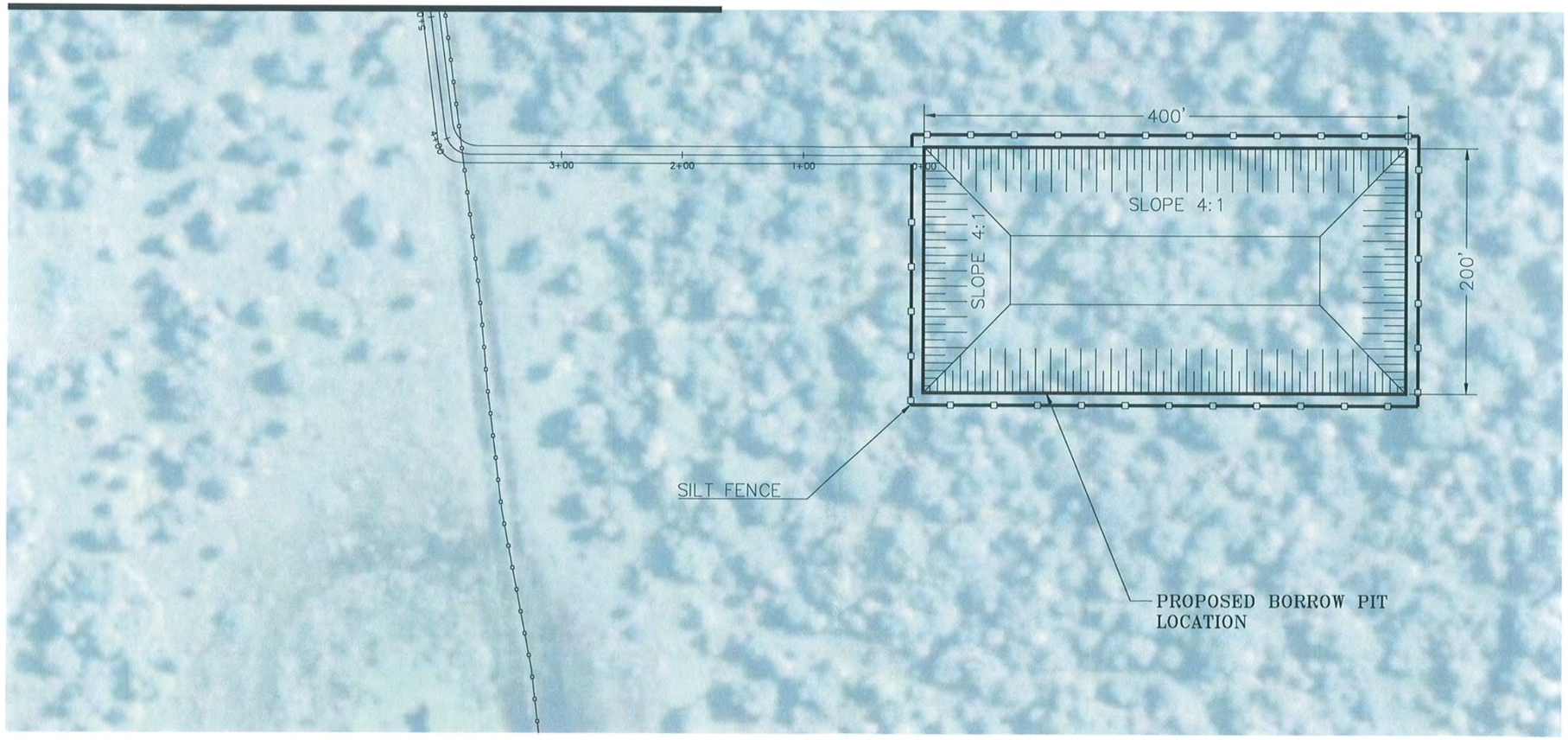
Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

RECEIVED
JUN 28 2012
D.E.P. South District

0' 100' 200' 300' 400' 500'

NORTH

MATCHING LINE SHEET C2.04



DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

SHEET TITLE
TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADEOUR
APPROVED BY : M. MADEOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-3831

PROJECT No. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C2.03

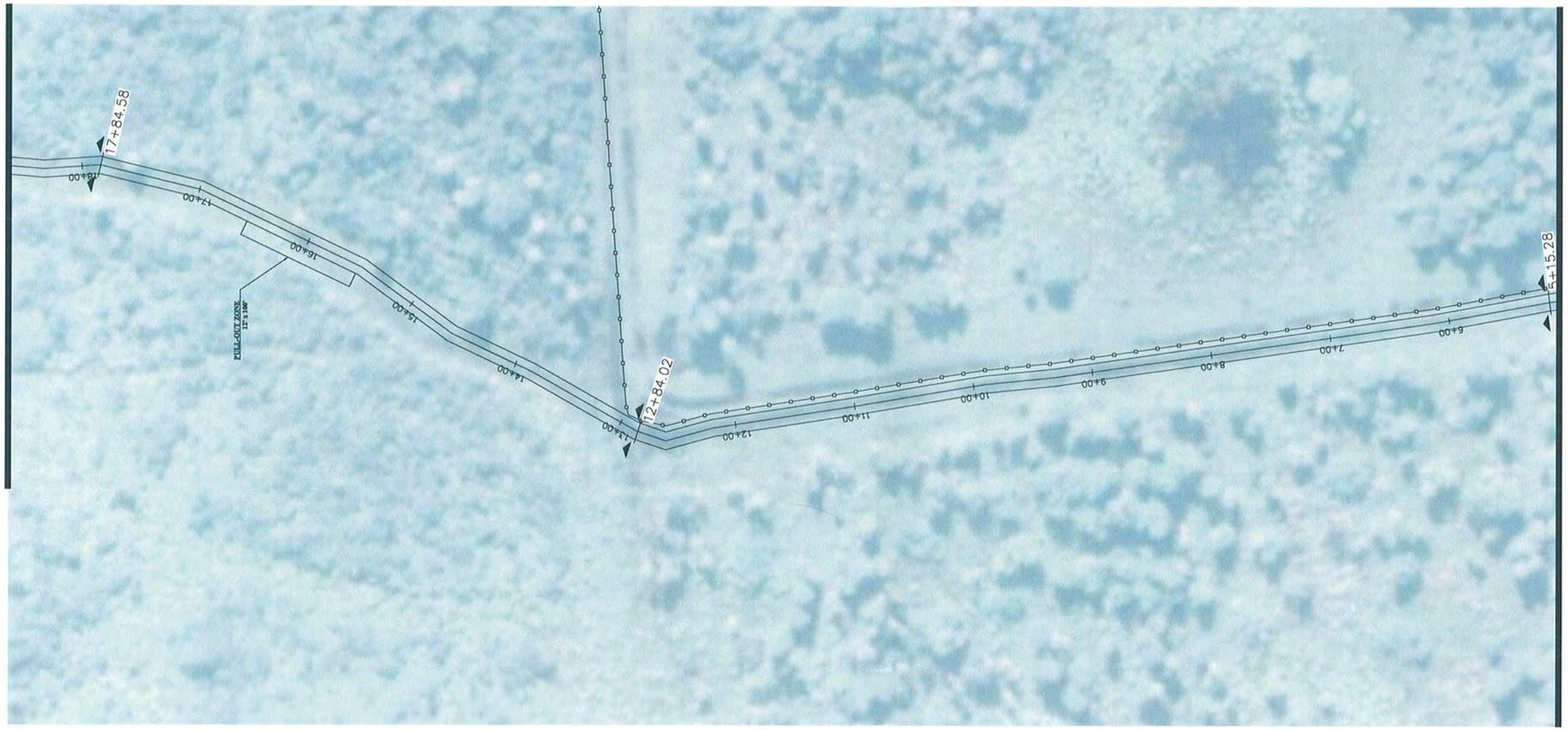
Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

NORTH

0' 100' 200' 300' 400' 500'

RECEIVED
JUN 28 2012
D.E.P. South District

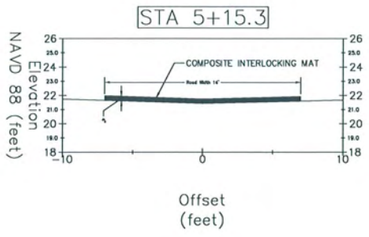
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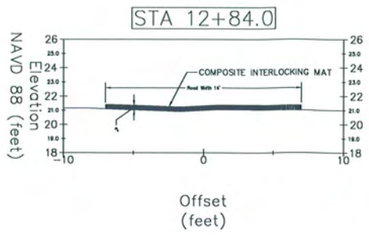
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DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

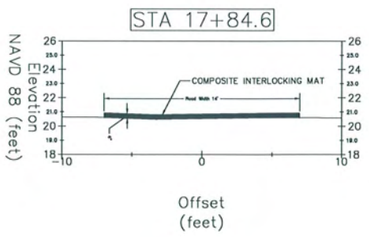
STA 5+15.3



STA 12+84.0



STA 17+84.6



SHEET TITLE
TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADSOUR
APPROVED BY : M. MADSOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-4676

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET NO. : C2.04

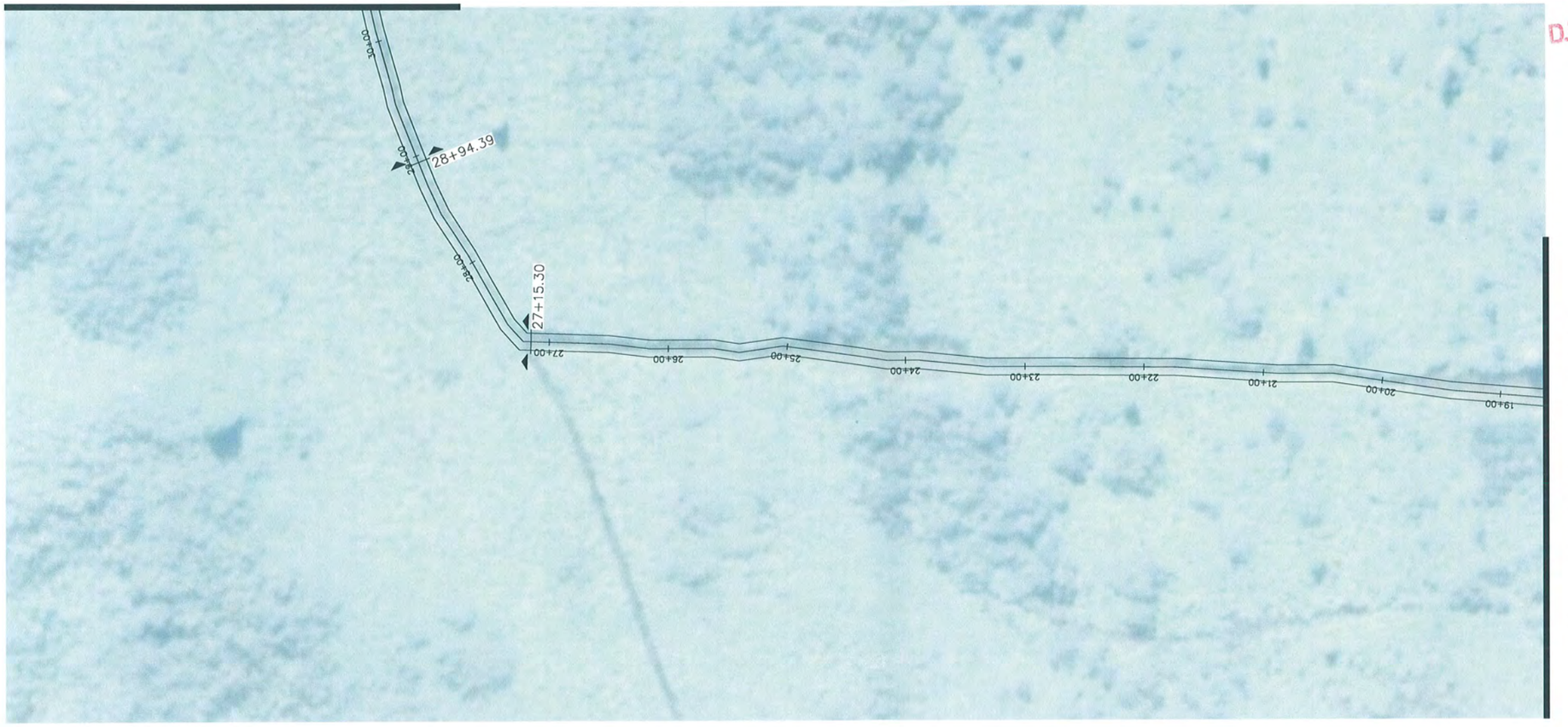
Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

NORTH

0' 100' 200' 300' 400' 500'

RECEIVED
JUN 28 2012
D.E.P. South District

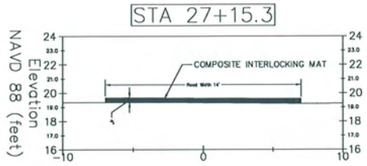
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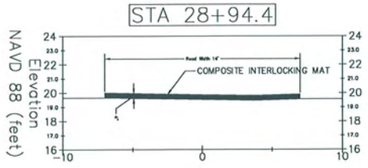
MATCHING LINE SHEET C2.04

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

STA 27+15.3



STA 28+94.4



SHEET TITLE
TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. HADKOUR
APPROVED BY : M. HADKOUR
SEAL

FLORIDA FISH & WILDLIFE CONSERVATION COMM./DEOT
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-1831

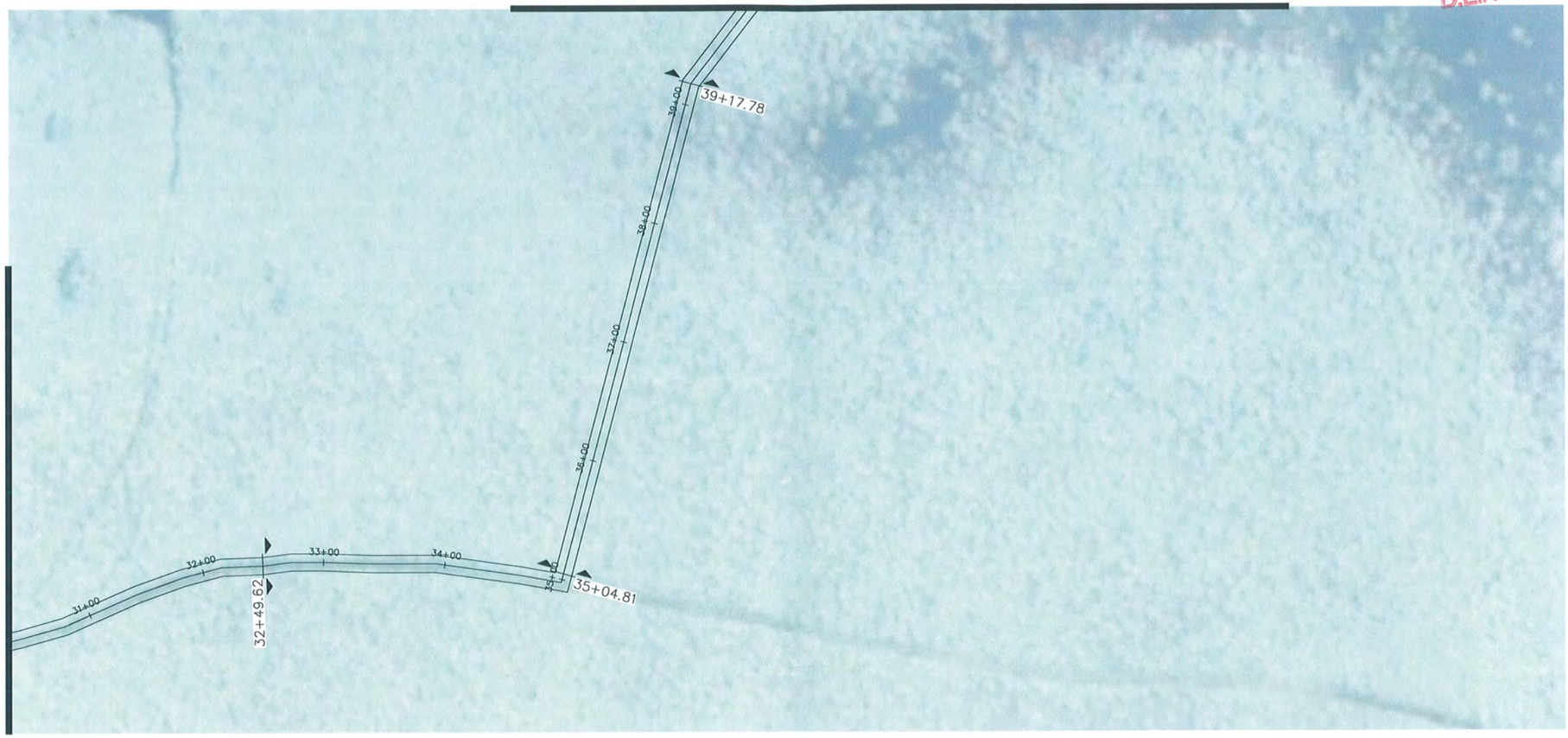
PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C2.05

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 100' 200' 300' 400' 500'

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JUN 28 2012
D.E.P. South District

MATCHING LINE SHEET C2.07

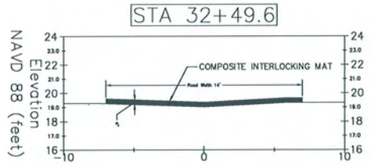


MATCHING LINE SHEET C2.05

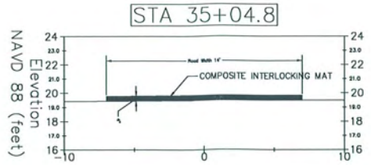
NORTH

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

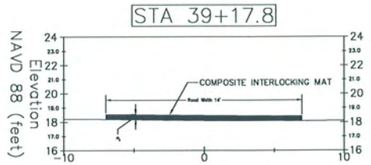
STA 32+49.6



STA 35+04.8



STA 39+17.8



SHEET TITLE
TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399-1
(850) 488-4676

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C2.06

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

NORTH

0' 100' 200' 300' 400' 500'

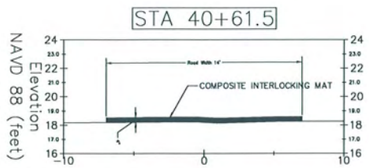
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JUN 28 2012
D.E.P. South District

MATCHING LINE SHEET C2.08

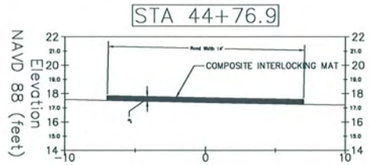


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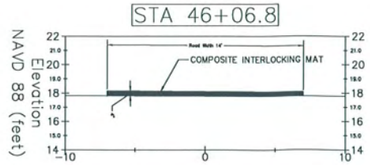
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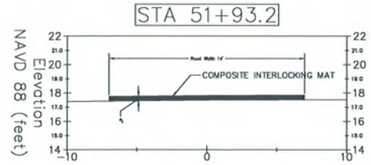
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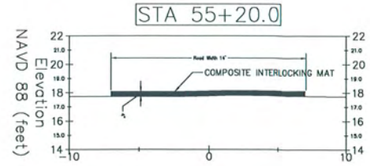
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STA 51+93.2



STA 55+20.0



SHEET TITLE
TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

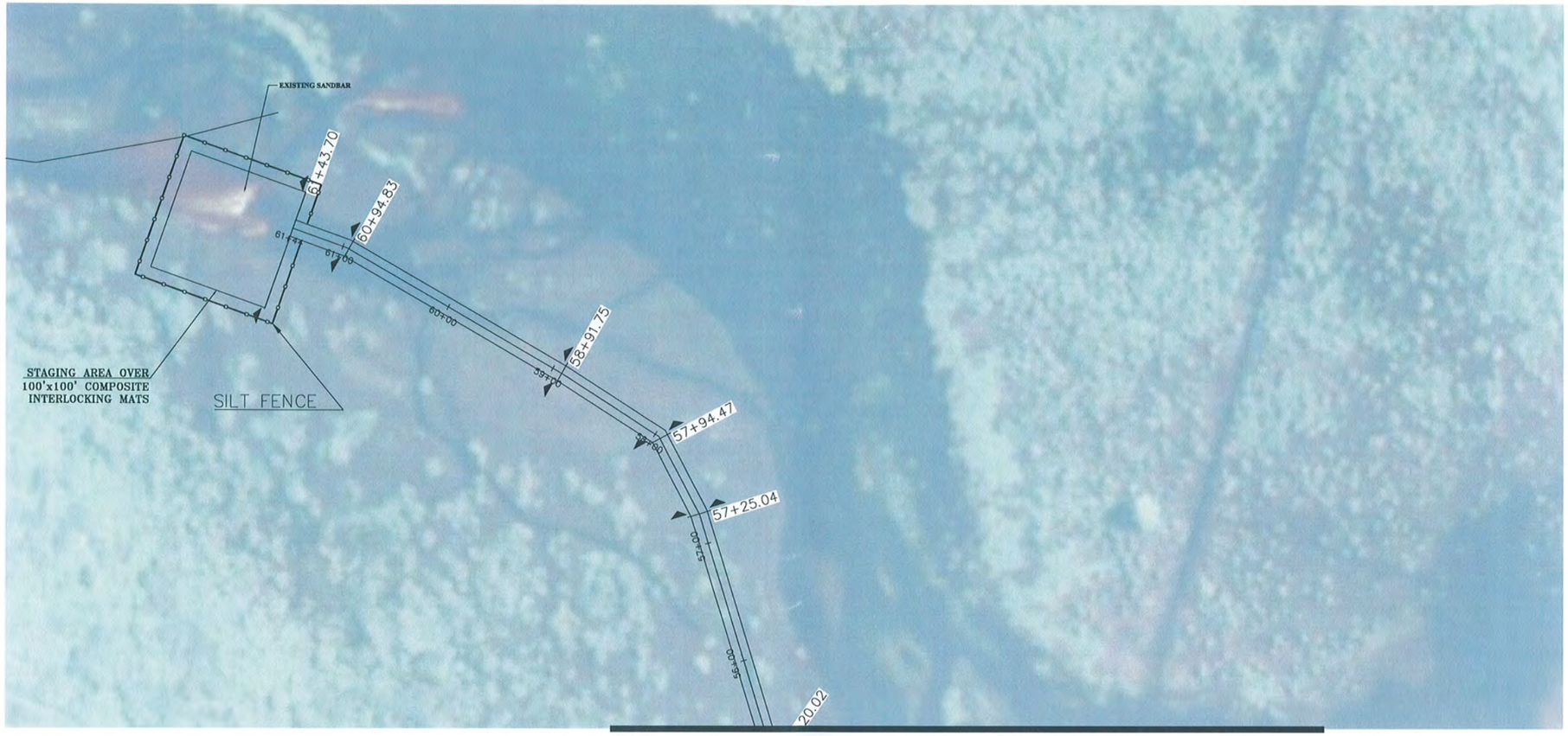
DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-4676

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET
C2.07

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

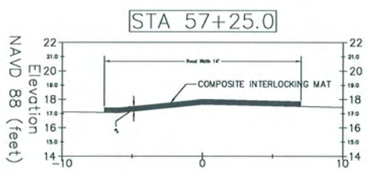
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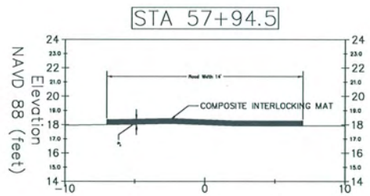
MATCHING LINE SHEET C2.07

NORTH

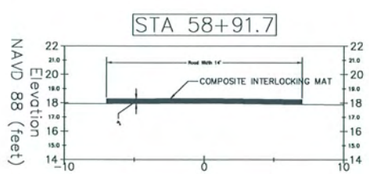
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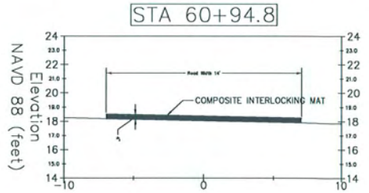
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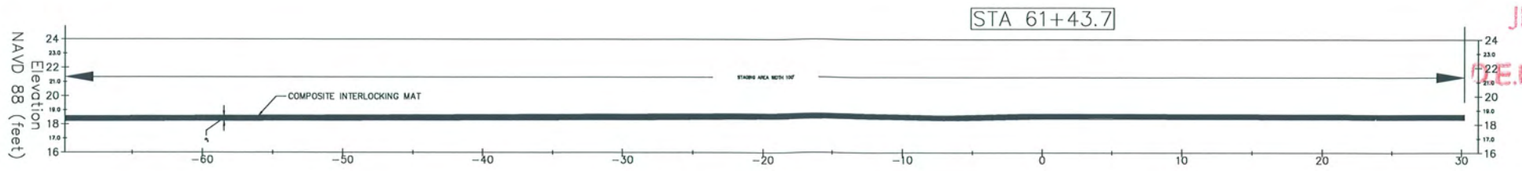
STA 58+91.7



STA 60+94.8



STA 61+43.7



DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

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FDEP South District

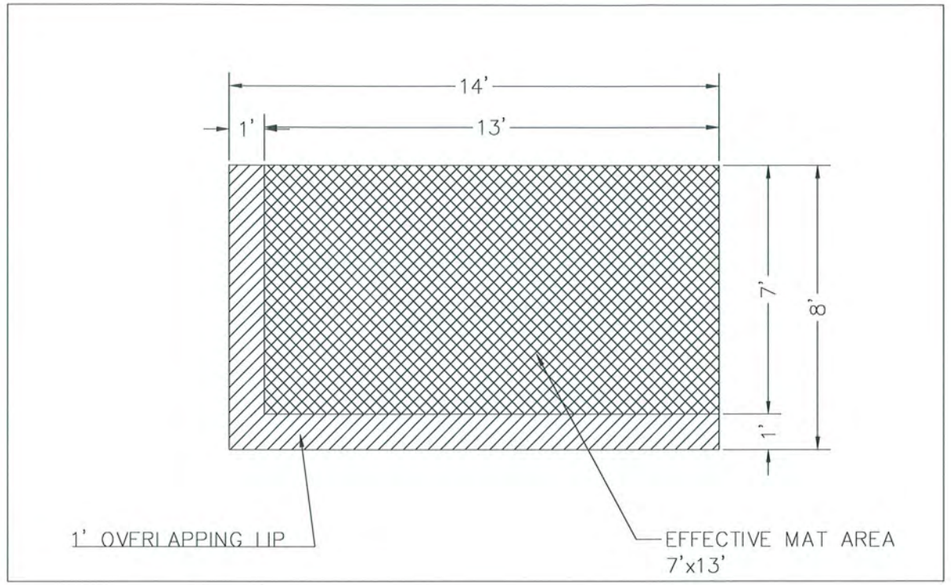
SHEET TITLE
TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADSOUR
APPROVED BY : M. MADSOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 487-3831

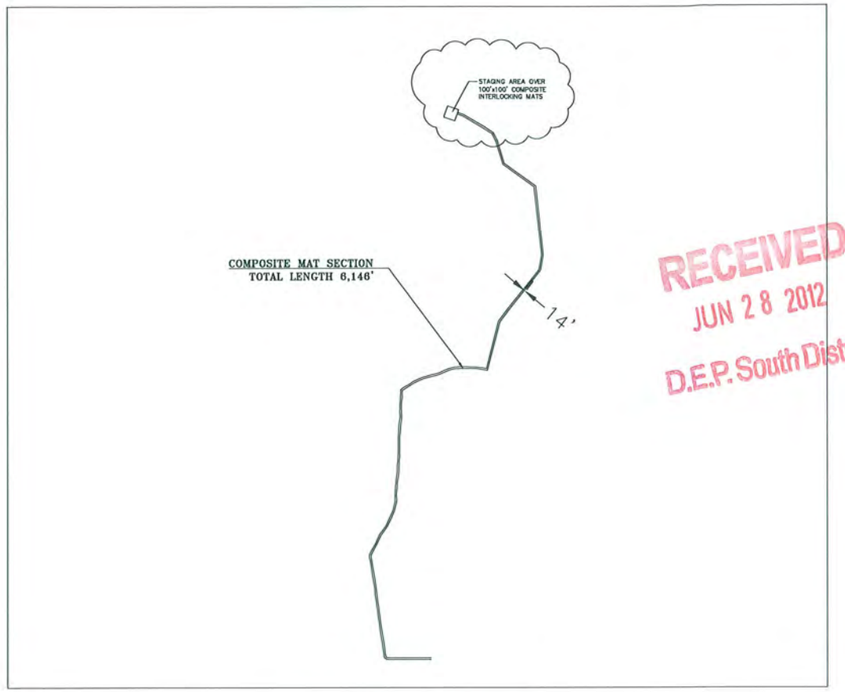
PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET : C2.08



SINGLE MAT DIMENSIONS

NOTES: FOR RESTORATION

- AS SOON AS BACKFILLING OF THE CUT CHANNEL IS COMPLETED AND STABILIZED, CONTRACTOR WILL REMOVE ALL COMPOSITE MATS.
- IF REMOVING THE COMPOSITE MATS REVEALED THE PRESENCE OF RUTS (MORE THAN 6" HIGH) DUE TO HAULING ACTIVITIES, CONTRACTOR WILL RE-GRADE THE RUTS TO EVEN SURFACE.
- RESTORE AND RE-VEGETATE ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION.



TEMPORARY ACCESS ROAD
COMPOSITE MAT SECTION

RECEIVED
JUN 28 2012
D.E.P. South District

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers







EXAMPLES OF COMPOSITE MAT APPLICATIONS

SHEET TITLE
COMPOSITE MAT DETAILS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL
FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 487-3241
PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C2.09

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0 1 2 3 4 5
MILES

RECEIVED
JUN 28 2012
D.E.P. South District

TEMP. ACCESS ROUTE (TAR-1)
TEMP. ACCESS ROUTE (TAR-2)

TEMP. ACCESS ROUTE TAR-2
UNIMPACTED WETLANDS
MUCK SOIL SECTION ENDS
0.44 MILES

CHANNEL TO BE RESTORED

TEMP. ACCESS ROUTE TAR-2
UNIMPACTED WETLANDS
MUCK SOIL SECTION BEGINS
0.00 MILES

TEMP. ACCESS ROUTE TAR-1
MINIMALLY IMPACTED WETLANDS
SANDY SOIL SECTION ENDS
0.65 MILES

TEMP. ACCESS ROUTE TAR-1
MINIMALLY IMPACTED WETLANDS
SANDY SOIL SECTION BEGINS
0.00 MILES

HERBERT HOOVER DIKE
LD-50

TEMP. ACCESS ROUTES TAR-1 & TAR-2
FIRELINE SECTION ENDS
1.66 MILES

TEMP. ACCESS ROUTES TAR-1 & TAR-2
FIRELINE SECTION BEGINS
0.0 MILES

HERBERT HOOVER DIKE
LD-3

TEMP. ACCESS ROUTES TAR-1 & TAR-2
HOOVER DIKE SECTION ENDS
4.85 MILES

HERBERT HOOVER DIKE
LD-3

US 27

CEMEX SAND MINE COMPLEX

TEMP. ACCESS ROUTES TAR-1 & TAR-2
HOOVER DIKE SECTION BEGINS
0.00 MILES

NORTH

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

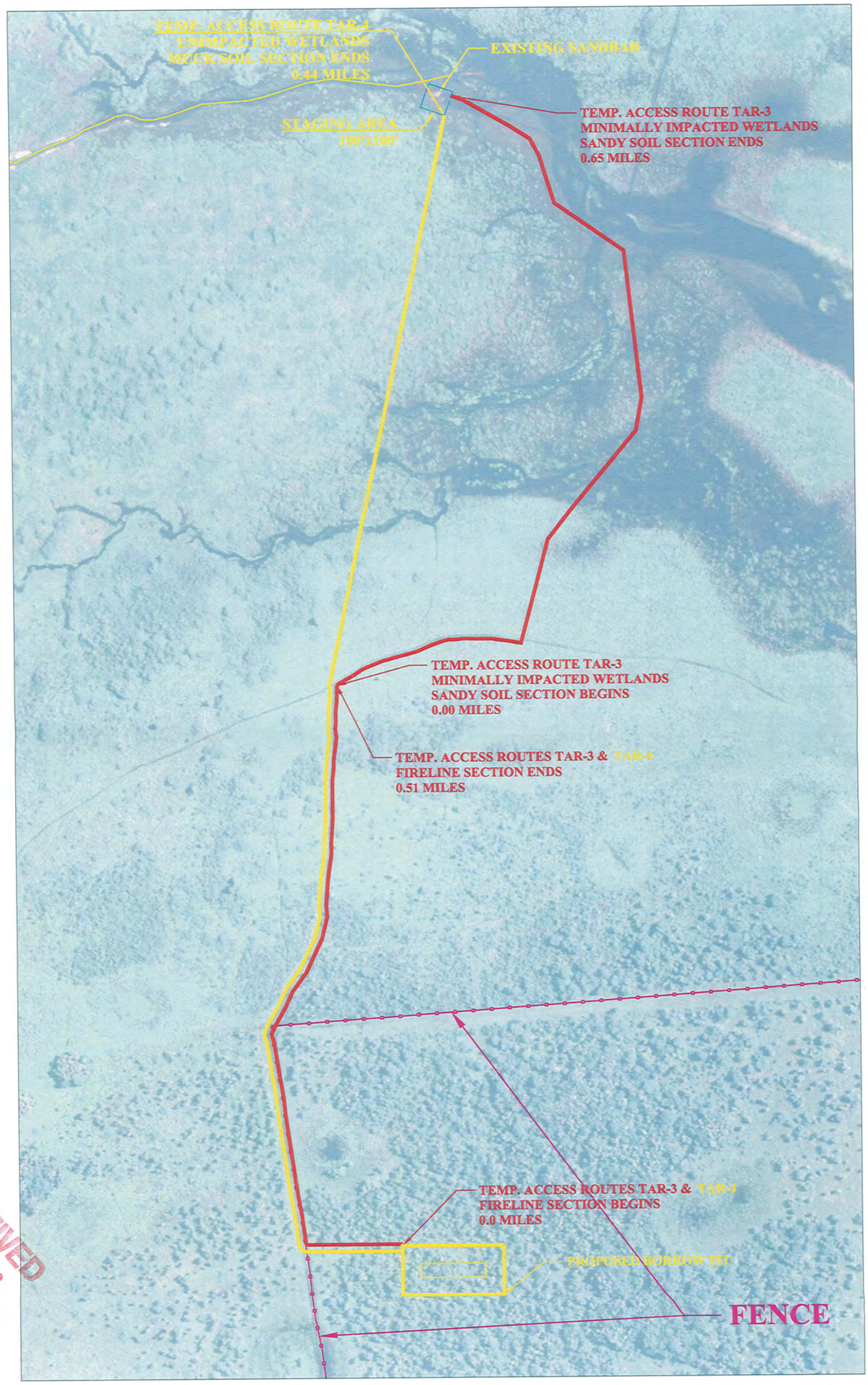
SHEET TITLE
TEMPORARY ACCESS ROUTE
ALTERNATIVES TAR-1 & TAR-2

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

C2.10

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 1,000' 2,000' 3,000' 4,000' 5,000'



NORTH

DEPARTMENT OF ENVIRONMENTAL PROTECTION
South District
Fort Myers
Permit Number
22-0303652-002

RECEIVED
JUN 28 2012
DEP South District

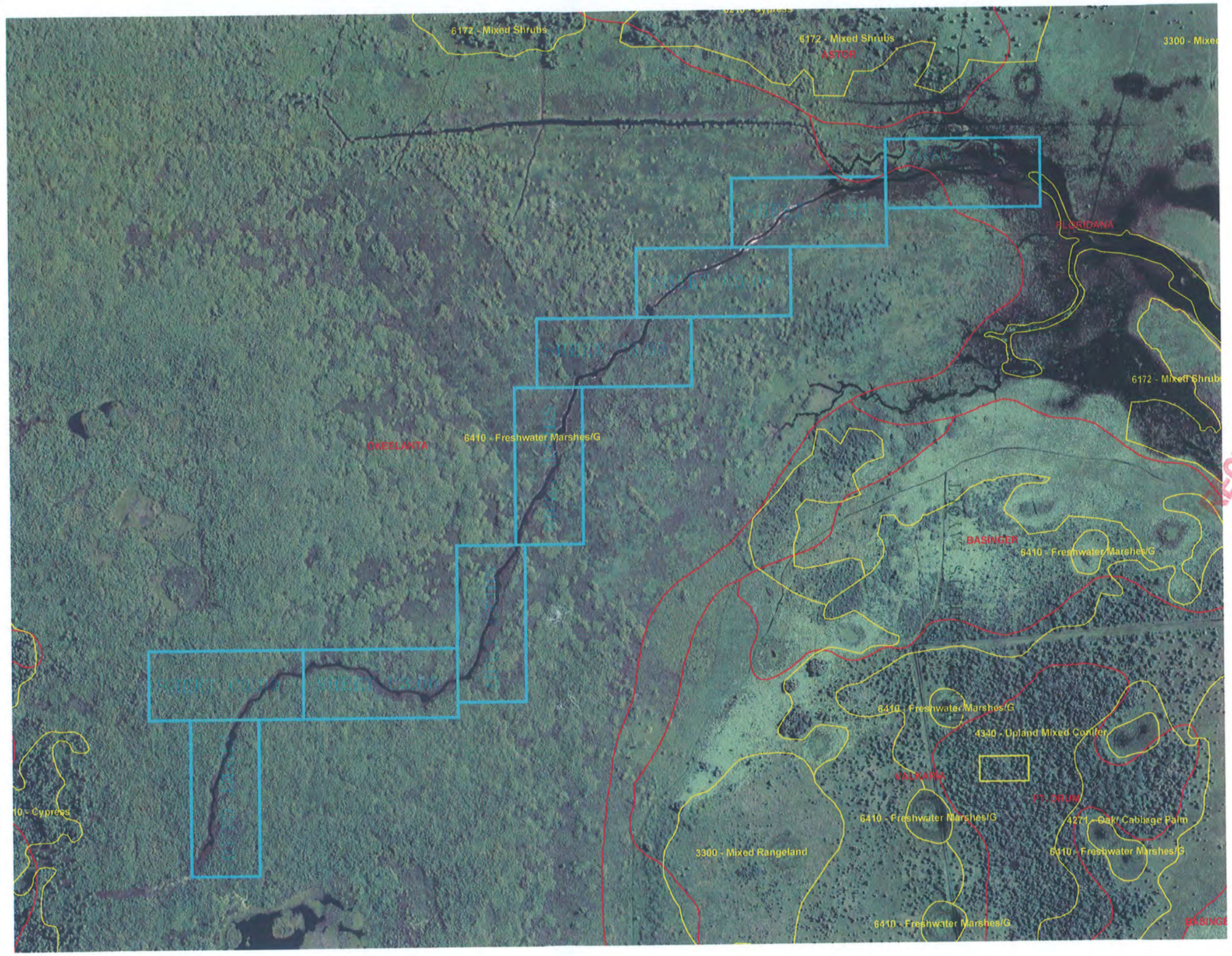
C2.11

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

SHEET TITLE
TEMPORARY ACCESS ROUTE
ALTERNATIVES TAR-3 & TAR-4

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 1,000' 2,000' 3,000' 4,000' 5,000'



NORTH

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

RECEIVED
JUN 28 2012
DEP South District

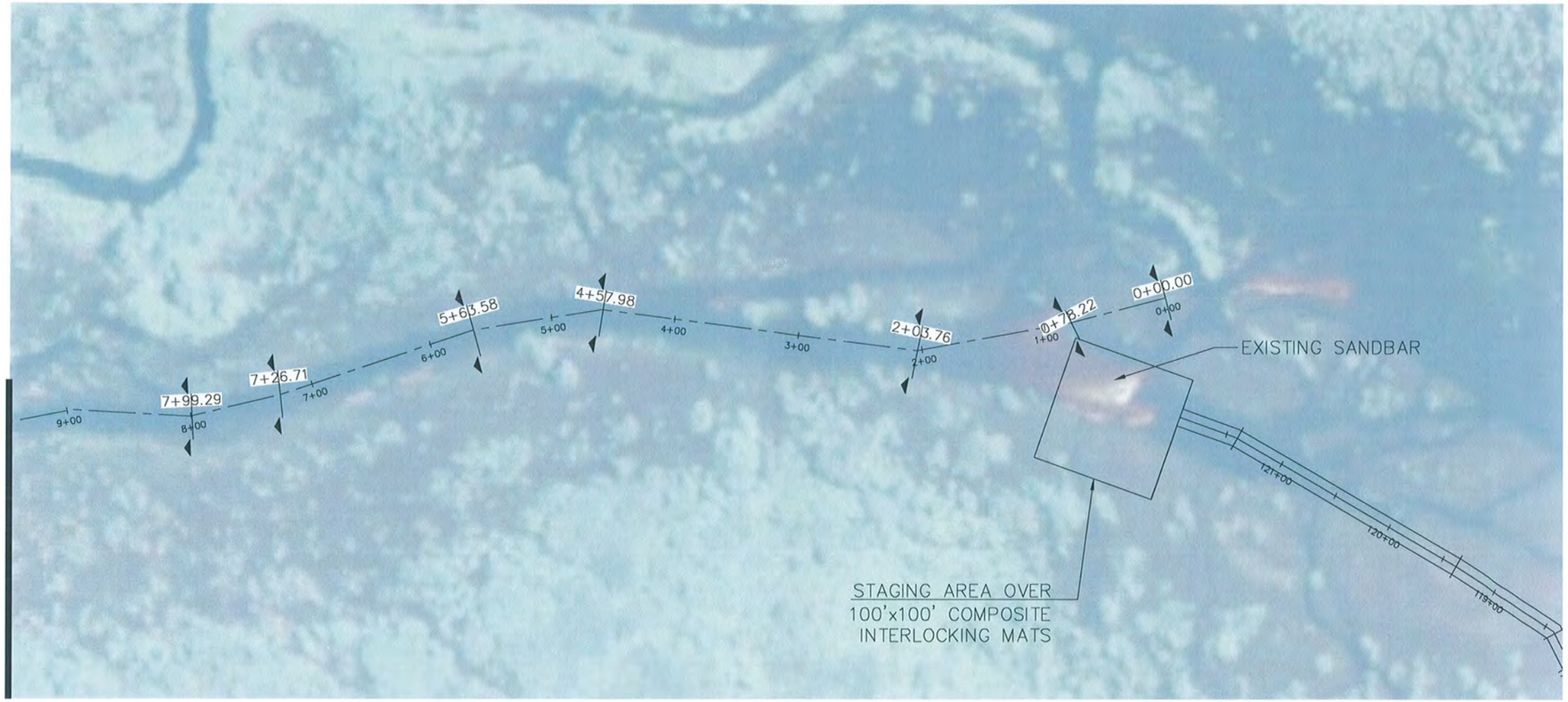
SHEET TITLE
CHANNEL SHEETS LAYOUT

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY: M. MANSOUR
APPROVED BY: M. MANSOUR
DATE: MAY 2012
SCALE: AS SHOWN
SHEET: C3.01

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 100' 200' 300' 400' 500'



NORTH

MATCHING LINE SHEET C3.03

STA 0+00.00
EL. 18.00
AREA=18.2 SF

STA 0+78.22
EL. 18.00
AREA=14.6 SF

STA 2+03.76
EL. 18.00
AREA=31.9 SF

STA 4+57.98
EL. 18.00
AREA=35.6 SF

STA 5+63.58
EL. 18.00
AREA=36.0 SF

STA 7+26.71
EL. 18.00
AREA=31.3 SF

STA 7+99.29
EL. 18.00
AREA=28.4 SF

NAVD 88 (feet) Elevation

Offset (feet)

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Permit Number
22-0303652-002
South District
Fort Myers

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D.E.P. South District

SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.02

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 100' 200' 300' 400' 500'

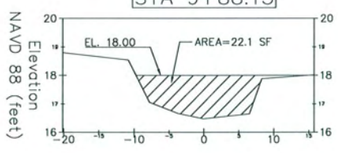


NORTH

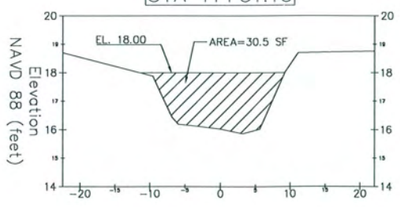
MATCHING LINE SHEET C3.02

MATCHING LINE SHEET C3.03

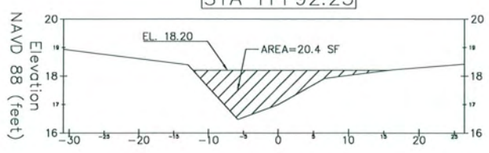
STA 9+88.15



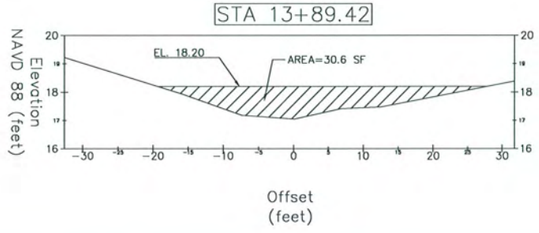
STA 11+31.13



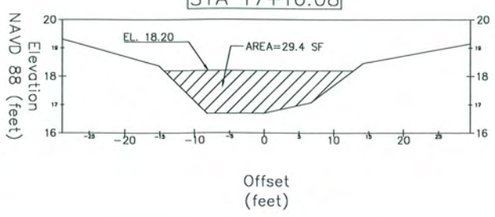
STA 11+92.23



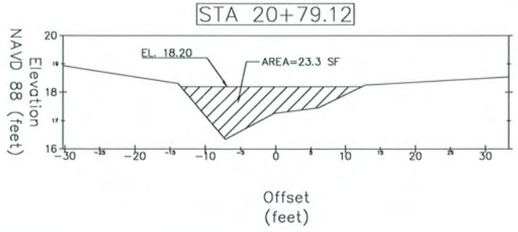
STA 13+89.42



STA 17+16.08



STA 20+79.12



DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

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JUN 28 2012
D.E.P. South District

SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL
FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5881
PROJECT NO. :
SHEET
DATE : MAY 2012
SCALE : AS SHOWN
C3.03

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 100' 200' 300' 400' 500'

MATCHING LINE SHEET C3.03



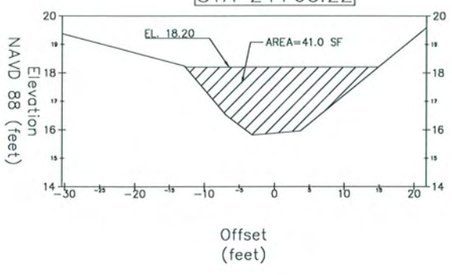
MATCHING LINE SHEET C3.05

NORTH

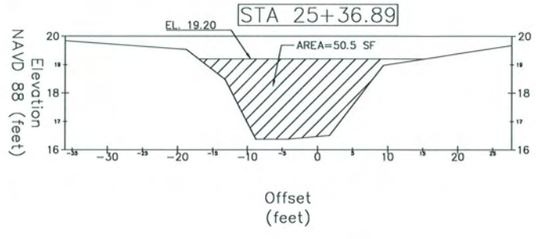
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

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JUN 28 2012
D.E.P. South District

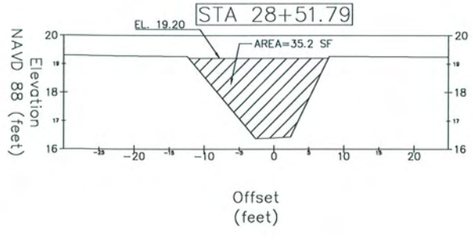
STA 24+63.22



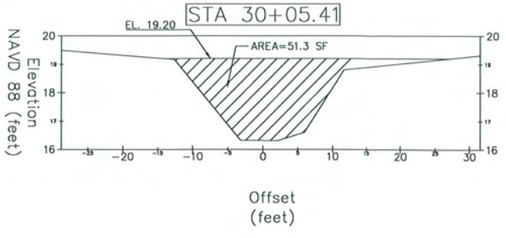
STA 25+36.89



STA 28+51.79



STA 30+05.41



SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADSOUR
APPROVED BY : M. MADSOUR
SEAL

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-4676

PROJECT No. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.04

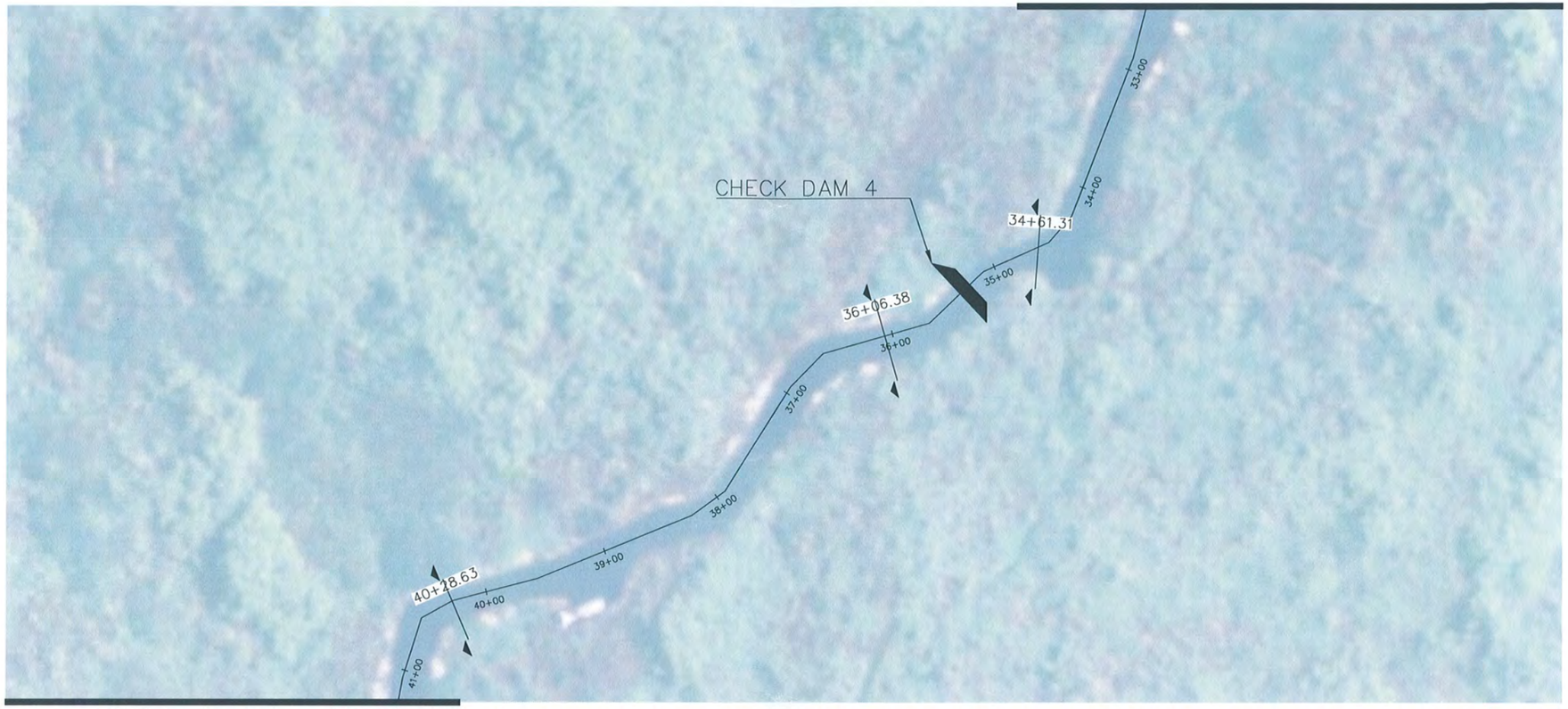
Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

NORTH

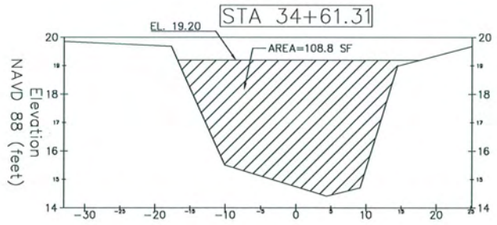
0' 100' 200' 300' 400' 500'

MATCHING LINE SHEET C3.04

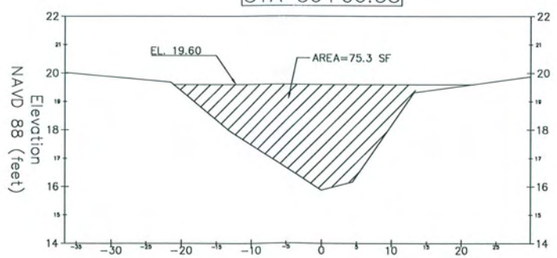


MATCHING LINE SHEET C3.06

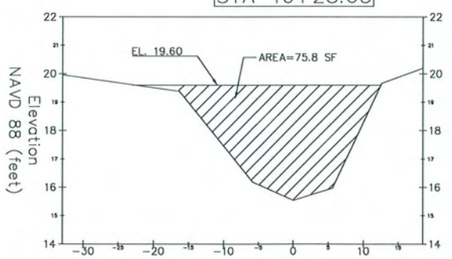
STA 34+61.31



STA 36+06.38



STA 40+28.63



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JUN 28 2012
D.E.P. South District

SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY :
M. MADHOUR
APPROVED BY :
M. MADHOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-3831

PROJECT NO. :
DATE :
MAY 2012
SCALE :
AS SHOWN
SHEET
C3.05

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 100' 200' 300' 400' 500'

MATCHING LINE SHEET C3.05



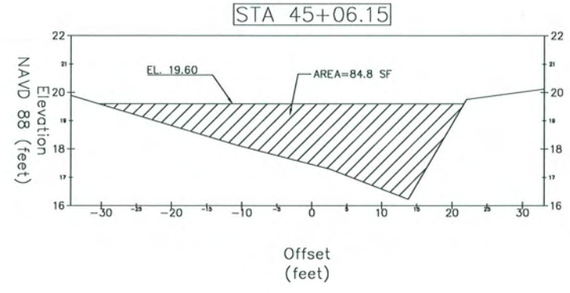
MATCHING LINE SHEET C3.07

NORTH

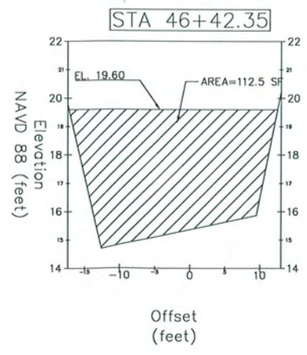
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

RECEIVED
JUN 28 2012
D.E.P. South District

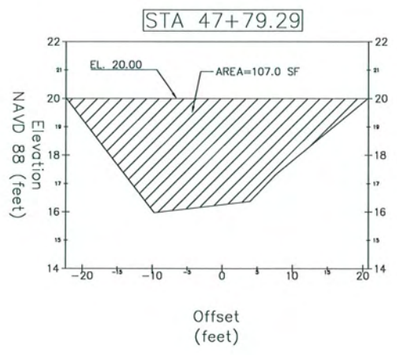
STA 45+06.15



STA 46+42.35



STA 47+79.29



SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

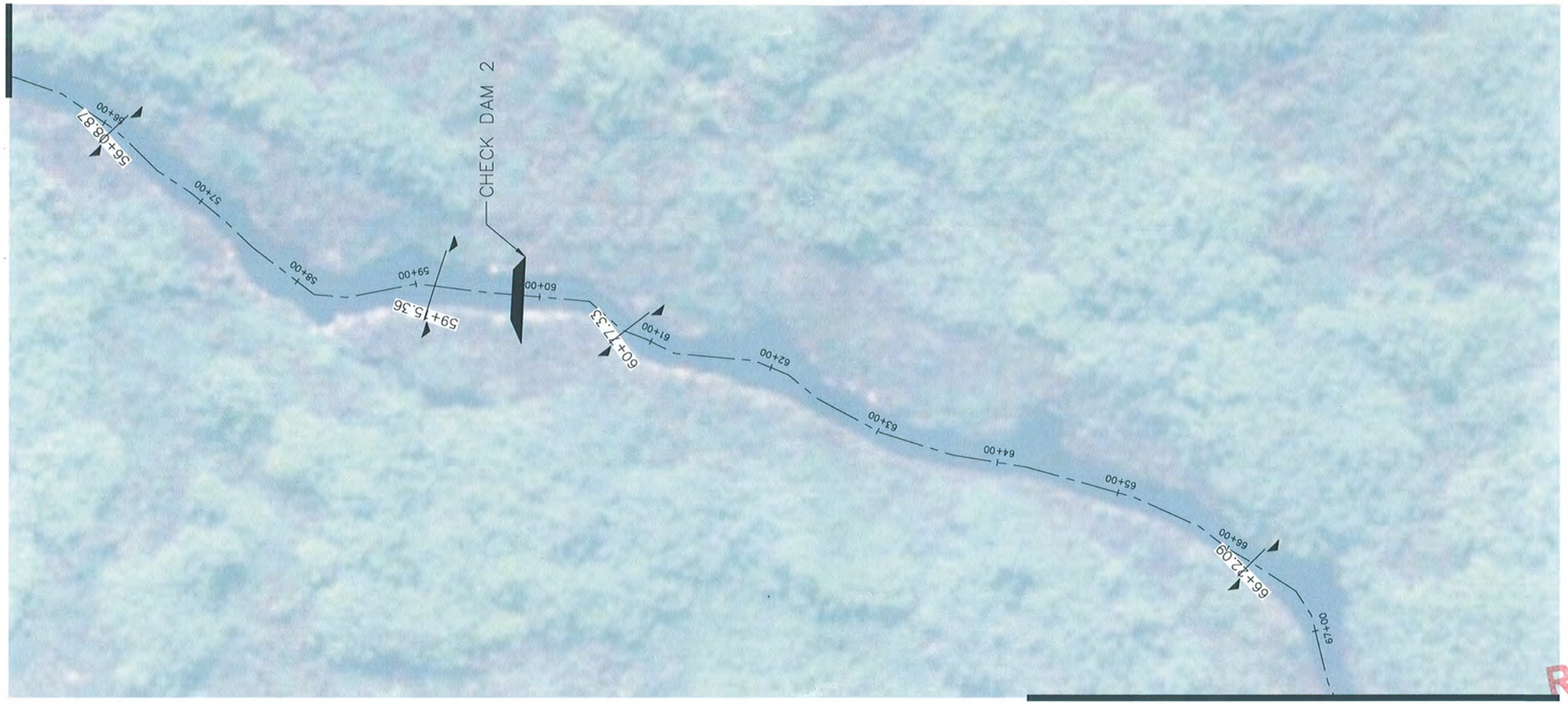
FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-8881

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.06

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 100' 200' 300' 400' 500'

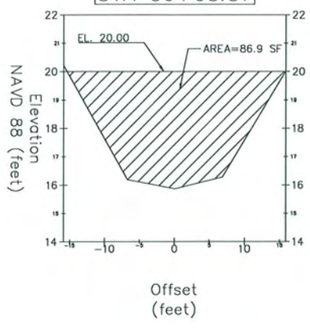
MATCHING LINE SHEET C3.06



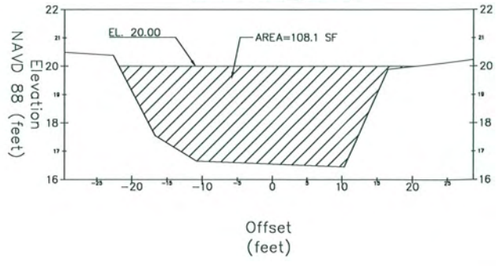
MATCHING LINE SHEET C3.08

NORTH

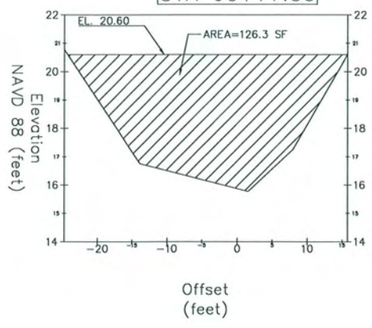
STA 56+08.87



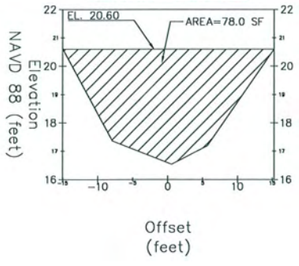
STA 59+15.36



STA 60+77.33



STA 66+22.09



DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

RECEIVED
JUN 28 2012
D.E.P. South District

SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

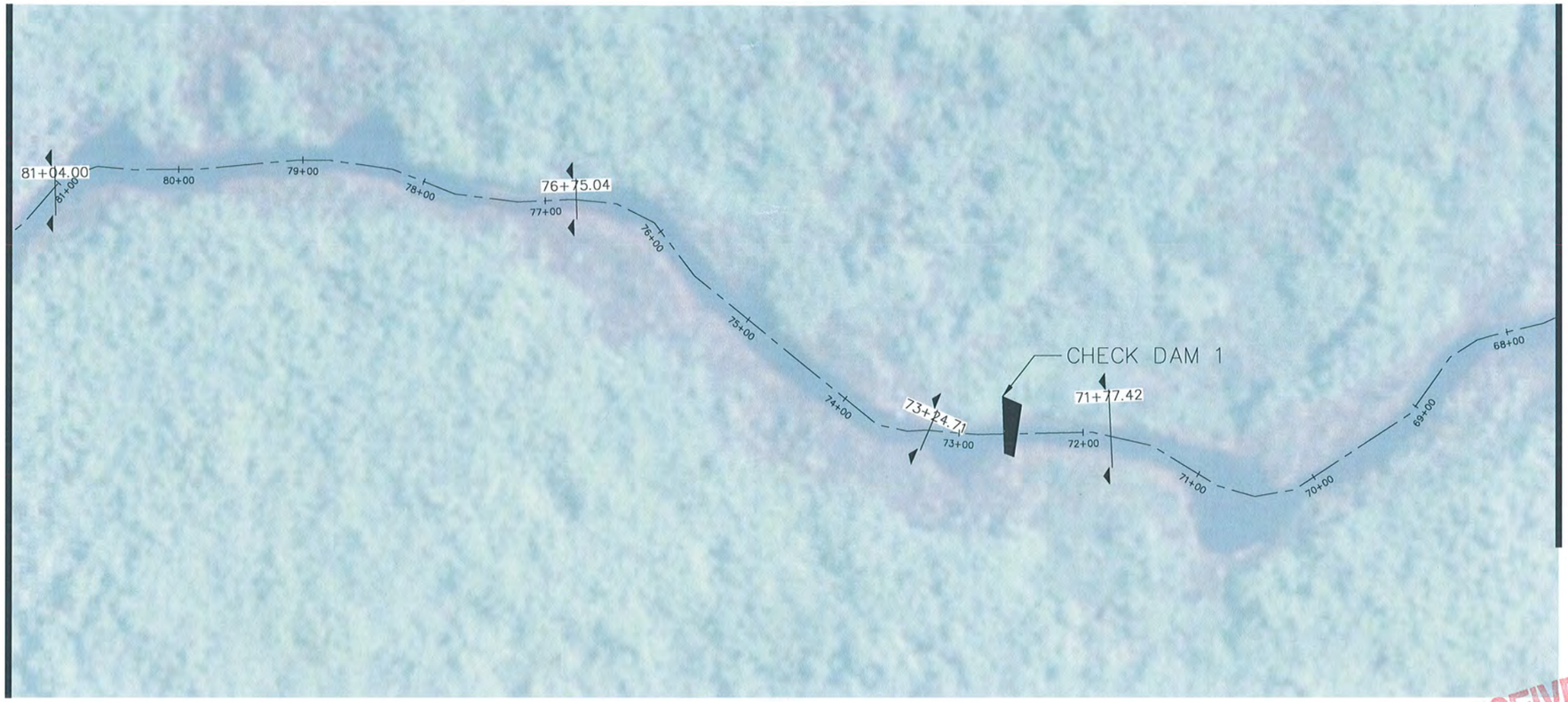
DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL
6/21/12

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-4676

PROJECT NO. : 08L27
DATE : MAY 2012
SCALE : AS SHOWN
C3.07

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 100' 200' 300' 400' 500'



MATCHING LINE SHEET C3.09

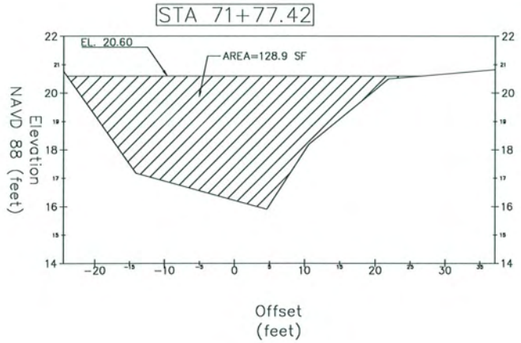
MATCHING LINE SHEET C3.07

NORTH

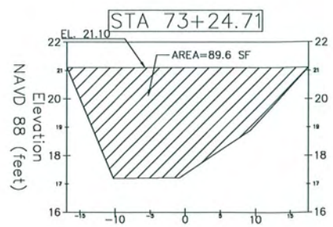
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

RECEIVED
JUN 28 2012
D.E.P. South District

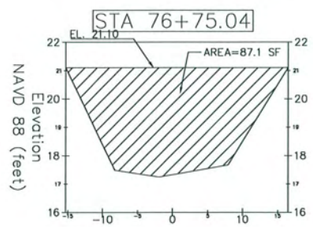
STA 71+77.42



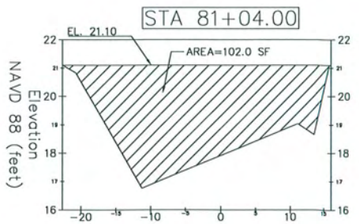
STA 73+24.71



STA 76+75.04



STA 81+04.00



SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY :
M. MADKOUR

APPROVED BY :
M. MADKOUR

SEAL

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-3831

PROJECT NO. :

DATE :
MAY 2012

SCALE :
AS SHOWN

SHEET
C3.08

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 100' 200' 300' 400' 500'

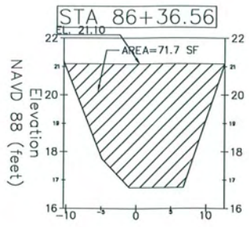
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers



NORTH

MATCHING LINE SHEET C3.08

MATCHING LINE SHEET C3.10



RECEIVED
JUN 28 2012
D.E.P. South District

SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADDOUR
APPROVED BY : M. MADDOUR
SEAL

FLORIDA Fish & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5851

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.09

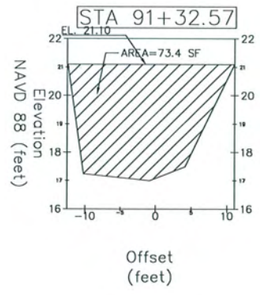
Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

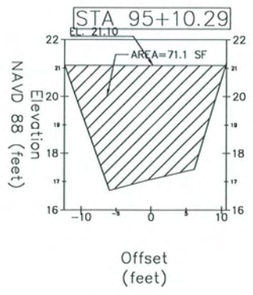
0' 100' 200' 300' 400' 500'

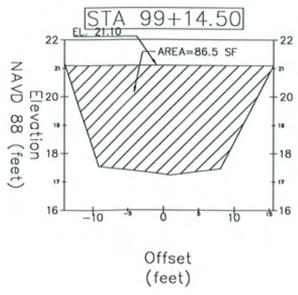
MATCHING LINE SHEET C3.09

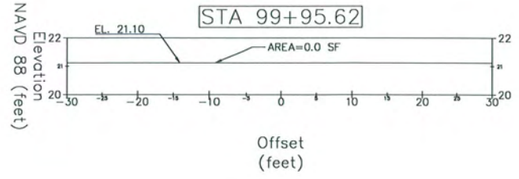


NORTH









DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

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JUN 28 2012
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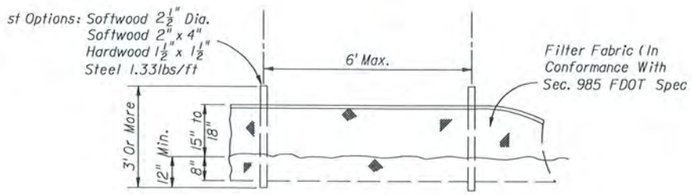
SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

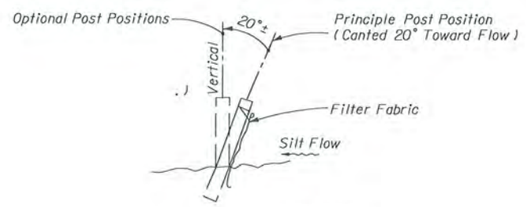
DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-4676

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.10

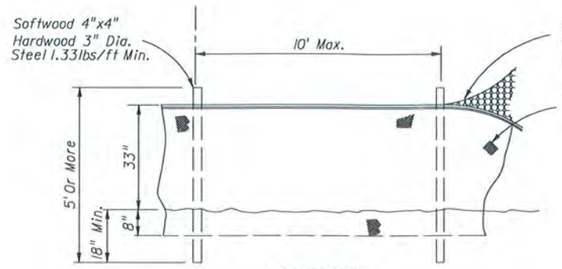


ELEVATION

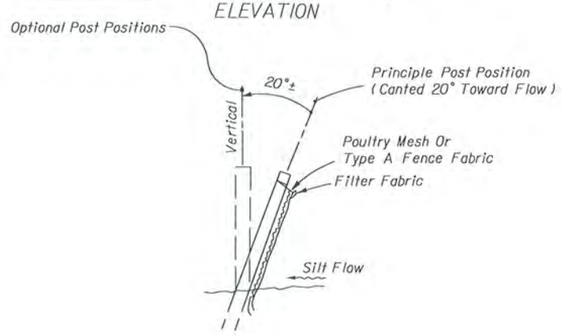


SECTION

TYPE III SILT FENCE



ELEVATION

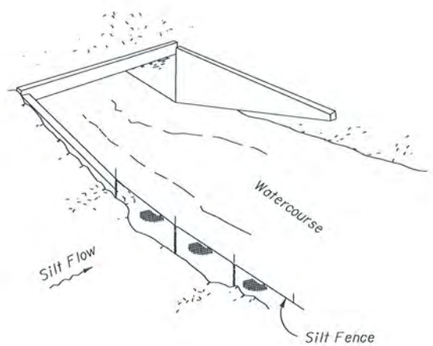


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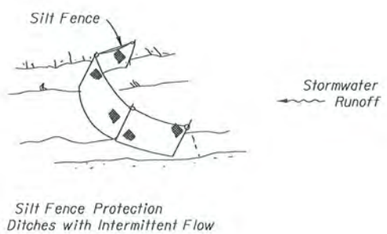
TYPE IV SILT FENCE

NOTES FOR SILT FENCES

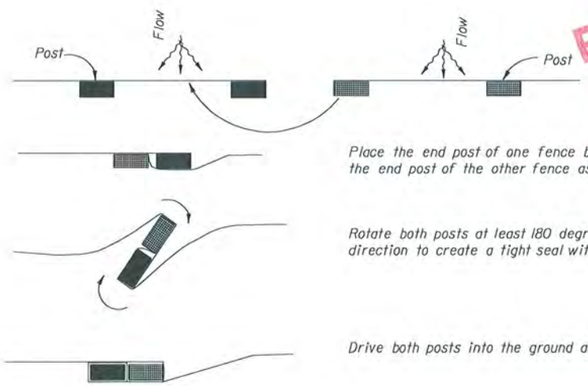
1. Type III Silt Fence to be used at most locations.
2. Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested is where fill slope is 1:2 or steeper and length of slope exceeds 25 feet.
3. Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.
4. Where used as slope protection, Silt Fence is to be constructed on 0% longitudinal grad to avoid channelizing runoff along the length of the fence.



SILT FENCE APPLICATIONS



Silt Fence Protection in Ditches with Intermittent Flow



PLAN VIEW

JOINING TWO SILT FENCES

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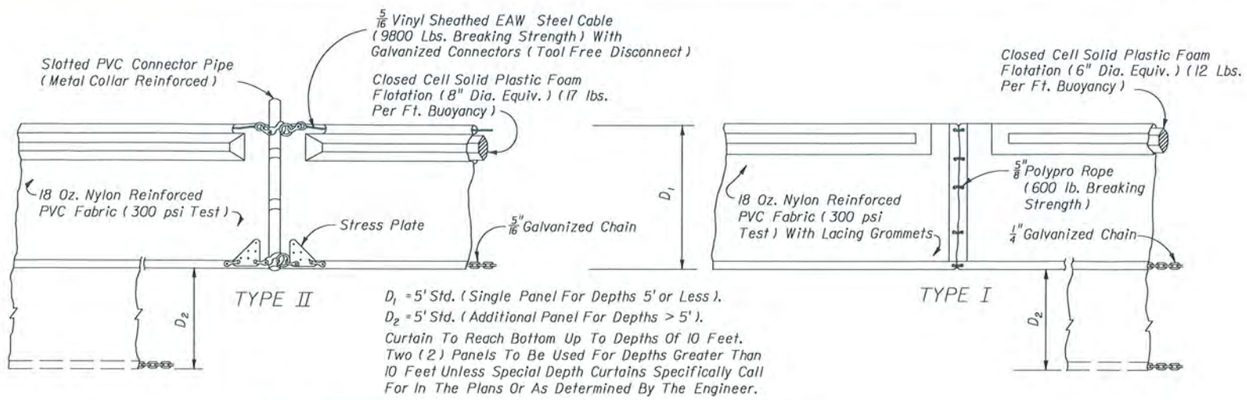
SHEET TITLE
EROSION CONTROL DETAILS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADHOUR
APPROVED BY : M. MADHOUR
SEAL :
6/11/12

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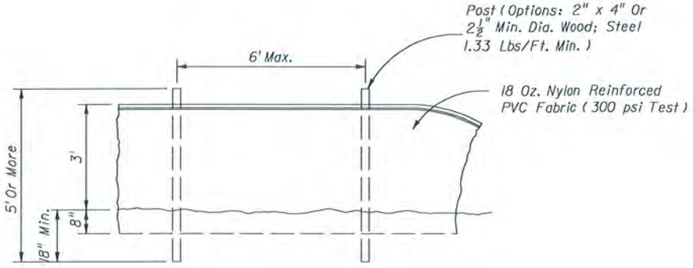
PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C4.01



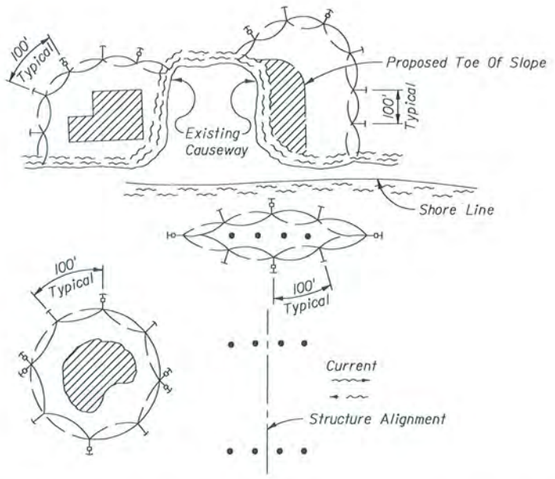
D_1 = 5' Std. (Single Panel For Depths 5' or Less).
D_2 = 5' Std. (Additional Panel For Depths > 5').
Curtain To Reach Bottom Up To Depths Of 10 Feet. Two (2) Panels To Be Used For Depths Greater Than 10 Feet Unless Special Depth Curtains Specifically Call For In The Plans Or As Determined By The Engineer.

NOTICE: COMPONENTS OF TYPES I AND II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.

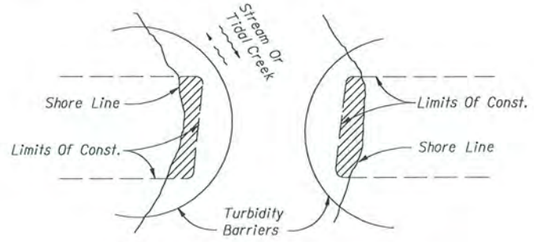
FLOATING TURBIDITY BARRIERS



STAKED TURBIDITY BARRIER



LEGEND
- Pile Locations
- Dredge Or Fill Area
- Mooring Buoy w/Anchor
- Anchor
- Barrier Movement Due To Current Action



NOTES:
1. Turbidity barriers are to be used in all permanent bodies of water regardless of water depth.
2. Number and spacing of anchors dependent on current velocities.
3. Deployment of barrier around pile locations may vary to accommodate construction operations.
4. Navigation may require segmenting barrier during construction operations.

Note:
Turbidity barriers for flowing streams and tidal creeks may be either floating, or staked types or any combinations of types that will suit site conditions and meet erosion control and water quality requirements. The barrier type(s) will be at the Contractors option unless otherwise specified in the plans, however payment will be under the pay item(s) established in the plans for Floating Turbidity Barrier and/or Staked Turbidity Barrier. Posts in staked turbidity barriers to be installed in vertical position unless otherwise directed by the Engineer.

TURBIDITY BARRIER APPLICATIONS

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SHEET TITLE
EROSION CONTROL DETAILS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : N. MADKOUR
SEAL
5/29/12

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-3831

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C4.02

Cowbone Marsh

Cut Restoration Plan



FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

AUGUST 7, 2012

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Appendix 3. Potentially affected wildlife and plants

Appendix 4. Preliminary construction plans

Figure 1. Fisheating Creek WMA boundary

Figure 2. US Army Corps of Engineers 1929 survey

Figure 3a. 1949 Aerial of Cowbone Marsh Open Water Areas

Figure 3b. 1949 Aerial of Cowbone Marsh Open Water Areas

Figure 4. 2010 Aerial of Cowbone Marsh

Figure 5. Check dam locations

Figure 6a. Wildlife Occurrences and Route From LD-3 Levee

Figure 6b. Alternative Route from Borrow Pit

Figure 7a. Soils

Figure 7b. Florida Land Use, Land Cover Classification System

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COWBONE MARSH CUT BACKFILL PLAN

Background

Cowbone Marsh (Marsh) is a freshwater marsh system located between open flowway portions of Fisheating Creek in central Glades County and is contained within the 40-mile-long, 18,272-acre Fisheating Creek Wildlife Management Area (WMA) (see Figure 1). The Marsh transects Fisheating Creek eight miles upstream of the Creek's mouth at the western shore of Lake Okeechobee. The Marsh is located approximately six miles east of US27 and six miles west of SR78 near Lakeport. It is bordered by a cypress slough system upstream, and an open grassy alluvial system characterized by oxbows downstream.

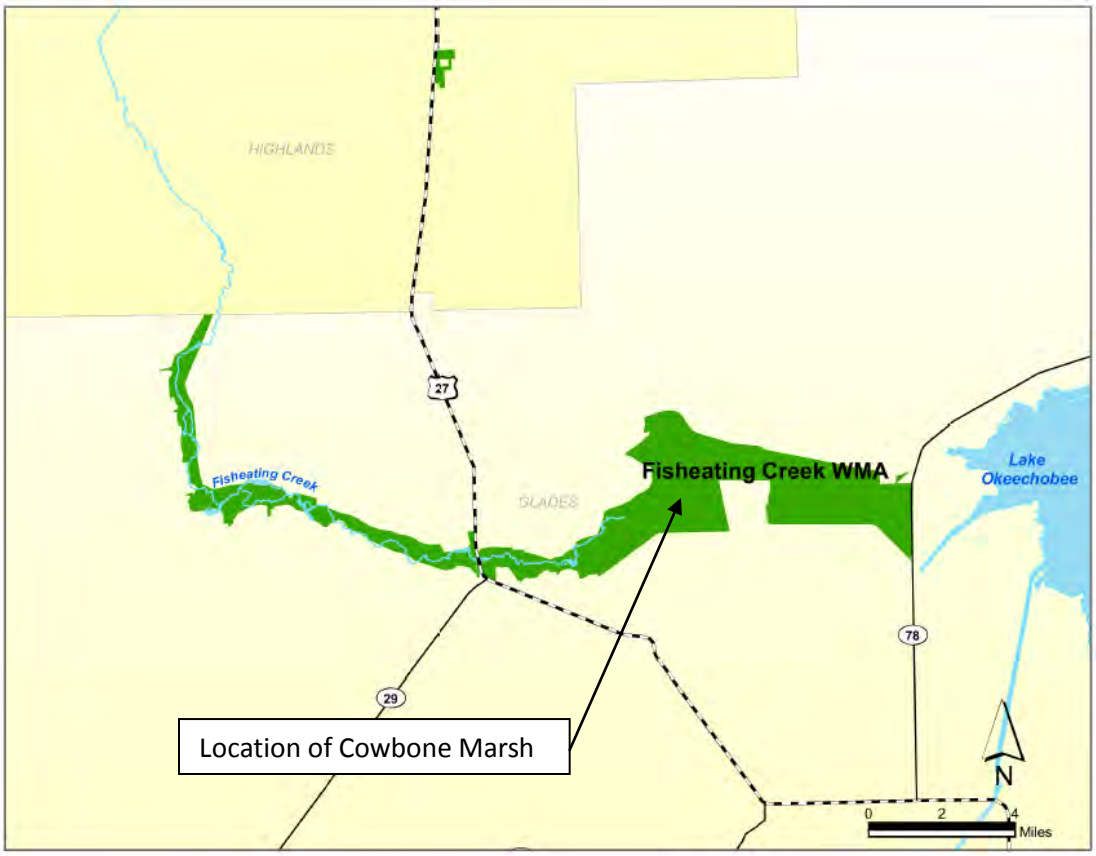


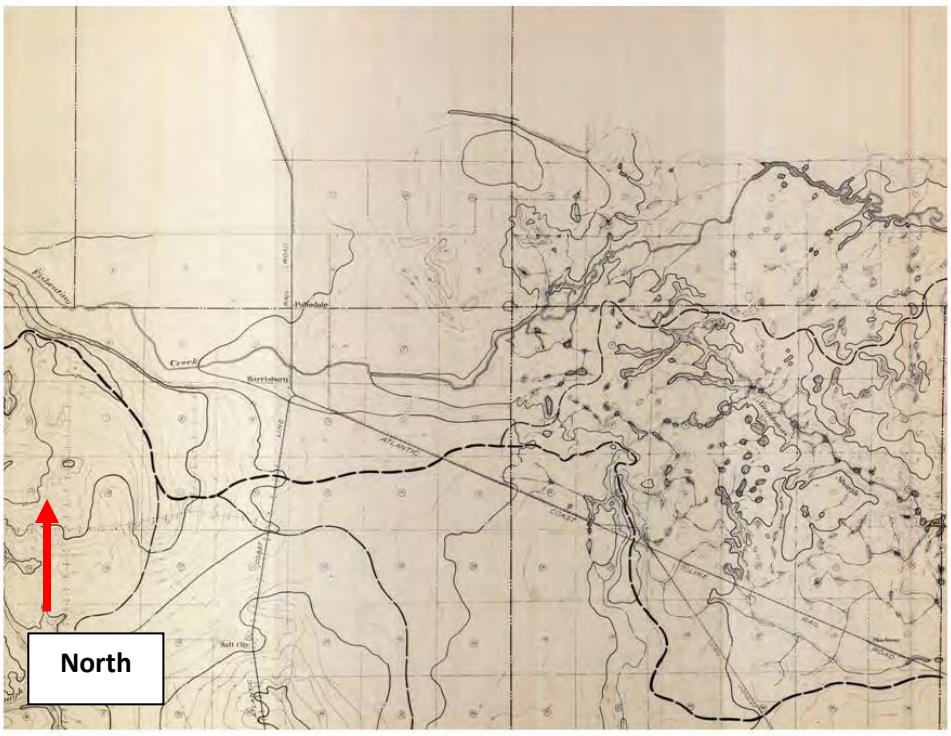
Figure 1 – Fisheating Creek Wildlife Management Area

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Regional projects have altered the hydrologic regimen of the Marsh over the years, particularly in the last century. These projects include the construction of Herbert Hoover Dike around Lake Okeechobee and subsequent water control regimen as well as development of agriculture upstream.

Upstream agricultural activities consist primarily of cattle and citrus. Although cattle lands have little impact to the water regimen, they have been identified as a source of nutrients. Citrus groves demand significant irrigation. Methods employed up to the latter part of the twentieth century resulted in reduced groundwater tables and resultant impacts to Fisheating Creek upstream of the Marsh.

Although it is difficult, if not impossible, to define how these alterations of the regional hydrology have impacted the Marsh, some historic evidence is available that can provide information on the Marsh's succession in the past 80 years. In 1929 the United States Army Corps of Engineers (USACE) conducted a survey showing Fisheating Creek to be an open water route from Lake Okeechobee through the Marsh and cypress upstream to US27 and beyond (see Figure 2).



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Figure 2 – US Army Corps of Engineers 1929 survey

Aerials from the late 1940s depict open water areas in the lower third of the Marsh, just downstream of the cypress (see Figure 3). These open water areas are estimated to have been approximately 150 acres in size, but have closed in over the succeeding 60 years, with the few remnant open areas totaling less than 15 acres (see Figure 4). There has been a vegetation shift in the upper half of the Marsh, with Carolina willow (*Salix caroliniana*) now the predominant species that has replaced open water and herbaceous marsh communities. Aerial photos also indicate linear canals were dredged within the Marsh; two are still discernable via current aerial photos and ground truthing.



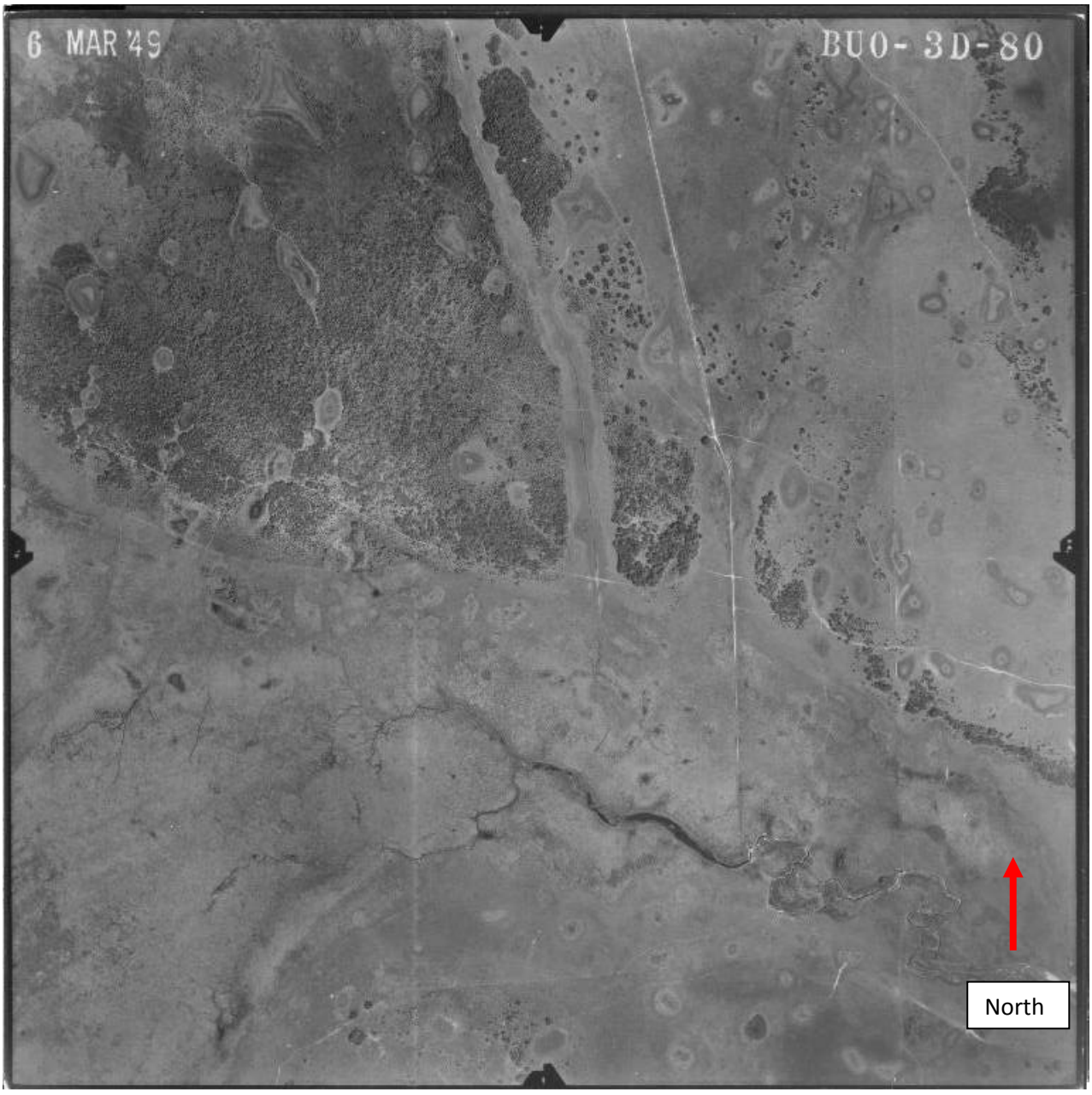


Figure 3a – 1949 Aerial of Cowbone Marsh Open Water Areas

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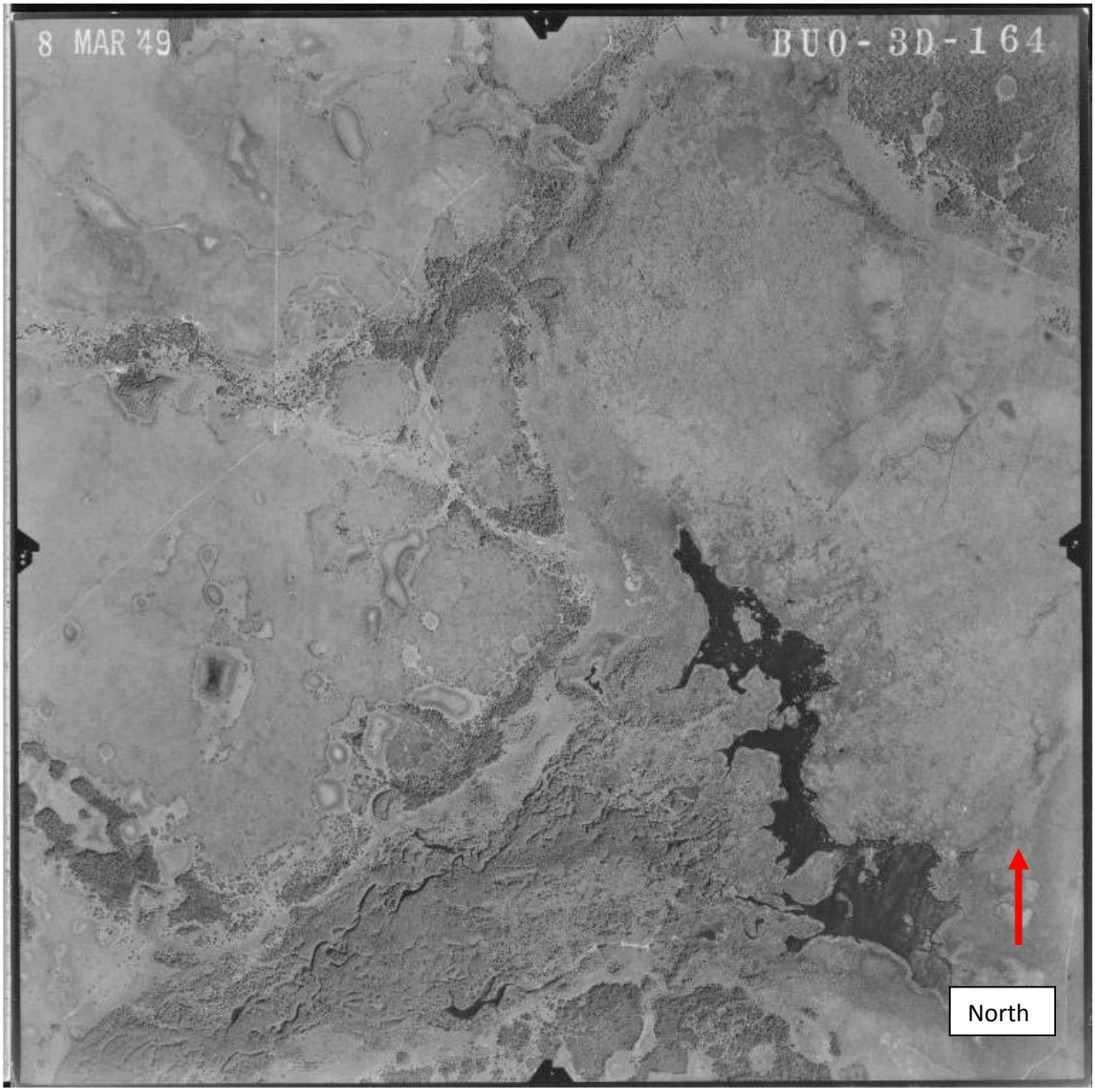


Figure 3b – 1949 Aerial of Cowbone Marsh Open Water Areas

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Figure 4 – 2010 Aerial of Cowbone Marsh

In April 2010 to comply with the Settlement Agreement requirement to maintain and enhance navigation along Fisheating Creek, FWC utilized an Agitator to shred vegetation through Cowbone Marsh along the route depicted in the 1929 USACE survey map. The state of Florida Department of Environmental Protection (DEP) and subsequently the USACE determined this work to be dredging and issued emergency orders to halt the work. The USACE referred enforcement to the United States Environmental Protection Agency (EPA). In accordance with orders issued by these various agencies, FWC immediately constructed a temporary weir and has since constructed six check dams in the locations shown in Figure 5.

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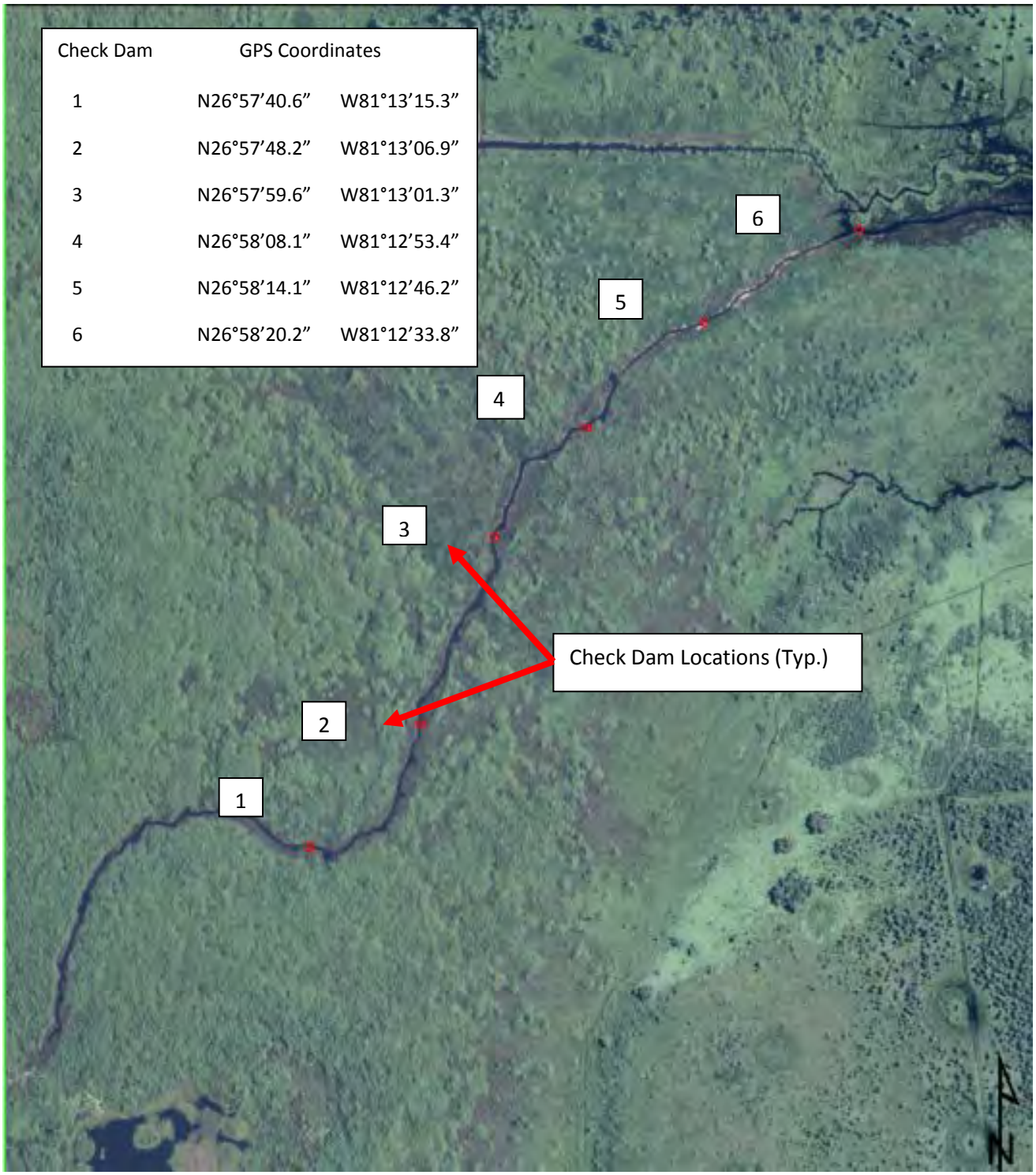


Figure 5 - Cowbone Marsh Check Dam Locations

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Check Dams

Based on a limited survey performed in 2010, the surface elevation drops six inches from the westernmost end of the cut channel to the location of the temporary weir and then drops an additional 32 inches from the weir to the cut channel mouth (approximately 38 inches over the span of the cut). Six check dams were installed at approximately equidistant intervals to achieve an approximately six-inch drop in the upstream water levels as compared to the downstream water level across each check dam. A six-inch water table is well within the range of marshes that, like Cowbone Marsh, experience fluctuating seasonal water tables as shown in Table 1.

The exact location of each dam was determined through field evaluations of the channel by FWC and DEP. The evaluations included reviewing existing choke points, vegetation, channel depths, channel bottom conditions, and side bank profiles. The choke points in the channel minimize the size of the dams needed thereby minimizing environmental impacts. The locations also were selected for vegetation density that provides a strong root structure to further stabilize the marsh from erosion forces. Channel depths and the side bank profiles were considered in the selection to minimize the size of the check dams and to ensure that no undercutting of the dam or channel side banks will occur.



Table 1 – Hydrologic Regimes of Major Southwest Florida Plant Communities			
SW Florida Plant Communities	**Hydroperiod (months)**	**Seasonal Water Level (inches)**	
		Wet	**Dry (1,10)***
Xeric Flatwood	0	≤-24	-60, -90
Mesic Flatwood Mesic Hammock	≤1	≤2	-46, -76
Hydric Flatwood Hydric Hammock	1 - 2	2 – 6	-30, -60
Wet Prairie Dwarf Cypress	2 - 6	6 – 12	-24, -54
Marsh	6 - 10	12 – 24	-6, -46
Cypress	6 - 8	12 – 18	-16, -46
Swamp Forest	8 - 10	18 – 24	-6, -36
Open Water	>10	≥24	< 24, -6
Tidal Marsh Mangrove Beach	Tidal	Tidal	Tidal
* 1 = average year low water 10 = 1 in 10 year drought			

Source: Mike Duever, December 2008. Pre-Restoration Status of Wetlands Within and Near Picayune Strand. South Florida Water Management District.

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FWC in consultation with DEP and EPA, constructed the structures of natural and synthetic materials consisting of sand bags, marine plywood, coconut matting, and pressure-treated posts and are sloped to ease portaging of small craft (Appendix 1).

All construction for the check dams occurred within the existing channel with the exception of the sandbag 10′ wing walls that extend into the Marsh. These walls direct water outward into the Marsh and prevent erosion around the ends of the check dams. During construction FWC employed silt flotation barriers and/or sand bags to control downstream erosion and sedimentation.

The check dams have successfully raised the water levels within the cut to the ground surface elevations, minimized the flow velocities and sediment transport in the channel and have moved waters into the adjacent marsh areas. The cells of open water between check dams are being exploited by a number of wildlife species including alligators, waterfowl and wading birds. The FWC's preferred restoration alternative was to reinforce and/or install additional check dams and allow the cut to refill and re-vegetate naturally. However the check dams have required maintenance, have not shown sufficient accumulation of sediments between the check dams, and have not satisfactorily addressed concerns related to a preferential flow path remaining within the marsh. Therefore, FWC has continued to work with USACE, EPA, DEP and SFWMD to develop methodologies to return the cut area to as close as pre-impact conditions as possible and practical by backfilling.



Backfill Implementation

The objective of backfilling is to return the cut to as close to pre-impact conditions as described in the performance measures. The following goals guide the backfilling plan.

1. Minimize preferential flow path in the impacted area to the greatest degree practicable through implementation of this restoration plan.
2. Ground surface elevations and restored soil surface are as close to pre-impact conditions as outlined in the performance measures.
3. Backfill is stabilized so sediment transport from the filled area is minimized.
4. Work does not cause negative impacts to cultural resources and fish and wildlife species.
5. Secondary impacts are eliminated or minimized. Secondary impacts may include sediment transport during backfilling and temporary impacts to wetland vegetation for access and staging and within the marsh.
6. Backfilling will be completed as outlined in the project schedule and contingency plan. Work will be conducted in the dry season, during periods to avoid impacts to wildlife species of concern and preferably within one season to minimize secondary impacts and additional work.

Backfilling will be implemented by transporting fill from either a sand mine located at the western end of the LD-3 levee or from a borrow pit to the downstream end of the cut. Other backfill options evaluated included hydraulic pumping and hauling and backfilling using helicopters. Hauling and backfilling using conventional construction equipment was chosen as the most feasible backfill alternative.



Route Assessment

Access from both the north and south were evaluated. Site visits of both the LD-50 (north) and LD-3 levees (south) were conducted. An access approach from the southern side of the marsh was chosen since this route offered a shorter distance to the cut from the potential sources of fill (Cemex sand mine or borrow pit on adjacent private land), avoids the necessity of crossing Fisheating Creek as well as potential impacts to known cultural resources, wildlife and plants that exist along the route from the north (Figure 6a).

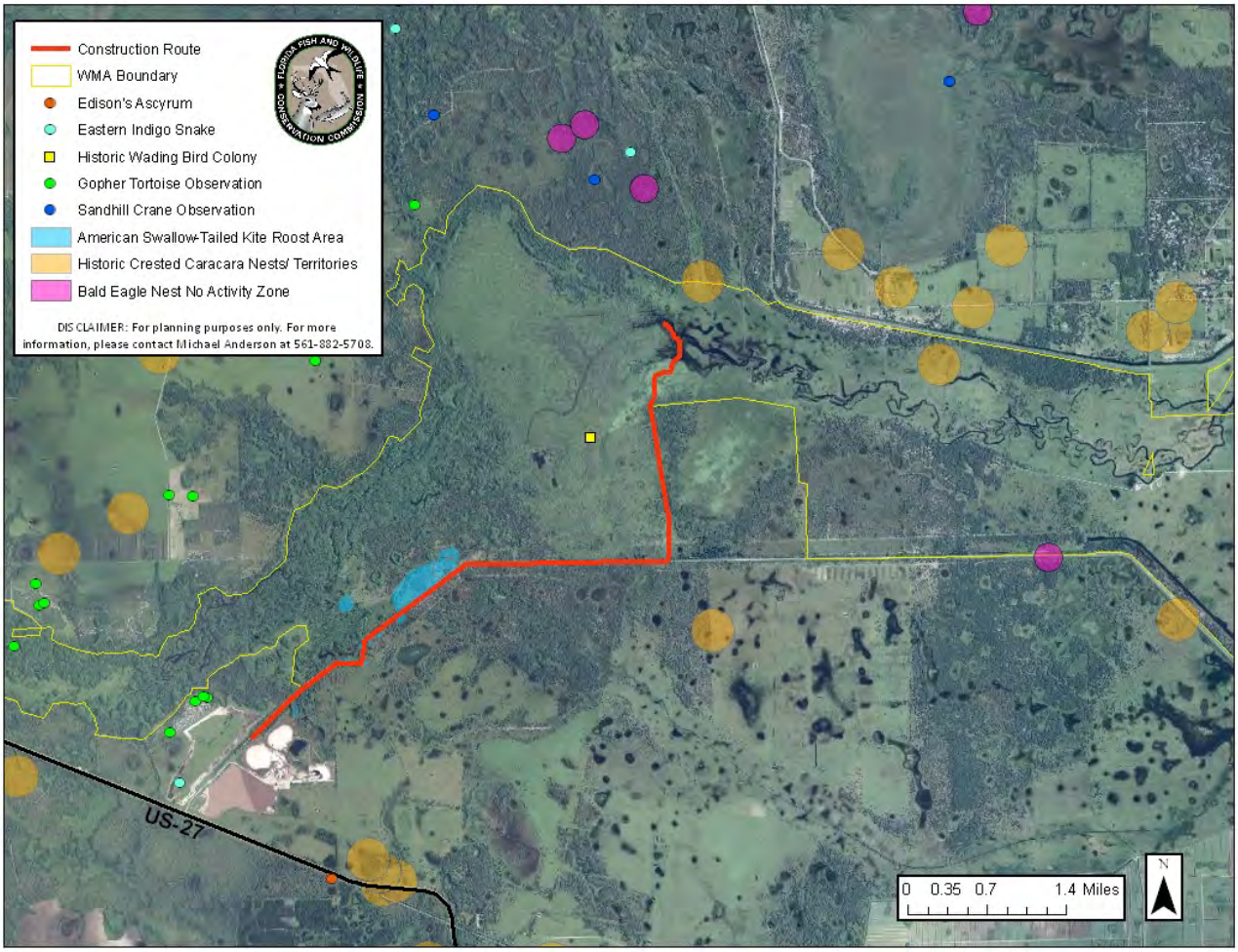


Figure 6a – Wildlife Occurrences and route from LD-3 levee

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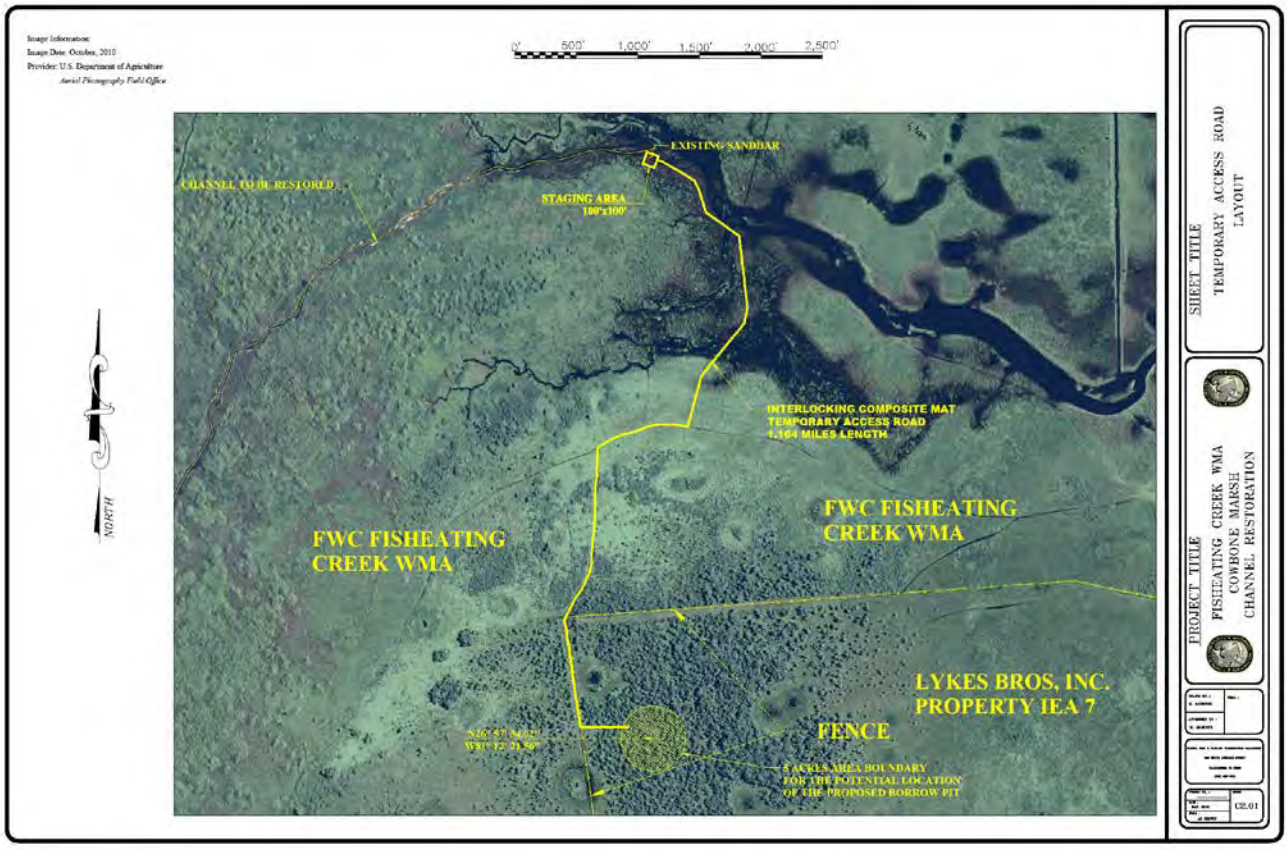


Figure 6b – Alternative 2 Route from Borrow Pit

Access routes proposed for consideration extend from the CEMEX sand mine east 4.85 miles along the LD-3 levee and then exits the levee and turns north following an existing fire line and trails on impacted wetlands for about 1.66 miles. The last portion of the route traverses minimally impacted floodplain over sandy Basinger and Floridana soils for approximately 0.65 miles. The access route from the borrow pit shown in Figure 6b would intersect and then follow the same route to the north.

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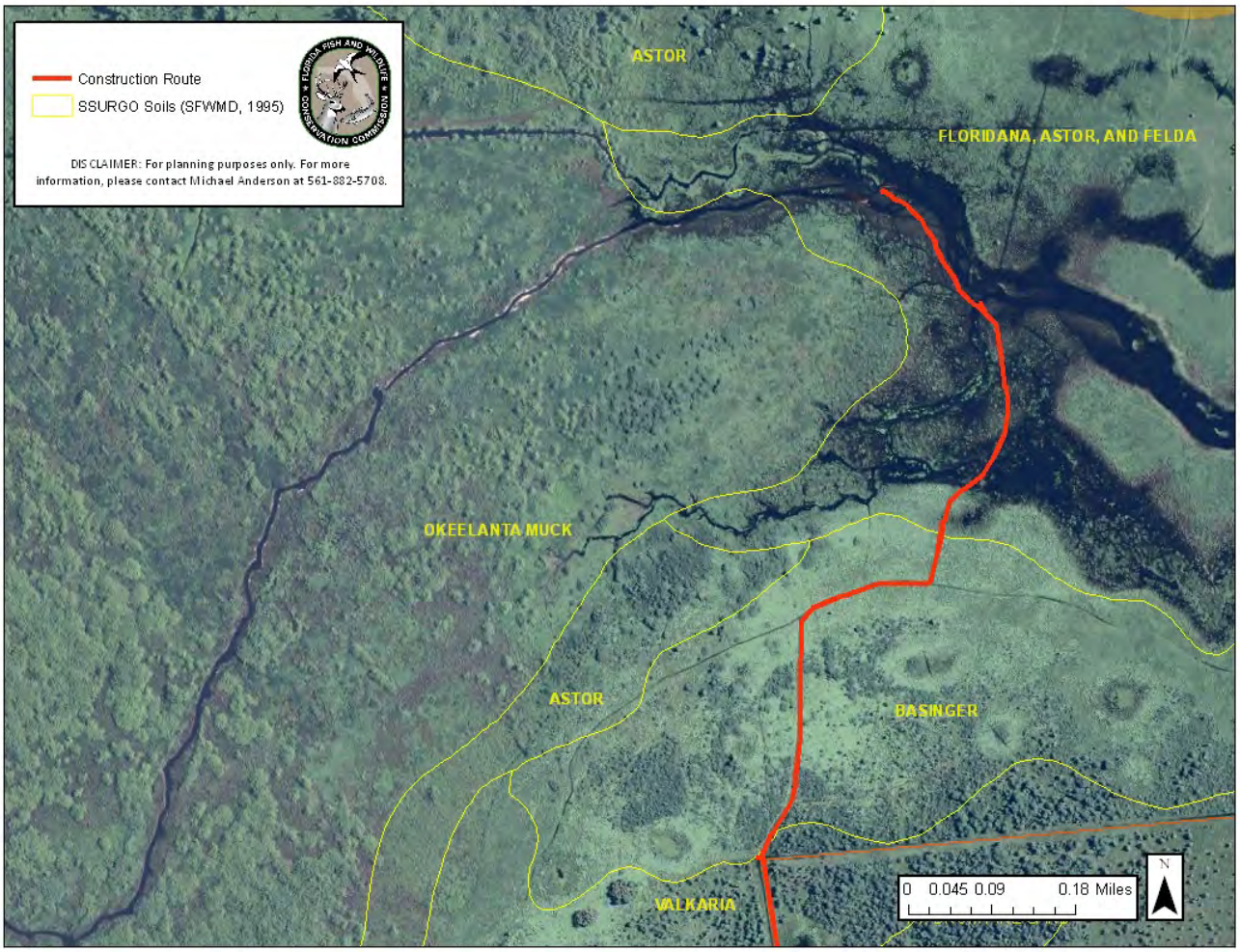


Figure 7a – Soils

The soil types within the floodplain are *Floridana*, *Astor*, and *Felda soils, frequently flooded*. These soils are very poorly drained with a fine sand surface and sub-surface layer. The final access route from the south was chosen to minimize impacts to the peat soils (*Okeelanta muck, depressional* soil type) of the marsh itself (See Figures 7a and 7b).

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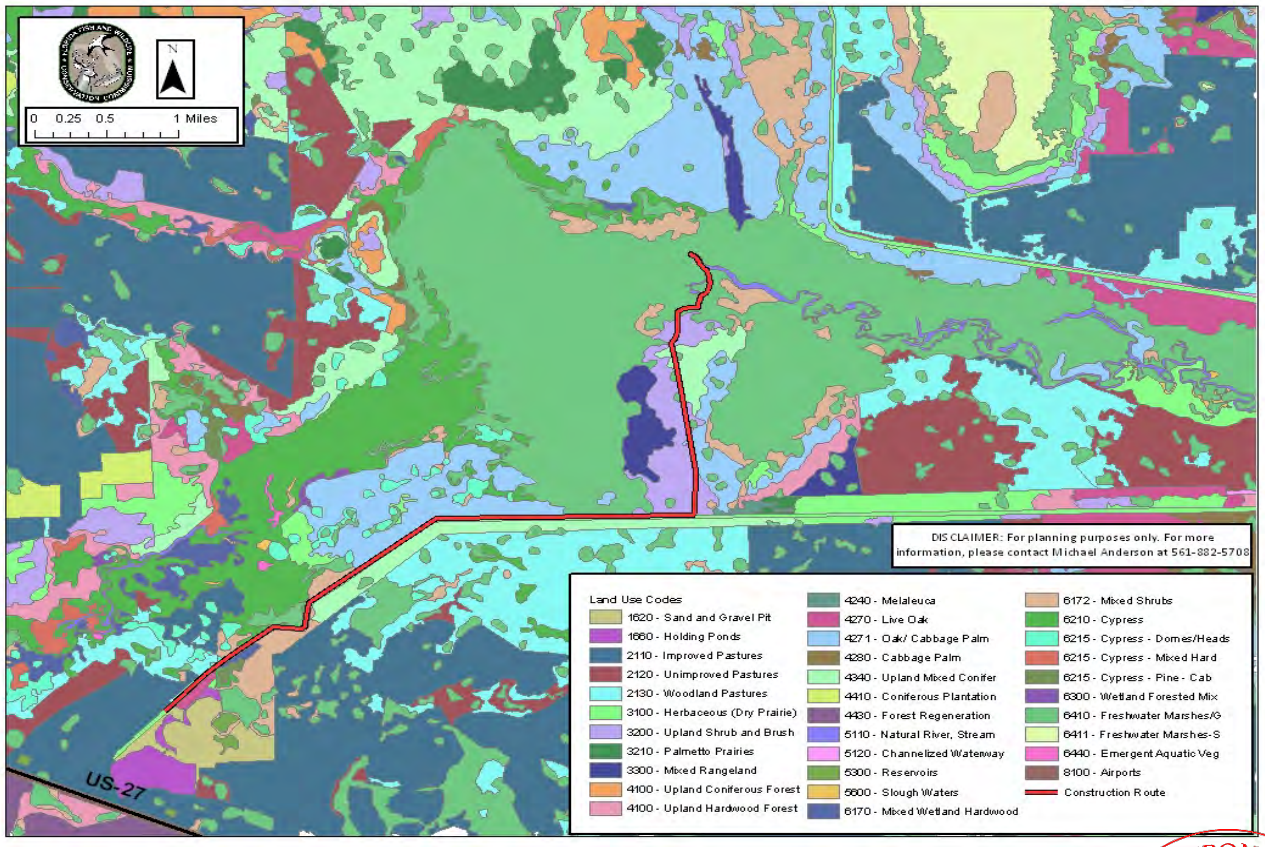


Figure 7b – Florida Land Use, Land Cover Classification System

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Backfill Material and Methods

Fill material will be tested and selected to be free of stones greater than 2 inches, free of roots, seeds, nuisance or exotic species, waste, debris, trash, non-soil matter, hydrocarbon or other contamination. Backfill material will be sand classified as SP, SW, or SM by Unified Soil Classification System meeting following requirements.

1. Less than 20 percent passing number 200 sieve.
2. Amount of clay lumps or balls not exceeding 5 percent.
3. Backfill shall have an average organic content of less than 10%.
4. Material passing number 40 sieve shall have plasticity index not exceeding 7

Fill will be placed in the cut from the beginning of the cut at station 0+00, spread and compacted. Backfilling will then continue progressively upstream within the cut using the filled areas as the access for the equipment. Utilizing the backfilled

channel as an access road will ensure obtaining the most compaction that can be possibly achieved under the conditions. If the section of the cut channel from the beginning at station 0+00 to check dam 6 is not dry, then the temporary access road will be extended with the same interlocking composite mats through a minimally impacted access lane parallel to the cut channel to check dam 6 at station 11+50. Backfilling will then continue progressively upstream within the cut from check dam 6 using the filled areas as the access for the equipment. Backfilling of the section of the cut channel from station 0+00 to check dam 6 can be done at a later time when it is dry enough to ensure that the backfill material will be held in place and not washed downstream. 27,000 cubic yards of fill will be required. The fill will be leveled to the appropriate grade and elevation as outlined in the performance measures. Backfilled areas will be stabilized using measures described in the stabilization and sediment and erosion control sections of this plan to minimize sediment transport.

Stabilization

As soon as backfilling is completed, and as weather allows, the backfilled area will be stabilized. In order to hasten the response of native vegetation and provide erosion control post-treatment to the restoration site, a native wetland seed prescription will be applied via hydro-seeding. An alternative to the traditional process of broadcasting or sowing dry seed, hydro-seeding is a re-vegetation / erosion control technique in which a prescribed seed mixture is combined with water and hydraulically applied (sprayed) on the treatment area. The prescription includes seed appropriate for the soil and other environmental conditions (e.g., warm-season vs. cool-season grasses; seed of plants tolerant of inundated or aquatic conditions). The treatment mix also includes amendments, such as fertilizer, mulch, soil stabilizer, and tackifier, all of which help hold down the seed and soil while plants become established, approximately two weeks for the brown-top millet. A dye (usually green) is used in the mixture to ensure even and thorough application. The seed slurry may be transported in a truck- or trailer-mounted tank and broadcast directly via hoses from the truck or trailer or by helicopter if determined to be cost effective.



The proposed prescription will be as follows (numbers are per-acre):

a) 20 lbs. of "Martin County, Florida FACW-OBL" wetland seed mix (Facultative Wet / Obligate Wet grasses and sedges; Table 2);

b) 1,500 lbs. of wood mulch;

c) 200 lbs. fertilizer (Soil samples will be collected prior to treatment to determine the correct fertilizer and rate; a "17-4-8" fertilizer at a rate of 200 lbs./acre was applied for a wetland restoration project conducted at the Florida Power & Light facility in Indiantown [30 minutes from Okeechobee]);

d) 20 lbs. of an annual grass (brown-top millet; the annual grass is applied to provide a quick-response solution for erosion control and will die out once inundated).

Table 2 – Seed mix for the hydroseeding prescription

Species		Wetland Indicator	% Mix
Redtop panic-grass	*Panicum rigidulum*	FACW	55
Beaked panicgrass	*Panicum anceps*	FAC-	28
Bushy bluestem	*Andropogon glomeratus*	FACW+	5
Soft-rush	*Juncus effusus*	FACW+	4
Lizard's-tail	*Saururus cernuus*	OBL	3
Swamp sunflower	*Helianthus angustifolius*	FAC+	2
Small-fruit beggarticks	*Bidens mitis*	OBL	1
Meadow beauty	*Rhexia mariana*	FACW+	1
Seaside primrose-willow	*Ludwigia maritima*	FACW	1

OBL = Obligate Wetland (occurs almost always [estimated probability 99%] under natural conditions in wetlands)

FACW = Facultative Wetland (usually occurs in wetlands [67-99%], but occasionally found in non-wetlands

FAC = Facultative (equally likely to occur in wetlands or non-wetlands [34-66%])

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Sediment and Erosion Control Measures

During construction all best management practices will be followed. Sediment and erosion control measures to prevent siltation of wetlands and waterways will be installed and maintained in accordance with state and federal regulations. Siltation fences and turbidity barriers will be placed in accordance with permit conditions.

Project Schedule

Work will be timed and managed to minimize impacts in accordance with guidelines in Appendix 3 – Potentially Affected Plants and Wildlife and recommendations in the completed wildlife and cultural resource surveys.

The FWC plans to begin work in November 2012. Work cannot begin in the marsh until conditions are dry. Achieving the November start date is based on expedited permitting. The work must be completed or stopped prior to June 1 to prevent disturbance to the swallow-tailed kites at their roost along the LD-3 levee. The schedule contained in Appendix 4 is contingent on weather conditions and other intervening forces.

Contingency Plans

If work must be stopped for an extended period of time due to wet conditions, the backfill end point will be properly contained through the use of sheet piling or similar application to prevent soil material migration. Road mats will be pinned down to prevent them from moving. If work cannot be completed in a single season, fill soil will be stabilized and mats will be removed, the area stabilized and replaced to complete the work in the following season.



Performance Measures

The following performance measures will be used to evaluate the success of restoration activities.

Final Grade: Fill must be compacted and ground surface elevations must be the same as the adjacent marsh ground surface elevations (within a tolerance of +6/-6 inches).

Stabilization: The filled area must be stabilized so that erosion of the fill material does not change the grade or exceed acceptable turbidity parameters. Within 3 years, vegetation coverage must equal or exceed 95 percent.

Timing: The restoration must be completed as quickly as possible given the project constraints in order to preserve the hydrology of the marsh and minimize secondary impacts.

Secondary impacts: All secondary impacts must be minimized and temporary. During construction turbidity and siltation must be controlled so they do not exceed 29 nephelometric turbidity units (NTUs) above background waters.



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Monitoring

Project monitoring methods have been designed to assess the success of the project via the performance measures above.

Final Grade: The final grade of the temporary access road and cut will be monitored through visual inspections during construction and be verified with as-built surveys at specified cross section locations that will be shown in the construction plans. These 50-foot cross sections will be surveyed every 500 feet along the road from the point of turning from the LD3 levee to the cut and along the cut from check dam 6 to the western end of the channel. A post-construction monitoring report documenting the conditions of the temporary road will be provided. The report will include photographs and a description of the conditions of the wetlands at the time of removal and the end of the first wet season following removal.

Stabilization: Revegetation of the backfilled area will be assessed from the air using a point intercept method from a helicopter. This methodology will provide accurate results and is the least impactful and most efficient means of data collection. A single point sampling method will be used by selecting a specific point on the helicopter skid and looking directly down past that point. The helicopter will fly 1 transect along the center of the filled cut and removed road. Along the transect 142 points will be collected. Two observers will be on each flight, one on either side of the helicopter resulting in a total of 284 points. The helicopter will be flown at an altitude of 200 feet and will hover at each point to give the observer the ability to determine vegetation cover type and take photographs. The number of points where vegetation is observed will be divided by the total number of points and multiplied by 100 to give a percentage of cover for the filled cut and area where the access road will be removed.

Monitoring of the temporary access road will be recorded at transects across the restored road every 0.2 miles along the floodplain (except the areas currently used for firelines). The percent cover of vegetation must be within 10% of the adjacent undisturbed marsh percent coverage within six months of the project completion or additional measures described below will be taken.

Monitoring will occur quarterly during the first year or until stabilization performance measures are met. If performance measures are not met during the

first year, monitoring will occur biannually for 3 years or until performance measures are met or trending towards success. Additional hydro seeding and/or hand planting will be undertaken if percent coverage does not exceed 50% one year after completion or is not trending towards success, 75% two years after completion or trending towards success or final performance standard has not been met after 3 years.

Timing and secondary impacts: Construction activities will be conducted during the dry season to minimize secondary impacts. The contractor will be required to monitor and log water quality when there is a rainfall event of at least 1/2-inch that generates flowing water. All construction activities will be monitored by FWC daily to ensure the construction schedule is maintained, to address unforeseen issues if they arise, minimize secondary impacts, and preclude adverse impacts to fish, wildlife and cultural resources (See Appendix 3).

Check dams: The FWC will continue to monitor check dams monthly when accessible by airboat until backfill work begins to ensure that each check dam remains in good repair. If deficiencies are noted during the monitoring immediate action will be taken to correct the deficiencies. The immediate actions will include an evaluation of the deficiency by a biologist and/or an engineer. A remediation plan will be developed and implemented within 30 days. A remediation report will be filed with EPA and DEP within 30 days of the completed action providing documentation of the deficiency and the completed remediation. The remediation report will include the frequency and duration of the remediation monitoring.

Special monitoring visits will be conducted by FWC in the case of fires in the marsh near the check dams or extreme rain events (6 inches within 24 hours). Each check dam will be inspected within 7 days following the event or as soon as it is possible to access the site. If deficiencies are noted FWC will take remedial actions as described above.



Reporting

Notification of construction start date and end date will be submitted to the EPA. Reports documenting performance and repair of check dams will be submitted monthly during periods passable by airboat until construction work begins. Monthly reports substantiating progress of the project will be submitted on or before the 15th of the following month once construction begins. As-built surveys documenting the final grade will be submitted within 60 days of project completion.

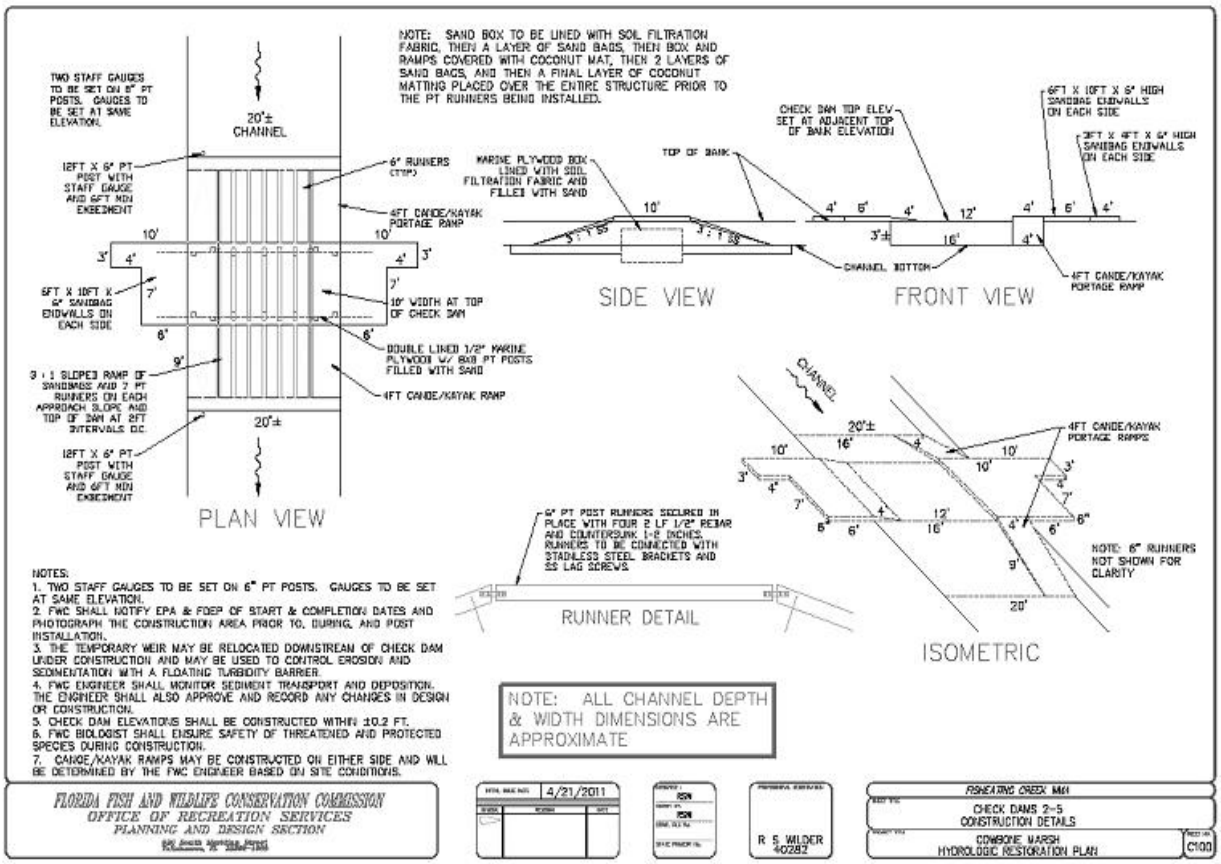
Quarterly monitoring reports will be submitted from project completion through Year 1 to document plant coverage within the filled channel.

Bi-annual reports on plant coverage within the filled channel will be submitted for 2 additional years or until performance measures are met or trending toward success.

Reporting end date will be 3 years from end of construction provided the performance measures have been met.

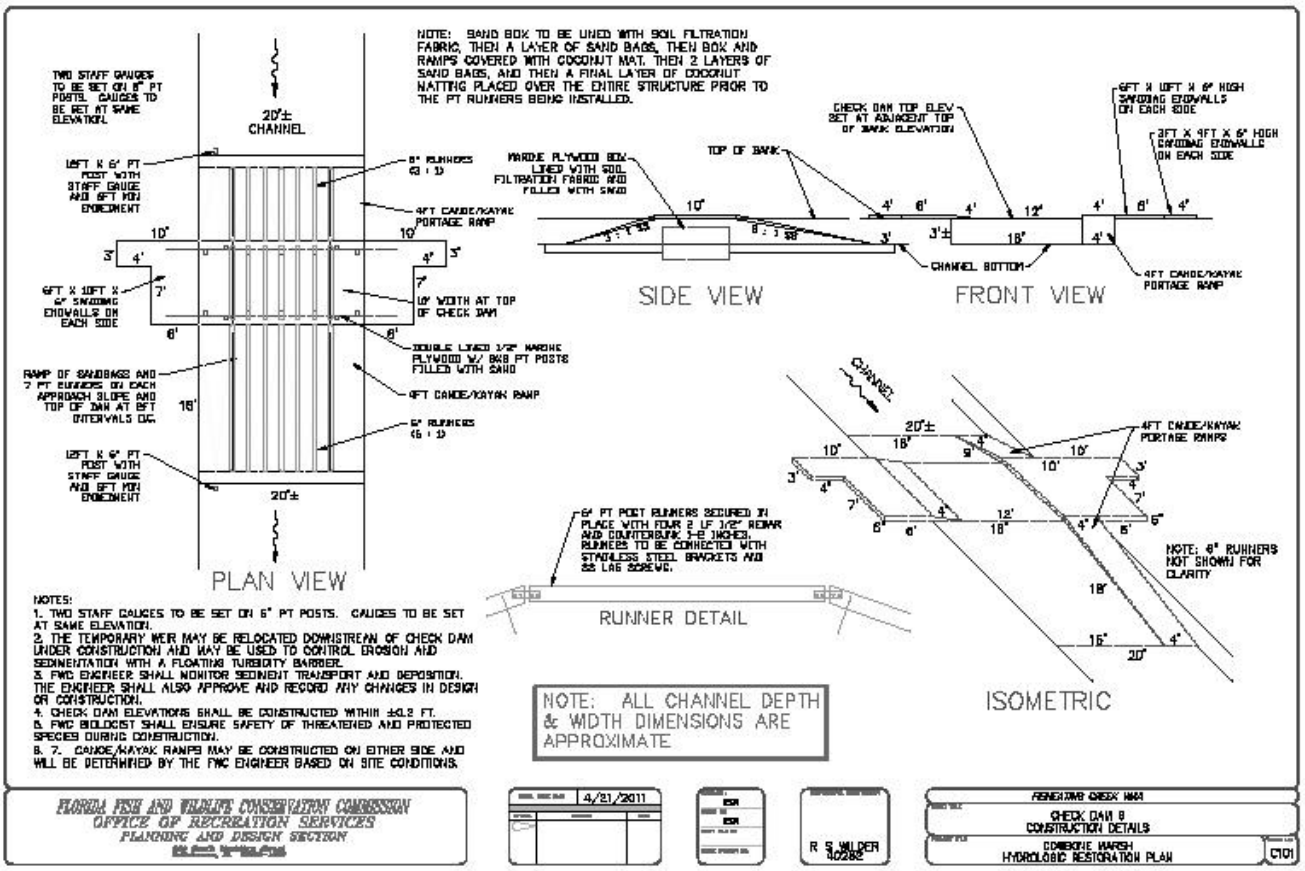


Appendix 1. Check Dam Details





Appendix 1 con'td. Check Dam Details



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Appendix 2. Check Dam Observation Form

COWBONE MARSH CHECK DAM 1 MONITORING											
DATE	TIME	UP GAGE READING	DN GAGE READING	DAM WTR DEPTH	US27 GAGE READING	SEDIMENT READING	DAM INTEGRITY	CHANNEL INTEGRITY	ADJ MARSH HYDRATION	OBSERVER	NOTES

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Appendix 3

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

Cowbone Marsh Restoration Plan

Potentially Affected Wildlife and Plants

07/16/2012



This document describes the life history and locations of potentially affected wildlife and plants that occur within the Cowbone Marsh portion of the Fisheating Creek Wildlife Management Area (WMA). The Fisheating Creek WMA is a natural area managed and operated by the Florida Fish and Wildlife Conservation Commission.

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Cowbone Marsh Restoration Plan Potentially Affected Wildlife Species

Introduction

This report of potentially impacted flora and fauna within Cowbone Marsh as a result of restoration activities is to be used with the Cowbone Marsh Restoration Plan. This report serves to review all potential federally and state listed species as well as other focal species and attempts to identify all potential impacts as a result of the project. Potentially impacted species and their corresponding management guidelines are listed in Table 1. More detailed life history and potential impacts of the project for each of the potentially affected species is also included in this document. Additionally, Figure 1 illustrates historic locations of potentially affected species and their associated areas of avoidance.

Table 1. Potentially Affected Species in project area, guidelines for avoidance, and potential impacts.

Potentially Affected Species in Project Area	Protection Guidelines	Potential Impacts
American Alligator *Alligator mississippiensis*	Avoid direct mortality and significant alterations to hydrology.	Disturbance of breeding individuals, nests, and injury and/or direct mortality from construction equipment.
American Swallow-Tailed Kite *Elanoides forficatus* 	If active nests are identified in the project area, maintain a 330-foot limited activity buffer around active nests (March – June). Migratory roost active June 1 – September 30th. If activity (including increased vehicle or foot traffic) is to take place during this time near the roost location, consultation with species experts (Dr. Ken Meyer, ARCI) will be necessary to determine appropriate no-activity zones to avoid ground disturbance of roosting birds.	Disturbance to the historic roost located on the LD3, Herbert Hoover Dike (HHD).
Blue-tailed Mole Skink *Plestiodon egregious lividus*	Avoid compacting sandy soil in areas where mole skinks are known to occur	Compacting soil causing direct mortality and/or degradation of habitat. Activities could also destroy the nests that are built on the ground since activities may occur during their nesting season.
Crested Caracara *Caracara cheriway*	Caracaras typically nest in cabbage palms, and are particularly sensitive to disturbance during the	Disturbances to nesting adults. If construction activities occur during peak

Potentially Affected Species in Project Area	Protection Guidelines	Potential Impacts
	first few weeks of fledging. State and federal guidelines prohibit increased activity within 1,500m of a known nest from December - February.	nesting season and in close proximity to nests, adult birds could abandon nests leading to nestling mortality.
Florida Black Bear *Ursus americanus floridanus*	When possible in occupied bear habitat, fire should be excluded from dense (denning) vegetation during January to April. Consider prohibiting palmetto fruit harvesting. See Bear Management Plan, FWC 2008 when complete, also Maehr et al. 2001.	Females tend to den in late December through April and any disturbances could pose a risk to cubs if she is forced to leave the den multiple times throughout the day.
Florida Burrowing Owl *Athene cunicularia floridana*	Burrowing owls tend to burrow in artificial habitats, such as levees or spoil piles. When active burrows are identified, activity within 33 feet should be avoided. Heavy equipment should not be used around burrows to avoid collapsing them.	Potential impacts of this project on burrowing owls could include collapsing burrows.
Florida Grasshopper Sparrow *Ammodramus savannarum floridanus*	Avoid destruction of nests (April – June)	Construction activities could impact sparrows by displacing breeding adults. Activities could also destroy the nests that are built on the ground since activities may occur during their nesting season.
Florida Panther *Puma concolor coryi*	Avoid rollerchopping/ herbicide of thick patches of vegetation during denning season (March-June)	Denning is not known to occur in the area. As most panthers using the property are likely dispersing and would avoid areas with increased human activity, construction activities are likely to have little, if any, impact on the species.
Florida Pine Snake/ Eastern Indigo Snake *Pituophis melanoleucus mugitus/ Drymarchon couperi*	Avoid direct mortality. Gopher tortoise burrows, including abandoned burrows, should be avoided when using heavy equipment. Heavy equipment should be kept at least 25 feet from known breeding burrow sites (often abandoned Gopher Tortoise burrows).	Injury or direct mortality of individual snakes as a result of earth work during construction activities. Additionally, gopher tortoise burrows, other cavities created by other wildlife, and cavities in trees which indigo snakes prefer as

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Potentially Affected Species in Project Area	Protection Guidelines	Potential Impacts
		refugia could be damaged during construction activities.
Florida Sandhill Crane *Grus canadensis pratensis*	Known nests should be protected by a 400 foot buffer to reduce likelihood of disturbance.	Disturbance to nesting adult cranes and actual nest destruction. Since they are ground nesters and since they nest in wetlands, construction activities could pose harm to this species.
Florida Scrub-Jay *Aphelocoma coerulescens*	Avoid destruction of nests and disturbance of breeding individuals (March – July)	Habitat in and around the Cowbone Marsh are not indicative of that required by the scrub jay and therefore, impacts to this species are not anticipated.
Gopher Frog *Rana capito aesopus*	Minimize soil disturbance within 500 yards of potential breeding ponds and continue the prohibition on public off-road vehicle use. Timber management around known or potential breeding ponds should focus on selective thinning and natural regeneration enhanced by prescribed fire.	Impacts to gopher frogs in the project area could include actual harm to individuals as a result of earth work during construction activities. Additionally, gopher tortoise burrows which gopher frogs frequent could be damaged during construction activities.
Gopher Tortoise *Gopherus polyphemus*	Avoid collapsing known burrows – including inactive burrows. Recommended timeline for land disturbing activities is November – March.	Impacts to gopher tortoises in the project area could include actual harm to individuals as a result of earth work during construction activities. Additionally, gopher tortoise burrows which are frequented by other species in the project are such as gopher frogs, pine snakes, and indigo snakes, could potentially be damaged during construction activities.
Ivory-Billed Woodpecker *Campephilus principalis*	Identify existing populations, reduce risks to existing populations, protect and enhance suitable habitat, reduce or eliminate threats.	Habitat in and around the Cowbone Marsh are not indicative of that required by the ivory-billed woodpecker and therefore, impacts to this

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Potentially Affected Species in Project Area	Protection Guidelines	Potential Impacts
		species are not anticipated.
Limpkin *Aramus guarauna*	A 330-foot buffer around known nests should be maintained from January - May	Construction activities could cause nest abandonment or simply cause adult birds to leave nest unattended for an inordinate amount of time leading to eventual nest failure. Additionally, water levels in the marsh may be changed so that they are not conducive for wading bird foraging.
Puma *Puma concolor*	Avoid rollerchopping/ herbicide of thick patches of vegetation during denning season (March-June)	Denning is not known to occur in the area. As most panthers using the property are likely dispersing and would avoid areas with increased human activity, construction activities are likely to have little, if any, impact on the species.
Red-Cockaded Woodpecker *Picoides borealis*	Maintain a 200-foot buffer of uncut trees around cavity trees. Minimize human disturbance in active clusters, especially during nesting season (April – June).	Habitat in and around the Cowbone Marsh are not indicative of that required by the red-cockaded woodpecker and therefore, impacts to this species are not anticipated.
Sand Skink *Neoseps reynoldsi*	Avoid compacting sandy soil in areas where sand skinks are known to occur.	If present, construction activities could impact sand skinks by compacting soil causing direct mortality and/or degradation of habitat. Activities could also destroy the nests that are built on the ground since activities may occur during their nesting season.
Sherman's Fox Squirrel *Sciurus niger shermani*	Avoid direct mortality.	Adult females could be displaced from their litters and this could jeopardize young. Mortality both young and adults occur as a result of tree removal.
Snail Kite	State and federal guidelines	Hydrological flow paths

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Potentially Affected Species in Project Area	Protection Guidelines	Potential Impacts
Rostrhamus sociabilis	prohibit increased activity and water level alterations within of 1,640 ft of a known nest from January - August.	could be changed such that water may not enter the marsh east of the project area and therefore, would prevent that area from being accessible to snail kites for foraging.
South Florida Rainbow Snake *Farancia erytrogramma seminola*	Avoid direct mortality and significant alterations to hydrology.	The habitat in and around Cowbone Marsh and the construction route are not indicative of good rainbow snake habitat. Therefore, construction is likely to have little if any impact on this particular species,
Southeastern American Kestrel *Falco sparverius paulus* 	Fisheating Creek falls into the southern end of the range for the southeastern subspecies of the American Kestrel and is known to nest in Highlands county, with probably breeding in Glades county. If a nest is identified, maintain a 500-foot buffer around known nest sites from March – June to avoid premature fledging of young.	Impacts include the removal of trees with cavities suitable for nesting. Additionally, the construction activities are planned for the time of year when kestrels nest; so, particular attention will be needed to identify trees that have suitable cavities for nesting and measures should be taken to deter nesting and, if nests have been established in the project area, efforts be taken to disturbance near the nest tree.
Southern Bald Eagle *Haliaeetus leucocephalus leucocephalus*	There is one known active nest along theLD 3 Herbert Hoover Dike. From October 15th – May 15th, federal guidelines prohibit activity within 330-feet of an active nest. A permit may be required for activity 330-660 feet from an active nest.	Disturbance to the historic nest located on the LD3, Herbert Hoover Dike (HHD).
Wading Birds *Ardea alba, Egretta thula, Egretta tricolor, Egretta caerulea*	A 100 m buffer around colonies/ nests should be maintained from December – June	Construction activities could cause nest abandonment or simply cause adult birds to leave nest unattended for an inordinate amount of time leading to eventual nest failure. Additionally, water

Potentially Affected Species in Project Area	Protection Guidelines	Potential Impacts
		levels in the marsh may be changed so that they are not conducive for wading bird foraging.
West Indian Manatee *Trichechus manatus*	Avoid direct mortality or injury via boats or other heavy equipment used in open water.	Construction activities could impact manatees by direct injury via construction equipment if boats or motors are running in open water.
Whooping Crane *Grus americana*	Minimize human disturbance whenever possible and to limit construction activities to times of the year when cranes are absent.	Since there is only a small introduced population in central Florida, it is not anticipated that this project will have any impact on the whooping crane.
Wood Stork *Mycteria Americana*	A 1,500 ft buffer around colonies/nests should be maintained from December – June	Construction activities could cause nest abandonment or simply cause adult birds to leave nest unattended for an inordinate amount of time leading to eventual nest failure. Additionally, water levels in the marsh may be changed so that they are not conducive for wood stork foraging.



Table 2. Chart of construction avoidance information provided in Table 1 (refer to Table 1 for specific information on spatial and temporal avoidance criteria).

SPECIES	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
American Swallow-Tailed Kite (Nesting)			■	■	■	■						
American Swallow-Tailed Kite (Roosting)						■	■	■	■			
Southern Bald Eagle (Nesting)	■	■	■	■	■					■	■	■
Crested Caracara (Nesting)	■	■										■
Florida Grasshopper Sparrow (Nesting)				■	■	■						
Florida Panther (Denning)			■	■	■	■	■	■				
Puma (Denning)			■	■	■	■	■	■				
Red-cockaded Woodpecker (Nesting)				■	■	■	■	■				
Snail Kite (Nesting)	■	■	■	■	■	■	■	■				
Wood Stork (Nesting)	■	■	■	■	■	■						■
Wading Birds (Nesting)	■	■	■	■	■	■						■
Limpkin (Nesting)	■	■	■	■	■							
Southeastern American Kestrel (Nesting)			■	■	■	■						
Gopher Tortoise				■	■	■	■	■	■	■		



American Alligator



Listing status: USFWS = none

FWC = Species of Special Concern

Life History:

Alligators live in swampy areas, rivers, streams, lakes and ponds. Females and juveniles occasionally use seasonal wetlands. Although they are primarily freshwater animals, alligators will also venture into brackish salt water.

Nearly all alligators become sexually mature by the time they reach approximately 7 feet in length although females can reach maturity at 6 feet. A female may require 10-15 years and a male 8-12 years to reach these lengths. Courtship begins in early April, and mating occurs in May or June. Females build a mound nest of soil, vegetation, or debris and deposit an average of 32 to 46 eggs in late June or early July. Incubation requires approximately 60-65 days, and hatching occurs in late August or early September.

The average clutch size of an alligator nest is 35. From this, an estimated 15 live hatchlings will emerge. Only 6 alligator hatchlings will live to one year. Of these yearlings, 5 will become subadults (reach 4 feet in length). The number of subadults that reach maturity (6 feet in length) is approximately 4. These estimates are for a growing alligator population. As an alligator population matures (and has a higher percentage of large animals), the survival rate would be expected to be lower, in part due to a higher rate of cannibalism.

Alligators are ectothermic -- they rely on external sources of heat to regulate their body temperature. Alligators control their body temperature by basking in the sun, or moving to areas with warmer or cooler air or water temperatures. Alligators are most active when temperatures are between 82° to 92° F (28° to 33° C). They stop feeding when the ambient temperature drops below approximately 70° F (21° C) and they become dormant below 55° F (13° C). Alligators are dormant throughout much of the winter season. During this time, they can be found in burrows (or "dens") that they construct adjacent to an alligator hole or open water, but they occasionally emerge to bask in the sun during spells of warm weather.

Management and Protection Guidelines:

As human populations and tourism booms along coastal habitats, there are more and more situations where alligators are being fed and therefore, must ultimately be removed from the population. This situation is confounded by the fact that alligators have a bad (albeit biologically inaccurate) reputation from people misinterpreting the actual risk of alligator encounters.

Aside from problem interactions with humans, alligators are also experiencing direct habitat loss from development and the effects of pollution. Contaminants such as mercury and pharmaceuticals have led to decreased water quality and physiological effects in alligators exposed to these pollutants.

Potential Impacts as a Result of Construction Activities:

Alligators occur and breed in and around Cowbone Marsh. Potential impacts include disturbance of breeding individuals, nests, and injury and/or direct mortality from construction equipment. Care should be taken to avoid live alligators, when present.



American Swallow-Tailed Kite

Nesting has been documented on the WMA and the Lykes Bro.'s Conservation Easement.



Listing status: USFWS = none

FWC = none

Life History:

Swallow-tailed kites use a variety of habitats and require a mosaic of communities that include tall trees for nesting and open areas for foraging. Dominant trees that are significantly taller than the surrounding co-dominants are selected for nest sites. Most nest trees are pines or cypress, and nest sites tend to have higher shrub heights and densities than surrounding areas. Nesting occurs in loose colonies of 2-5 nests with nests 100-700 meters apart. Swallow-tailed kites exhibit high nest site fidelity.

Nesting begins in early March lasting through June. Clutch size is 1-4 and averages 2. Incubation is asynchronous beginning when the first egg is laid and lasts approximately 28 days, and is mostly conducted by the female. Fledging occurs after approximately 40 days. Second clutches (or re-nesting) after failures has not been documented. Average productivity is 0.9 fledglings per nest attempt.

The primary food of adult birds is insects usually caught and eaten in flight. Other prey taken includes snakes, frogs, nestling birds and lizards; less frequently takes bats, fruit, small fish. Small arboreal vertebrates are the main prey delivered to nests by adults. A study of foods brought to nestlings in South Florida found that 56% of the diet was frogs, 30% nestling birds and 11% reptiles. Kites have been observed drinking in flight.

In late summer, swallow-tailed kites assemble in large communal pre-migration roosts. A large percentage of the population concentrates in a few roosts in central and southern peninsular Florida as the birds stage for their migration to wintering territories in Brazil.

Management and Protection Guidelines :

Because swallow-tailed kites exhibit high nest site fidelity, protect known nest sites from disturbance and alteration, and retain the tallest pines in the area of nest sites. Maintaining a 330-foot limited activity buffer around active nests during nest season (March–June) should minimize the chance of disturbance. If documented on the area, allow nesting areas to have a higher shrub height and density than surrounding areas when feasible. If kite activity is observed during nesting season, particularly if kites are observed carrying nesting material, mobbing, or in groups of 3 or more, this information

will be documented and an effort to locate the nest should be made. Information on how to locate nests can be found in Meyer and Collopy, 1995.

It is important to preserve future potential nest trees. This can be done by retaining the tallest, oldest trees on the landscape during land management activities.

If construction or management activities are occurring near a migratory roost site from 1 June to 30 September, consultation with species experts is necessary to determine need and areas for protection/closed zones.

Potential Impacts as a Result of Construction Activities:

The primary potential impact foreseen as a result of the Cowbone Marsh Restoration Project is disturbance to the historic roost located on the LD3, Herbert Hoover Dike (HHD). Disturbances would include continual and increased traffic on the HHD to and from US 27. Increased traffic would disturb swallow-tailed kites off their roost during an important time in their life cycle; specifically, they need this time to prepare for their journey to Brazil. Disturbance from their roost could result in increased mortality during their migration to South America.

Additional disturbance from this project may include disturbance to nesting birds. Construction activities could result in nest abandonment and mortality of nestling or fledgling birds. Any nests within 330 feet of construction activity should be identified and disturbance should be restricted to times of the year outside of nesting season.



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Southern Bald Eagle

There is one known bald eagle nest on Fisheating Creek. It was last surveyed for activity in 2010, and was found to be active. There are 4 other active nests within 3 miles of Fisheating Creek, also last surveyed and found active in 2010.

Listing status: USFWS = Removed from listing under the Endangered Species Act in 2007. Protected under the Bald and Golden Eagle Protection Act

FWC = removed from list in April 2008, protected by species specific rule

Life History:

The southern bald eagle is a generalist and uses a number of natural communities. It is not considered management dependent, though it does benefit from active management that restores natural communities provided nest protection guidelines are followed. Bald eagles may be seen in most natural communities in Florida. Preferred habitat is close to coastal areas, bays, rivers, lakes, or other bodies of water that provide concentrations of food sources, including fish, waterfowl, and wading birds. Usually nests in tall trees (mostly live pines) that provide clear views of surrounding area. In Florida Bay, where there are few predators and few tall emergent trees, eagles nest in crowns of mangroves and even on the ground.

In Florida, nest-building and maintenance begin late September or early October. Generally only 1 brood is produced each season, but in Florida the breeding season is prolonged, with incubation beginning as early as October and as late as April. Most incubation is initiated in December and January. Replacement clutches are possible if eggs are destroyed during incubation. Clutches are generally 1–3 eggs with two most common. Incubation lasts 33-35 days. Fledglings begin to fly 10-12 weeks after hatching and leave the nest shortly after flight begins.

Management and Protection Guidelines :

Management should protect nest trees from catastrophic wildfire or disease outbreaks (i.e. regular prescribed fire, timber thinning). Clearcutting should not be done within 330 ft of a nest tree and thinnings should preserve large mature trees as alternate sites in case of loss of nest tree.

State and federal law requires protection of bald eagles, including avoiding disturbance of nesting eagles. Managers should consider the management guidelines in the state management plan when planning activities within 660 feet of known eagle nests. Any new nests that are located will be documented. As this species is surveyed on a statewide basis, the bald eagle nest locator can be checked annually to check status of

current nests and if any new nests are detected via the survey. It is undesirable to have unnaturally dense stands around eagle nests.

Potential Impacts as a Result of Construction Activities:

The impact foreseen as a result of the Cowbone Marsh Restoration Project is disturbance to the historic nest located on the LD3, Herbert Hoover Dike (HHD). Disturbances would include continual and increased traffic on the HHD to and from US 27. Increased traffic would disturb adult birds from their nest and could result in nest abandonment and mortality of nestling or fledgling birds. Any nests within 660 feet of construction activity should be identified and disturbance should be restricted to times of the year outside of nesting season.



Bluetail Mole Skink

Found in well-drained sandy uplands above 30 m (100 ft) in elevation, this taxon is known to occur only on the Lake Wales Ridge in Polk, Highlands and western Osceola counties. There are no known records on or near Fisheating Creek WMA.



Listing status: USFWS = Threatened

FWC = Threatened

Life History:

The bluetail mole skink (*Plestiodon egregious lividus)* is a subspecies of the mole skink (*Plestiodon egregius*). Very little information is available on the life history or distribution of the bluetail mole skink. Bluetail mole skinks are often found 2.5-5 cm (1-2 in) deep in sand under pine needles, leaves, logs or palmetto fronds. Like the sand skink (*Neoseps reynoldsi*), the bluetail mole skink has legs that are reduced in size and not used when "swimming" through the sand. However, the legs are functional and allow individuals to walk on the surface.

Information on life history characteristics of the bluetail mole skink is not available, but it is thought to be similar to other mole skinks. Mole skinks mate in the winter and have a clutch size of 3-7 eggs. Reproduction occurs annually. Nest cavities are constructed less than a foot deep in sand, and females remain with the eggs for up to 51 days until hatching occurs. Mole skinks eat small invertebrates, such as crickets, roaches and small spiders.

Bluetail mole skinks are not known to disperse well, even when surrounded by suitable, unoccupied habitat. They are more often found concentrated in localized pockets and not distributed throughout suitable habitat. Sand skinks are about 20 times more likely to be encountered in optimum habitat using standard collecting techniques such as raking or pitfall trapping than bluetail mole skinks. However, this may be a factor of seasonal variation in activity and has not been confirmed with year-round surveys over a period of several years.

Little is known about specific habitat requirements for the bluetail mole skink, but it is generally thought that the microhabitat conditions suitable for sand skinks are also suitable for this species. Leaf litter may be more important for the bluetail mole skink than the sand skink. Areas with loose sand and sunny exposure are preferred. Soil compaction affects skink activity, and areas with low soil compaction appear to be favored. Soils with low soil moisture and larger particle sizes appear to be preferred. Low understory vegetation and a higher percent of bare, loose sand are also important habitat components, but conditions within the soil are more important than vegetative

conditions. These parameters are important to consider as they affect thermoregulation and encourage a range of temperature conditions for skinks.

Translocation as a means for establishing bluetail mole skink populations in unoccupied areas has not been explored. Bluetail mole skinks are not known to be as genetically distinct as sand skinks, but they do show some genetic variation geographically. Given the paucity of research on this species, the most effective means for increasing current populations or establishing new ones are not known. However, protecting and managing scrub habitats on the Lake Wales Ridge are crucial to the long-term persistence of this species and should be a priority.

Management and Protection Guidelines :

Prescribed fire is the preferred habitat management technique for bluetail mole skink habitat. Patchy burns may be preferable as they provide a mosaic of burned and unburned habitats within a given management unit.

Mechanical treatments are often used to prepare fire lines and perimeters of burn units and also to reduce vegetation within a burn unit in order to safely apply prescribed fire. If mechanical equipment is used, soil compaction is likely and would be detrimental to bluetail mole skinks. Avoid the use of mechanical equipment and/or use caution with heavy equipment in areas that are priority for this species.

Potential Impacts as a Result of Construction Activities:

Bluetail mole skinks are not known to occur in Glades County and, though they occur in western Highlands county, they do not disperse well, therefore it is unlikely construction activities will impact this species. However, if present, construction activities could impact blue-tailed mole skinks by compacting soil causing direct mortality and/or degradation of habitat. Activities could also destroy the nests that are built on the ground since activities may occur during their nesting season.



Crested Caracara

Aerial surveys for caracara nests were conducted from 2003 to 2006. Since then anecdotal sightings of caracara nests have been reported. The most recent confirmed nest was located near Ft. Center in May 2012 (Figure 2).



Listing status: USFWS = Threatened

FWC = Threatened

Life History:

Historically, crested caracaras were thought to occur in native dry prairie systems that have since been altered or degraded due to development and fire suppression and are no longer suitable for caracara occupation. Currently, much of the crested caracara population is found on improved or semi-improved pastures on private cattle ranches (Layne 1996, Hipes et al. 2000), further contributing to threats of habitat loss and degradation. Crested caracaras are non-migratory across their range in Florida. Average home range size is 1,200 hectares (3,000 acres). Courtship behavior and nest building begins as early as September in Florida. Nests are typically built 4-18 m above the ground in a cabbage palm (*Sabal palmetto*) in an open area with scattered trees. Caracaras construct new nests each year, but they are often in the same tree as the previous year, indicating strong nest-site fidelity (Morrison 2001).

Egg laying has been documented as early as September and as late as June; peak activity occurs from late December through February (Morrison 2001). Clutch size is 2-3 eggs, with an incubation period of 32-33 days (Layne 1996). Re-nesting can occur if a nest is lost early in the season. Fledging occurs at 8 weeks. Young are dependent on parents for at least 2 months post-fledging, and may remain in the natal territory for up to 10 months. Most young in Florida leave natal territory after 4-6 months and form groups of up to 30 individuals. These groups have been observed feeding and roosting together. The Kissimmee River basin south of Lake Kissimmee is heavily used by these groups (Morrison 1996, Morrison 2001, USFWS 1999).

The crested caracara is an opportunistic feeder, taking prey items such as insects, small reptiles and amphibians, and small mammals. Eggs and carrion are also included in the diet of caracaras. Foraging for food takes place in early morning and late afternoon. Caracaras often walk through pastures searching for prey items, particularly after disturbance such as mowing or plowing. Caracaras have also been observed feeding in recently burned areas. Hunting takes place from conspicuous perches or while in flight. Once prey is sighted, the caracara flies to the ground and walks up to prey item (Morrison 1996, Morrison 2001).

Management and Protection Guidelines :

Crested caracaras have high fidelity to their home ranges and nest sites. Staff will protect known nesting sites and maintain habitat in suitable condition in areas where crested caracara nests are known to occur. Management actions like cattle grazing, mowing, shredding, and prescribed burning will improve habitat conditions by creating areas with low ground and shrub cover. Following the guidance in Morrison 2001 (cited below), staff will limit management actions during the breeding season if a nest is located. Crested caracaras are most likely to flush from the nest, which can be detrimental to eggs or young, if disturbance occurs within 1,500m of the nest during the first 2 - 3 weeks of nesting. Maintain this distance (1,500m) as a buffer around known nests. Morrison (2001) suggests historic management can continue (if the birds are used to it) during nesting season, as long as the first 2 - 3 weeks of nesting are avoided. A significant increase in human activity within the home range or territory can cause caracaras to abandon the area, even outside of the nesting season.

Potential Impacts as a Result of Construction Activities:

Potential impacts as a result of the Cowbone Marsh Restoration Project are disturbances to nesting adults. If construction activities occur during peak nesting season and in close proximity to nests, adult birds could abandon nests leading to nestling mortality. As a result, nest sites should be identified prior to and during any construction activities. A buffer of 1,500m should be maintained around any nests. Peak nesting season occurs from December to February, but since nesting can occur year round surveys should be conducted each year to identify new nesting attempts.



Eastern Indigo Snake

There are a number of older observations (most recent is 1992) of indigo snakes both on the WMA and on the easement to the north in the FLEO database. Grant Steelman documented the species on the WMA in 2006, and Kevin Enge documented the species on the Conservation Easement in 2000, so it is reasonable to assume they still occur on and near the WMA.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

Listing status: USFWS = Threatened

FWC = Threatened

Life History:

Eastern indigo snakes utilize a mosaic of natural communities throughout the year. They are most commonly associated with scrub, sandhill, and scrubby flatwoods where they occur in or near gopher tortoise burrows. Southern indigo snake populations are less dependent on gopher tortoise burrows for refugia. Pine flatwoods, dry prairie, hardwood hammocks, marsh edges, agricultural fields, and even anthropogenic areas are also used by these snakes (USFWS 1999). In warm months, indigo snakes use a variety of natural areas and have large home ranges (Moler 1992; USFWS 1999). Indigo snakes occupy larger home ranges in the summer than the winter. Information on snakes in Florida indicates adult males have home ranges as high as 224 ha in the summer (Moler 1985b). Because it is such a wide-ranging species, the eastern indigo snake is especially vulnerable to habitat fragmentation that makes travel between suitable habitats difficult.

One habitat requirement of indigo snakes is sufficient refugia,which they use to escape cold and desiccation (USFWS 2007). Within the range of the gopher tortoise, tortoise burrows are afavorite refugia for indigo snakes. They are known to use burrows made by cotton rats, land crabs, hollows at bases of trees and stumps, ground litter, trash piles and rock piles lining banks of canals (USFWS 2007). Indigo snakes appear to be tied closely to sandhills and tortoise burrows in northern Florida (Stevenson 2003). In central and south Florida, thermal stress is reduced and they can use other terrestrial habitats, if not heavily impacted by urban development (USFWS 1999). Moler (1985a) indicated indigo snakes commonly use hydric hammocks in central/south Florida, and Kuntz (1977) described pine flatwoods, pine rocklands, and tropical hardwood hammocks as important habitat in south Florida. Burrows and other below ground refugia will still be used by indigo snakes in central/south Florida.

Sexual maturity appears to occur around 3-4 years of age (Hallam et al. 1998). In North Florida, breeding occurs November – April with females laying 4-12 eggs in May-June (Moler 1992). Most hatching of eggs occurs August-September, with yearling activity peaking in April-May (USFWS 1999). Limited data on reproduction in south

Florida indicate the breeding season is extended; breeding occurs from June-January, egg deposition is April-July, and hatchlings are born through early fall (USFWS 1999).

Management and Protection Guidelines :

Large upland snakes such as the eastern indigo snake are relatively wide-ranging and elusive. When using heavy equipment during land management activities, it is important to avoid direct mortality. Gopher tortoise burrows, including abandoned burrows, should be avoided when using heavy equipment. Coarse woody debris and residual stumps should be left intact when possible to provide cover for these species. In general, avoid removing stumps. While it is acceptable to pile and burn excess logging slash if necessary to reduce smoke management issues, ensure some debris remain in the stand to provide cover for these species. Creating brush piles can provide cover for these species if natural cover is sparse or absent.

Potential Impacts as a Result of Construction Activities:

One potential impact to indigo snakes in the project area is injury or direct mortality of individual snakes as a result of earth work during construction activities. Additionally, gopher tortoise burrows, cavities created by other wildlife, and cavities in trees which indigo snakes prefer as refugia could be damaged during construction activities. Indigo snakes are very adaptable and can colonize agricultural areas and canal banks; as a result, it will be imperative to have a biologist onsite during all construction activities to ensure live specimens are dealt with properly. If live snakes are encountered, efforts will be made to stop construction activity and relocate snakes outside of the construction area.



Florida Black Bear

FEC and the conservation easement both fall into primary and secondary habitat zones for the Glades/Highlands bear population; there aren't any documented occurrences in the WildObs or FLEO shapefile.



Listing status: USFWS = Not listed

FWC = Recently de-listed from Threatened

Life History:

The Florida Black Bear subspecies (*Ursus americanus floridanus*) is found only in Florida and southern Georgia and Alabama. There are currently 2500 to 3000 bears estimated in Florida.

Breeding occurs from June through August. Reproductive females enter winter dens in mid to late December and emerge in early to mid-April after a denning period of 100 to 113 days. Most studies in Florida found an average litter size of around two cubs, but one to three are not uncommon. Cubs stay with their mothers and may den with her the following year. Family dissolution usually occurs in May to July when cubs are 15 to 17 months old. Young females generally form a home range overlapping their natal range while young males disperse to new areas.

In fall, bears wander widely and forage extensively in order to accumulate enough energy in the form of fat to survive the winter. Adult bears may increase their body weight by 25-40% in fall. In winter, the consumption of food by bears is greatly reduced and reproductive females may spend many weeks in the natal den with little or no additional nutrition. Approximately 70% of the natural bear foods in Florida are plant material with colonial insects and beetles representing the largest portion of the animal material consumed. Although food items vary by season and location, the fruits and fiber of saw palmetto are important throughout the state and throughout the year.

Bears in Florida exhibit a breadth of home range sizes indicative of the variety of habitats and habitat quality found in the state. Female bears with cubs have smaller summer home ranges than females without cubs but much larger fall home ranges than females without cubs. The larger fall home range is a response to the nutritional needs of rapidly growing cubs. Black bears may move great distances, occasionally dispersing > 87 mi (140 km). However, < 30% of the dispersal events recorded for black bears are > 37 mi (60 km) and fewer than 2% are > 62 mi (100 km).

Management and Protection Guidelines :

Preserve large unbroken tracts of habitat, and restore connectivity when habitat has been fragmented. Successful management prescriptions must consider highly variable food habits as well as the effects of fire, timber management, and expanding development. Reduce bear/vehicle collisions through construction of over/underpasses if necessary. Managers should consider extending the time between prescribed fires in occupied bear range. Short fire rotations (2–3 years) in upland sites may be insufficient to allow important mast-producing species to recover peak fruiting performance (flowering does not equal fruiting). However, burns that leave a mosaic of conditions would likely benefit this species. Do not take measures to burn patches that originally went unburned. When possible in occupied bear habitat, fire should be excluded from dense (denning) vegetation during January to April. Consider prohibiting palmetto fruit harvesting. See Bear Management Plan, FWC 2012, also Maehr et al. 2001.

Potential Impacts as a Result of Construction Activities:

Habitat in and around Cowbone Marsh is marginal at best for Florida black bears. However, the project site is near the Glades/Highlands primary black bear range and falls within the secondary range. This project could have minimal impacts if a female bear decides to den near the construction site. Dens are usually found in dense vegetation on the ground and occasionally in fallen trees or brush piles. Females tend to den in late December through April and any disturbances could pose a risk to cubs if she is forced to leave the den multiple times throughout the day. If a den is located during construction activities, then measures should be taken to avoid disturbing activities.



Florida Burrowing Owl

There is an old observation (1985) of a burrowing owl on Fisheating Creek. There is a more recent observation (2003) of a burrowing owl on agricultural land to the west of the WMA.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

Listing status: USFWS = none

FWC = Species of Special Concern

Life History:

The Florida burrowing owl is a resident, non-migratory subspecies of burrowing owl found in southwest and southeast Florida. Historically, this species occupied the dry prairies in the central part of the state. Drainage of wetlands and land clearing for development and agriculture has greatly expanded the historic range of the species in Florida. They appear to prefer modified features in the landscape, such as berms or canal banks. Burrowing owls require open, treeless areas with sandy soils for excavating burrows. Ground cover should be low; this can be accomplished by mowing or grazing in ruderal areas and the use of prescribed fire in native habitats. Unlike many other owl species, the burrowing owl is active during daylight hours (Behrstock 2001). The diet of burrowing owls includes a variety of insects, brown anoles (*Anolis sagrei*), and Cuban treefrogs (*Osteopilus septentrionalis*).

Burrowing owls derive their name from their extensive use of underground burrows. In Florida, burrowing owls often excavate their own burrows, and some have been documented using gopher tortoise burrows. Excavation of a burrow can be completed in a matter of days, and digging is done primarily with the feet. Burrows consist of a mound of soil at the entrance, an entrance tunnel that twists for approximately 1.5-2.5 meters, and a nest chamber that has been enlarged at the end of the tunnel. Burrows are used during the spring for nesting and during the winter for protection from avian predators. In summer, burrow use decreases, possibly due to increased flooding risk (Haug et al. 1993, Millsap 1996).

Burrowing owls are semi-colonial. They form loose colonies within which pairs may exhibit territoriality, although little is known about this, such as size of defended areas. In some areas in Florida, Wesemann and Rowe (1987) found densities of 17.6 pairs/km2 or 0.176 pairs/ha. On average, 68% of adults exhibit territory fidelity in Florida (Haug et al. 1993). In Florida, most (95%) egg laying occurs from February through May, with the peak occurring in mid-March. Egg laying has been documented as early as October. Clutch size is 2-6 eggs (median=4, n=14). Double brooding appears to be rare. Incubation is done primarily by the female, and lasts for 28-30 days. Young emerge from the burrows after approximately 2 weeks and wait for adults to bring food.

In the Florida subspecies, males have never been observed feeding young. If the female dies, the young will starve to death. Young can fly well by six weeks of age, but still remain near burrow for protection. Burrowing owls may prefer nest sites with a few extra unoccupied burrows nearby for young to escape to if necessary or for caching food items for later consumption. At seven to eight weeks of age, young begin chasing insects and using satellite burrows. Young females disperse an average of 1,116 m and males 414m from the natal territory (Haug et al. 1993).

Management and Protection Guidelines:

Artificial perches provide hunting and observation sites for burrowing owls. Wooden fence posts or other perches placed in immediate vicinity of burrows will provide a suitable perch. Placing a T perch near known burrows will not only benefit the owl, but will aid managers in their efforts to avoid burrows during management activities.

Cattle grazing will reduce vegetation height to a level that is beneficial for burrowing owls, but cattle may also degrade/destroy burrows by trampling or wallowing in them. Area managers should consider excluding cattle from the immediate vicinity of known active burrows, when feasible. When active burrows are identified, activity within 33 feet should be avoided from February 15 through July 10. Heavy equipment should not be used around burrows to avoid collapsing burrows.

Potential Impacts as a Result of Construction Activities:

Potential impacts of this project on burrowing owls could include collapsing burrows. Burrow failures due to collapse could result in nest failure and/or direct mortality of adult birds. As a result of no known observations of this species in Fisheating Creek in recent years, it is highly unlikely that this project will have any impacts on this species. Observations will be made in areas where burrowing owls would likely occur prior to and during construction activities. If burrows are identified, they will be mark with flagging tape and any construction activities will be routed in order to avoid impacts.



Florida Grasshopper Sparrow

There are 2 records (pre-1997) of Florida Grasshopper Sparrows occurring on the conservation easement.



Listing status: USFWS = Endangered

FWC = Endangered

Life History:

Dry prairie habitat for this species contains large (> 50 acres), treeless, grasslands that are maintained with frequent fire. Suitable prairie is dominated by saw palmetto and dwarf oaks 30 to 70 cm in height. Grasses like bluestem (*Andropogon* spp.), wiregrass (*Aristida* spp.), and St. John's wort (*Hypericum* spp.) also can be found in good sparrow habitat (Delany et al. 1985; USFWS 1999). Tree densities of >1 tree per acre are not tolerated. As ground-dwelling birds, they require bare ground (at least 20%) for ease of movement and foraging. Cover (i.e., bunchgrasses and low shrubs) however, is important for providing nesting habitat.

Nesting usually begins in early April and can continue through June. Nests are placed on the ground in shallow cavities. Nests are dome-shaped and constructed from grasses like wiregrass, bluestem, and yellow-eyed grass (*Xyris* spp.; Delany and Linda 1998). Second nest attempts appear to be common when summer burns are completed early in the breeding season (i.e., May – June; USFWS 1999). Females are known to create a new nest within 10 -12 days after one is destroyed (USFWS 1999). Most nests contain 3-5 eggs and females will incubate for 11-12 days. When chicks are hatched, both parents become more defensive around humans and to other intrusions. Success rates for nesting are low; 1996 annual estimates from Avon Park Air Force Range and Three Lakes WMA are 0.11 and 0.33, respectively (Perkins et al. 1998). Nest predation by snakes and mammals is believed to be the main reason for this low success.

Most foraging activity by grasshopper sparrows occurs on the ground. Diet is largely grasshoppers, crickets, beetles, weevils, moths, flies, and seeds. There is some evidence that birds might switch to a diet dominated by seeds during the winter (USFWS 1999). Territories are heavily defended by males from time of creation through incubation; defensive behavior is reduced once the young are hatched (Delany et al. 1995). Territory size on Avon Park Air Force Range was 1.8 – 4.8 ha (4.4 – 11.9 ac) in size, with no significant difference in size between mated and unmated males (Delany et al. 1995). During the non-breeding season males and females overlap and home ranges increase with a mean size of 29.0 ha (71.6 ac; Pranty & Tucker 2006).

Management and Protection Guidelines :

The use of frequent prescribed fire is needed to maintain open habitat and prevent the encroachment of pines and hardwoods into dry prairies. Sparrow populations decline on sites that have a burn frequency of greater than 2 years (Delany and Cox 1986; Shriver and Vickery 2001).

Growing season fires, as opposed to winter burns, may benefit sparrow populations by increasing the length of breeding activities (USFWS 1999) and possibly reproductive success (Shriver et al. 1996).

Roller-chopping may be used, in addition to fire, to alter vegetation in dry prairies. Winter chopping can provide a quick reduction in shrubs and improve herbaceous growth but will still leave a large amount of biomass. Burns completed after the chop will help to remove this biomass and trigger more herbaceous growth depending on seasonality of the burn.

Grazing activities on dry prairies should be considered carefully. Sparrow populations decline greatly or disappear on sites that are heavily grazed (Delany and Linda 1994).

Unnatural water impoundment during the breeding season will reduce or eliminate breeding by sparrows.

Potential Impacts as a Result of Construction Activities:

The type and condition of habitat in and around Cowbone Marsh and the construction route are not representative of good grasshopper sparrow habitat conditions. Therefore construction should have little, if any impact on this particular species. However, if they were present, construction activities could impact sparrows by displacing breeding adults. Activities could also destroy the nests that are built on the ground since activities may occur during their nesting season.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

Florida Panther

Telemetry data shows limited panther use on and near Fisheating Creek WMA. The WMA falls outside the primary and secondary habitat ranges for the species, however dispersing individuals may be using the area as a corridor.



Listing status: USFWS = Endangered

FWC = Endangered

Life History:

The Florida panther is the only representative of the species *Puma concolor* surviving in the eastern United States and its current breeding range exists only in South Florida (USFWS 2008). South Florida habitats consist of forested uplands and wetlands interspersed with open areas such as freshwater wetlands, dry prairie, old fields, pasturelands, and agricultural land. Recent studies found that panthers select forested habitats, both upland and wetland, and use all other habitats in proportion to their availability (Cox et al. 2006, Land et al. 2007).

Male Florida panthers are polygynous, maintaining large home ranges that overlap several adult females. Males may breed as early as 17 months, but most breeding begins at 3 years. Female panthers have bred as young as 18 months (Maehr et al. 1989) and successful reproduction has occurred up to 11 years old. Litters, typically of 2 or 3 kittens, are produced throughout the year, with 56 - 60% of births occurring between March and June (Jansen et al. 2005).

Den sites are usually located in dense understory vegetation, typically saw palmetto (Maehr 1990). Den sites are used for up to two months (birth to weaning) by female panthers and their litters. Independence and dispersal of young typically occurs at 18 months, but may occur as early as one year (Maehr 1992). Male and female panthers disperse an average distance of 42.5 mi (68.4 km) and 12.6 mi (20.3km) respectively (Maehr et al. 2002). Panthers require large areas to meet their needs. Comiskey et al. (2002) examined the home range size for 50 adult panthers and found resident males had a mean home range of 251 mi^2 (650 km^2), while females had a mean home range of 153 mi^2 (396 km^2).

Telemetry data indicate that panthers typically do not return to the same resting site day after day, with the exception of females with dens or panthers remaining near kill sites for several days. Panthers move extensively within home ranges, visiting all parts of the range regularly in the course of hunting, breeding, and other activities (Maehr 1997, Comiskey et al. 2002). Males travel widely throughout their home ranges to maintain

exclusive breeding rights to females. Females without kittens also move extensively within their ranges (Maehr 1997). Panthers are capable of moving large distances in short periods. Nightly panther movements of 12 mi (20 km) are not uncommon (Maehr 1990).

White-tailed deer and feral hog are primary prey items (Maehr 1990b, USFWS 1999; USFWS 2008). Generally, feral hogs constitute the greatest proportion of the diet of panthers north of the Alligator Alley section of Interstate 75 (I-75) while white-tailed deer are the greatest proportion of the diet to the south (Maehr 1990). Secondary prey includes raccoons, nine-banded armadillos, marsh rabbits (Maehr 1990) and alligators (USFWS 2008).

Management and Protection Guidelines:

Desired habitat conditions for panthers include areas with dense understory vegetation, particularly saw palmetto, interspersed with open areas. Dense understory provides some of the most important feeding, resting, and denning cover for panther. Saw palmetto is a typical component of quality denning and resting sites, and maintaining both vertical and horizontal understory components are important to optimize suitability. Patches of dense vegetation adjacent to areas that are more open provide critical areas for stalking and ambushing prey. In the limited areas where these features currently exist, management practices should be encouraged to maintain this cover. Open marshes, dry-prairie/grasslands, and other vegetation types that can support high densities of prey species are also critical components of panther habitat. The long-term goal for this WMA complex is to provide suitable habitat throughout the complex that will support and encourage panther use and movement within and through the area.

Potential Impacts as a Result of Construction Activities:

Denning is not known to occur in the area. In a panther peripheral areas survey conducted by Belden et al. (2006), male tracks were confirmed in the WMA as recently as 2003, but no panther sign was observed during their survey in 2002. As a result, most panthers using the property are likely dispersing males and would avoid areas with increased human activity, construction activities are likely to have little, if any, impact on the species.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

Florida Pine Snake

There are no records of the Florida Pine Snake occurring on FEC or the conservation easement; however they have similar habitat requirements to the Eastern Indigo Snake, so it is reasonable to assume they may occur in the area and simply have not been detected.



Listing status: USFWS = Not listed

FWC = Species of Special Concern

Life History:

The Florida pine snake is one of four subspecies of pine snake and is found from southeastern South Carolina, west to Mobile Bay, Alabama, and south through peninsular Florida. The ecology of this species is poorly known, but it is closely tied to the upland pine and sandhill communities of the Coastal Plain. It typically occupies sites with sandy soil (for burrowing) and dominated by pines and a well-developed herbaceous understory dominated by grasses. Home ranges for pine snakes are not well known but are documented to range from 11 to 93 ha (27 to 230 ac.; Franz 1986; 1992). They will utilize gopher tortoise burrows and appear to use open habitats surrounding wetlands (Franz 1992).

Female pine snakes have an annual breeding cycle that extends from April through the winter in Florida. Eggs are laid between June and August into burrows excavated by the female. Clutch size can range from 3 to 24 eggs with Florida pine snakes having a mean of 5.6 eggs (Franz 1992). Incubation takes 50 to 100 days with hatchlings emerging in late August – September.

Pine snakes feed heavily on pocket gophers, but are also known to eat other rodents, birds and bird eggs, lizards, other small snakes and their eggs, and insects (Ernst and Barbour 1989; Franz 1992). Florida pine snakes appear to actively locate mounds of pocket gophers and burrow in to capture individual gophers.

Management and Protection Guidelines :

Management regimes that create suitable habitat for red-cockaded woodpeckers should be beneficial for Florida pine snake. This should focus on frequent fire (2-3 year intervals), control of midstory hardwoods, and restoration of longleaf pine to suitable sites.

Pine snakes utilize forest openings with well-drained sandy soils and little shrub cover. This, however, may be a reflection of the herbaceous community where pocket gophers build mounds, which pine snakes use for nesting and hibernation sites. Mature pine

communities are not the only habitat utilized by pine snakes; a mosaic of natural communities, including bottomland forest, should be managed as well.

Low intensity site-preparation techniques like burning should be used whenever possible; actions like root raking and chopping can interfere with the snake's fossorial nature. Heavy equipment should be kept at least 25 feet from known breeding burrow sites (Jordan 1998).

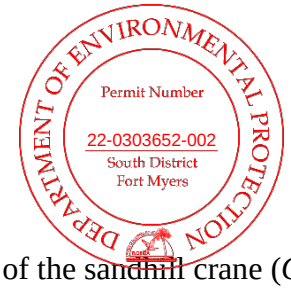
Potential Impacts as a Result of Construction Activities:

Potential impacts to the Florida pine snake are similar to those of the indigo snake. Impacts to snakes in the project area could include actual harm to individual snakes as a result of earth work during construction activities. Additionally, gopher tortoise burrows, other cavities created by other wildlife in which pine snakes frequent for hunting purposes could be damaged during construction activities. As a result, it will be imperative to have a biologist onsite during all construction activities to ensure live specimens are dealt with properly. If live snakes are encountered, efforts will be made to stop construction activity and relocate snakes outside of the construction area.



Florida Sandhill Crane

There is documentation of Florida Sandhill Cranes occurring on the WMA, but the only documented nesting sites are on the conservation easement.



Listing status: USFWS = not listed

FWC = Threatened

Life History:

The Florida sandhill crane is a resident subspecies of the sandhill crane (*Grus Canadensis*). Florida sandhill cranes utilize a variety of open habitats including prairies, freshwater marshes, pastures, open pinelands, agricultural areas, and transition zones between these habitats (Hipes et al. 2000, Stys 1997). Standing water is an important nesting component for Florida sandhill cranes. Nests consist of herbaceous plant material mounded in shallow water or in marshy areas. Water conditions vary depending on amount and seasonality of rainfall, and can have an impact on nesting success (Stys 1997).

Florida sandhill cranes are perennially monogamous. Juvenile birds remain with their parents until around ten months of age, and then leave to join other non-breeding individuals. These flocks are important socially as breeding pairs are often created during this time. Unpaired adult cranes whose mate died or disappeared also join these flocks and will re-pair with a new mate (Stys 1997). Nesting begins as early as December, but more typically in January and extending through June. Re-nesting will occur if eggs or chicks are lost (Dwyer and Tanner 1992). Average clutch size is 1-2 eggs, with an incubation period of 29-31 days. Young are precocial and accompany foraging adults within one week of hatching (Stys 1997). Chicks can fly within 70 days and are independent by 10 months of age (Nesbitt 1996, Stys 1997).

Home range size varies by age class and time of year. One study of 31 individuals found a mean annual home range size of 936 ha, with an average of 447 ha for adult pairs and 2,132 ha for subadults (Nesbitt and Williams 1990). Stys (1997) reported north central Florida cranes had home range sizes of 253 ha, 180 ha, and 124 ha during pre-nesting, nesting and post-nesting, respectively. Paired adults on the Kissimmee Prairie had a mean annual home range of 183 ha. As habitat conditions degrade, pairs or groups will leave their home range and travel up to 15 km to find resources. Breeding may be delayed or abandoned if suitable foraging or breeding habitat cannot be located (Nesbitt 1996, Nesbitt and Williams 1990).

Management and Protection Guidelines :

Known nests should be protected by a 400 foot buffer to reduce likelihood of disturbance. Seasonality of wetland management activities should be considered to avoid flooding existing nests or detrimentally impacting foraging habitat. Reducing disturbance to nest areas decreases chances of abandonment or other negative impacts (Dwyer and Tanner 1992).

Potential Impacts as a Result of Construction Activities:

Potential impacts to the Florida sandhill crane include disturbance to nesting adult cranes and actual nest destruction. Since they are ground nesters and since they nest in wetlands, construction activities could pose harm to this species. Additionally, nesting season overlaps with the same time period of proposed construction activities. As a result, it will be imperative to have a biologist onsite prior to and during all construction activities to ensure any nests in the area are avoided and, if nests are identified, to ensure avoidance measures are taken.



Florida Scrub-Jay

There are a small number of scrub-jays on the WMA monitored each year by JayWatch volunteers. Fisheating Creek is at the southern tip of the Lake Wales Ridge Scrub-Jay population and the birds on the WMA constitute the southernmost population of scrub-jays on an FWC-managed Wildlife Management Area. There are also family groups on the conservation easement.



Listing status: USFWS = Threatened

FWC = Threatened

Life History:

The Florida scrub-jay is a habitat specialist that can be found in scrub and scrubby flatwoods. Florida scrub-jays are found in both coastal and ancient scrub habitats in peninsular Florida, and rely heavily on fire to maintain optimal scrub conditions for foraging and breeding. Florida scrub-jays are non-migratory and tend to be relatively sedentary.

Florida scrub-jays live in groups, in which non-breeders assist with feeding young and predator detection. Groups consist of the breeding pair and up to 8 adults and 1-4 juveniles. Large groups are rare; average group size is 3. Average territory size per group is approximately 25 acres (Fitzpatrick et al. 1991). Eggs are laid from March to June into a small nest located at low to mid height in a dense shrub. Clutch size is 3-4 eggs (Fitzpatrick et al. 1991). Incubation lasts for 18 days, after which nestlings are cared for by the parents and group members. Young fledge at 18 days (range 12-25d) .

Diet of Florida scrub-jays includes small invertebrates, arthropods, and acorns. Acorns comprise the majority of the diet during certain times of the year. Florida scrub-jays cache acorns by hammering them into sand, or stuffing them into tufts of pine needles or palmetto fronds. From August to December, each Florida scrub-jay caches 6,500-8,000 acorns within its territory (Woolfenden and Fitzpatrick, 1996). Open patches of sand within the territory are important for this behavior.

Ideal scrub-jay habitat consists of mostly treeless open expanses of low shrubs interspersed with bare sandy patches. Oaks and other shrubs are generally low enough that a person approximately 6 feet tall can see over most of the landscape. Fire is an important component of the natural history of the Florida scrub-jay and should be used as a management tool as needed to achieve the desired habitat structure. In general, scrub should burn at a fire frequency of 7-20 years and scrubby flatwoods at a frequency of 5-10 years. Shorter fire frequencies (2-3 years) in scrub will prevent acorn production in

oaks and longer fire frequencies will allow overgrowth of sand patches and invasion of pine species that are detrimental to survival of Florida scrub–jays.

Management and Protection Guidelines :

Conduct management and construction activities outside of the nesting season (March – mid-July) to avoid impacting nesting scrub-jays. If there is a possibility of impacting potential scrub-jay habitat, or if federal funding is used for projects in scrub-jay habitat, consult with USFWS to determine whether a Section 7 consultation is necessary.

Potential Impacts as a Result of Construction Activities:

Habitat in and around the Cowbone Marsh are not indicative of that required by the scrub jay and therefore, impacts to this species are not anticipated.



Gopher Frog

There are 3 older records of gopher frogs (*Rana capito aesopus*) occurring just north of the FEC boundary.



Listing status: USFWS = Not listed in FL; MS population as Endangered

FWC = Species of Special Concern

Life History:

Gopher frogs in Florida use gopher tortoise burrows as refuges and are considered a gopher tortoise commensal species. Because of this fact, their range is a sub-set of the gopher tortoise range. Gopher frogs do not occupy tortoise habitat lacking sufficient wetlands for breeding. Gopher frogs spend much of their time in refuges such as gopher tortoise burrows, rodent burrows and crayfish holes. Their preferred habitat is Longleaf Pine- Turkey Oak sandhills, but they also are found in pine flatwoods, sand pine scrub, and xeric hammocks. They are rarely found more than a mile away from breeding habitat.

Gopher frogs prefer to breed in seasonally flooded grassy ponds and cypress heads that lack fish. They are most often heard calling after heavy rains. This species breeds in large groups of many individuals (explosive breeding) triggered by heavy rains. Fish prey on the early life stages of gopher frogs, which may account for their preference for fishless breeding habitats such as temporary ponds. While southern populations call, and probably breed year long, northern populations in FL breed from February through April. Females may not breed every year, but lay between 3,000 and 7,000 eggs when they do (Palis 1998). Tadpoles take three to five months to metamorphose. Gopher frogs reach sexual maturity in their first-second year.

Gopher frogs are largely nocturnal, but may be seen at the mouths of tortoise burrows on dark damp days. Their diet consists of invertebrates and anurans, including toads. Tadpoles feed on plant matter and detritus.

Management and Protection Guidelines :

Gopher frogs frequently move between wetland breeding ponds and adjacent uplands. Do not place ground disturbing firebreaks along wetland ecotones because they can alter/destroy the herbaceous component of pond margins preferred by this species and other amphibians. Wet lining can be an alternative to mineral firebreaks around wetlands if necessary; however, it is preferred to allow fire to burn through the wetland. Managers should use prescribed fire as the primary tool to remove shrubs and other thick

vegetation from pond margins; mechanical treatments may be needed initially, but prescribed fire should be the main management tool in suitable wetlands.

Growing season (April–September) burns, preferably after April, are more beneficial to gopher frogs than dormant season (October–March) burns. This is because they are more effective at reducing shrub cover and litter in the wetland basin, stimulating the growth of herbaceous emergent vegetation, enhancing the wetland/upland ecotone, and stimulating the reproduction of wiregrass in the surrounding uplands. The most beneficial time to burn is when the wetland is dry. While growing season fires are preferred, it is better to burn during the dormant season than to avoid burning.

Because it is important to maintain potential breeding ponds in good condition, minimize soil disturbance within 500 yards of potential breeding ponds and continue the prohibition on public off-road vehicle use. Timber management around known or potential breeding ponds should focus on selective thinning and natural regeneration enhanced by prescribed fire.

Potential Impacts as a Result of Construction Activities:

Impacts to the gopher frog are similar to those identified for the indigo and pine snake. Impacts to gopher frogs in the project area could include actual harm to individuals as a result of earth work during construction activities. Additionally, gopher tortoise burrows which gopher frogs frequent could be damaged during construction activities. As a result, burrows should be avoided whether active or not to ensure this habitat is not impacted. Additionally, it will be imperative to have a biologist onsite during all construction activities to ensure live specimens are dealt with properly. If live frogs are encountered, efforts will be made to stop construction activity and relocate them outside of the construction area.



Gopher Tortoise

There are a number of records of gopher tortoises occurring just to the north of FEC, and a few records on or immediately adjacent to the property.

Listing status: USFWS = None in FL, Threatened in LA, MS, and Western AL (in July 2011, the USFWS determined that listing throughout the eastern portion of the range is warranted, but precluded)

FWC = Threatened

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Life History:

The gopher tortoise is a management responsive species that when present can be an indicator of properly managed upland pine or grassland habitats. This species is often considered a keystone species because many other species make use of the burrows dug by gopher tortoises. Tortoise grazing and mound building also alter the surrounding habit making it suitable for other species. Gopher tortoise habitat management requires frequent controlled burns and maintenance of an open tree canopy. Fire can be useful in maintaining a diverse grass and legume dominated groundcover at a height where it is suitable for tortoise foraging. This management regime also benefits a large suite of species including several focal and listed species.

The gopher tortoise is slow to reach sexual maturity, has low fecundity and has a long life span. Females become sexually mature between 10-21 years of age, depending on local resource abundance and latitude; males mature at a slightly younger age. The breeding season is generally March-October. Nests are excavated from mid-May to mid-June and only 1 clutch is produced annually. Tortoises often excavate nests in burrow mounds and predators frequently depredate the eggs. Clutch size is between 1 to 25 eggs, with an average of 5-9. Incubation period is approximately 80-100 days, depending on latitude.

The gopher tortoise diet is composed of a wide variety of plants including broadleaf grasses, sedges, grass-like asters, legumes, and various fruits. Preferred foraging areas are relatively open and have low-growing, diverse herbaceous vegetation that is readily accessible.

Home range varies based on habitat quality, season, and sex of the tortoise, and generally ranges from 0.25 to 5 acres (0.10-2 hectares). Gopher tortoises generally use several burrows during the year and can move a mile (1.6 kilometers) or more to occupy a new burrow. Adults have been documented moving up to 200 m from burrows to forage. Tortoises are capable of long movements such as the 0.74 km movement of one sub-adult.

Management activities that benefit gopher tortoises are prescribed fire and silvicultural practices that open the forest canopy and provide a diverse herbaceous ground cover and limited shrub cover. Translocation is frequently used to conserve populations threatened by development activities and can be used to restock unoccupied, restored habitats. The use of temporary enclosures (i.e. soft release) is required at the recipient sites because this has been shown to increase site fidelity. Upper respiratory tract disease (URTD) and other diseases should be considered when relocating gopher tortoises into areas with an existing population.

Management and Protection Guidelines :

FWC Management Plan: http://myfwc.com/media/214304/GT_Mgmt_Plan.pdf

In areas where gopher tortoises occur, the timing of land disturbance activities (e.g. roller-chopping, timber removal) should, whenever appropriate, occur during the dormant season to minimize negative impacts to gopher tortoise. This species generally is less active and spends more time in burrows during the winter months. Therefore, disturbances at this time will be less likely to crush or otherwise harm foraging tortoises. Regardless of timing, minimize impacts on known burrows.

Potential Impacts as a Result of Construction Activities:

Impacts to the gopher tortoise are similar to those identified for the gopher frog, indigo snake, and pine snake. Impacts to gopher tortoises in the project area could include actual harm to individuals as a result of earth work during construction activities. Additionally, gopher tortoise burrows which are frequented by other species in the project are such as gopher frogs, pine snakes, and indigo snakes, could potentially be damaged during construction activities. As a result, burrows should be avoided whether active or not to ensure they are not impact. Additionally, it will be imperative to have a biologist onsite during all construction activities to ensure live specimens are dealt with properly. If live specimens are encountered, efforts will be taken to stop construction activity and properly relocate outside of the construction area.



Ivory-Billed Woodpecker

There are a few documented observations of ivory-billed woodpeckers near Fisheating Creek. Many are fairly old observations nearby in Jonathan Dickinson State Park, Big Cypress National Preserve, and Fakahatchee Strand. The most recent reports outlined in the Recovery Plan were from Fakahatchee Strand and Whitewater Bay, Monroe County.



Listing status: USFWS = Endangered

FWC = Endangered

Life History:

The Ivory-billed Woodpecker has been described as needing large contiguous tracts of forests with large trees. In Florida, bald cypress has been noted as an important forest component for this species survival. However, it is also noted that bald cypress forests in connection with adjacent pine forests is favorable too. Although bald cypress forests are periodically inundated, Tanner (1942), states that the Ivory-billed Woodpecker will utilize forests that are infrequently flooded. It has also been noted that Ivory-billed Woodpecker habitat will be similar to habitat frequented by other woodpecker species.

Management and Protection Guidelines:

Identify existing populations, reduce risks to existing populations, protect and enhance suitable habitat, reduce or eliminate threats.

Potential Impacts as a Result of Construction Activities:

Habitat in and around the Cowbone Marsh are not indicative of that required by the ivory-billed woodpecker and therefore, impacts to this species are not anticipated.

Limpkin

There are no records in the FLEO or WildObs of Limpkins occurring on FEC or the conservation easement. However, there is habitat for them in these areas, so it is difficult to tell if they do not occur or observations simply haven't been recorded.



Listing status: USFWS = Not listed

FWC = Species of Special Concern

Life History:

The limpkin is a rail-like wading bird that is highly dependent on the apple snail. This species inhabits freshwater marshes, swamps, springs and spring runs, and pond and river margins. Northern breeding populations are found along spring-fed rivers with lush, submerged aquatic vegetation. Throughout its range, limpkins are locally common where apple snails are abundant. The Florida population is considered non-migratory, and because of the limpkin's dispersal capabilities, it could be considered a single population.

This species is monogamous, or serially polyandrous, with males and females establishing a territory for reproduction. Egg laying is typically late January through March in central Florida and February through May in north Florida. However, breeding can occur over a longer period. Second clutches are common and third clutches are occasional. The majority of information on this species comes from a handful of natural history studies, and there are many gaps in our knowledge of their demography. Females and males both breed successfully in their first year. Limpkins mature quickly, reaching flight stage at about 7 weeks of age. Survival to this flight stage was 28.4%. Adult survival has not been reported. Average clutch size is 5.5 (2.75 females, assuming a 1:1 sex ratio), with younger individuals probably having smaller clutch sizes than older females. Territory size may vary greatly from year to year in relation to prey abundance and availability and social phenomena.

Management and Protection Guidelines :

Literature does not provide a nest buffer recommendation; therefore, FWC uses the recommendation provided for wading birds. Maintaining a 330-foot limited activity buffer around active nests during nest season (January–May) should minimize the chance of disturbance.

Potential Impacts as a Result of Construction Activities:

It is possible that construction activities could have negative impacts on limpkins if the needs of the species are not considered during planning of these activities. The literature does not provide a nest buffer recommendation; therefore, FWC uses the

recommendation provided for wading birds. Maintaining a 330-foot limited activity buffer around active nests during nest season (January–May) should minimize the chance of disturbance.





Puma

Listing status: USFWS = Endangered

FWC = none

Life History:

Historically the mountain lion ranged throughout the western hemisphere from northern British Columbia to Patagonia and from the Atlantic coast to the Pacific coast; the most widely distributed wild cat. Today their range in North America has been limited to the western half of the United States. Typically, Mountain lions inhabit most terrestrial habitats from deserts to humid coast range forest from sea level to 10,000-foot elevations. They live where there is abundant prey and stalking cover available.

Mountain lions are solitary except during breeding. Males do not help raise cubs. The cubs remain with their mother for up to 16 months at which they disperse to establish their own territories. Multiple female territories will often overlap with each other, but the females manage to avoid each other for the most part. Males have large home ranges that will overlap with multiple females. A male will mark his territory with scrapes and scent marking. Territorial disputes between males often end in death for the weaker lion.

Cats spend most of their time on the ground, but they are adept at climbing trees. They have learned to climb trees to avoid canid species which is why hunting dogs are often used to hunt the lions. Their chief range preferences are rocky precipitous canyons, escarpments, rim rocks or in absence of these, dense brush. The signpost for a male consists of a small pile of leaves and grasses which he scrapes together, and urinates on.

Management and Protection Guidelines:

Similar to the Florida panther, habitat in a mosaic that incorporates patches of open and thick areas to support both denning and prey availability is idea.

Potential Impacts as a Result of Construction Activities:

Similar to the Florida subspecies, denning is not known to occur in the area. As most puma using the property are likely dispersing and would avoid areas with increased human activity, construction activities are likely to have little, if any, impact on the species.

Red-Cockaded Woodpecker

Historic clusters of RCW's occurred on the Lykes Brothers conservation easement, but there have been no recent records of active RCW clusters in the area.



Listing status: USFWS = Endangered

FWC = Species of Special Concern

Life History:

The RCW is a management responsive species that can be an indicator of properly managed pine stands. This species is often considered an umbrella species as many other species benefit from management designed for this species.

RCWs are cooperative breeders, with small groups composed of the breeding male and female and 0 – 4 "helpers" (usually 0-2, though up to 9 have been documented). While most helpers are young males, female helpers do occur. Each individual usually has its own cavity, and the breeder males' cavity typically becomes the nest tree. Suitable cavities are often a limiting factor. As cavity trees and old pines tend to be limiting, protection of current and potential future cavity trees should be an important management consideration. Making use of artificial cavities has proven effective as a tool in increasing local populations when combined with appropriate land management.

Nesting typically occurs April – May, with a typical nest having 3-4 eggs. Re-nesting attempts may result in eggs in the nest as late as June. Incubation is about 10 days and chicks fledge at about 27 days post hatching. Pairs with helpers tend to fledge more young than pairs without helpers. Young that do not become helpers typically disperse in the fall/winter.

Arthropods are the primary food item, though fruits and seeds are also eaten. Males tend to forage in the tree crown; females commonly forage on the trunk and lower branches.

Fire is an important aspect in RCW ecology. Fire decreases the hardwood component; and increased hardwoods favor RCW predators and competitors. Further, fire has been shown to increase the abundance of RCW prey, and may increase the nutritional value of prey.

Home range for PBG can be from 100 to 400 acres, with PBG in south FL tending to have larger home ranges. Territory size is likely influenced by the quality of the habitat, as well as the density of RCWs in the area. High quality habitat tends to have

older pines stocked at an intermediate density (40-80 BA) with an open stand structure that is typically maintained by regular fire.

Management/Protection Guidelines:

See management & recovery plan, especially section 3 “Management Techniques” and section 8 “Management guidelines” in USFWS 2003.

Notable recommendations are:

- Maintain a 200-foot buffer of uncut trees around cavity trees
- Minimize human disturbance in active clusters, especially during nesting season

Potential Impacts as a Result of Construction Activities:

Habitat in and around the Cowbone Marsh are not indicative of that required by the red-cockaded woodpecker and therefore, impacts to this species are not anticipated.



Sand Skink

Sand skinks are known to occur in nearby Highlands County. It is possible they occur in sandy soils in Glades county. However, there are no known records on or near Fisheating Creek WMA.



Listing status: USFWS = Threatened

FWC = Threatened

Life History:

The sand skink is primarily fossorial in nature and spends most of its time 1-8 cm (0.5-3.0 inches) beneath the surface of the sand. Sand skinks are well adapted to this niche. Eyes are reduced in size, and there are no external ear openings. The wedge-shaped snout facilitates movement through the sand. Locomotion is achieved with eel-like motions that propel the sand skink forward, leaving a characteristic sine-wave track on the surface of the sand. These adaptations allow sand skinks to feed primarily on invertebrates found in subsurface plant debris, such as palmetto fronds, Spanish moss, logs and roots.

Sand skinks are most active in March-May, with a peak in activity in April. There is another peak in August-October coinciding with the emergence of hatchlings. The breeding season is February-May with peak egg-laying in May-June. Sand skinks typically reproduce at around 19-23 months of age and typically produce only 1 clutch per year. Some individuals may reproduce only every other year. Usual clutch size is 2. Sand skinks have a longer life span than many lizards at 8-10 years.

Sand skinks are primarily found in rosemary scrub but also occur in sand pine scrub, oak scrub, scrubby flatwoods, and turkey oak barrens. Sand skinks can also be found in disturbed areas, such as citrus groves that occur on or near soils that formerly supported typical sand skink habitat. It is important to note that sand skink occurrence is not necessarily dependent on habitat quality. Populations can persist in disturbed areas as long as soil conditions are adequate. Areas with loose sand and sunny exposure are preferred. Soil compaction affects sand skink activity, and areas with low soil compaction appear to be favored. Soils with low soil moisture and larger particle sizes appear to be preferred. Low understory vegetation and a higher percent of bare, loose sand are also important components of sand skink habitat, but conditions within the soil are more important than vegetative conditions above the soil. These parameters are important to consider as they affect thermoregulation and provide a range of temperature conditions for skinks.

Prescribed fire is an important management technique for native sand skink habitat, but some studies have found that skink numbers decrease immediately following prescribed fire and that skinks are found in greater numbers in long-unburned habitat. Sand skinks are most often found in areas with bare patches of sand, which can impede the direct movement of fire across the landscape, thus creating a mosaic of burned and unburned habitat within a given management unit. The retention of unburned areas due to natural fire exclusion will ensure that skink habitat is always available.

Many land managers use mechanical equipment to prepare scrub habitats for prescribed fire or use mechanical treatment in lieu of prescribed fire because of site-specific limitations to the use of prescribed fire. Given the sand skink's fossorial nature and dependence on soil conditions, soil compaction and damage from mechanical equipment could have a negative effect and should not be used in areas that are priority for sand skinks. If mechanical treatment is unavoidable, equipment with minimal soil disturbance should be used, such as chainsaws or track vehicles.

Sand skink dispersal appears to vary widely among individuals. Mark/recapture studies have found that skinks appear to move larger distances during the breeding season, when they are most active, and that smaller individuals may move farther than larger individuals. Some adults have been found to move up to 140 m (459 ft). Natural colonization of habitat in close proximity to occupied areas may occur if the habitat is within the dispersal distance, but re-establishment of sand skinks in isolated patches of habitat is unlikely. Genetic studies have found that sand skink populations on the Mt. Dora Ridge are genetically distinct from Lake Wales Ridge populations. Additionally, sand skink populations on the Lake Wales Ridge are genetically distinct from north to south. For this reason, geographic distances between scrub patches and the phylogeographic history should be considered to maintain genetic integrity should translocation be explored as an option for restoring sand skinks in an area not currently occupied. Also, prior to translocation, unoccupied habitat should be thoroughly assessed to determine that the habitat could actually support translocated individuals.

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Management and Protection Guidelines :

Prescribed fire is the preferred habitat management technique for most native sand skink habitat. Patchy burns within a given management unit may be preferable in that they provide a mosaic of burned and unburned habitats.

Mechanical treatments are often used to prepare fire lines and perimeters of burn units and also to reduce vegetation within a burn unit in order to safely apply prescribed fire. If mechanical equipment is used, soil compaction is likely and would be detrimental to sand skinks. Avoid the use of mechanical equipment and/or use caution with heavy equipment in areas that are priority for sand skinks.

Logs and other woody debris are important areas for sand skink food items, such as termites. These should be protected during land management activities, if possible.

Potential Impacts as a Result of Construction Activities:

If present, construction activities could impact sand skinks by compacting soil causing direct mortality and/or degradation of habitat. Activities could also destroy the nests that are built on the ground since activities may occur during their nesting season.





Sherman's Fox Squirrel

Listing status: USFWS = Not listed

FWC = SSC

Life History:

The Sherman's fox squirrel range was originally defined as running from the Aucilla River east to Nassau County and south to the Caloosahatchee River in southwestern Florida and to Miami-Dade County along the east coast. Some researchers extend the range westward to the Apalachicola River. This subspecies occupies longleaf pine sandhills and flatwoods. The best habitat often contains both pines and oaks, such as along the edges of longleaf pine savannas and live oak forests (Kantola and Humphrey 1990), especially where there are large, mature trees and fires occur at intermediate frequency. Compared to other rodents, this subspecies requires a large home range and historically occurred in low densities in a patchy habitat. The average home range over one year in Florida was 106 ac (43 ha) for males and 42 ac (17 ha) for females. In Densities have been estimated at 98 squirrels/sq mi (38 squirrels/sq km) and 20-39 squirrels/sq mi (8-15 squirrels/sq km).

Sherman's fox squirrel diet varies seasonally, consisting primarily of pine seeds and acorns, but they may also consume various nuts, fruits, fungi, bulbs, buds and insects. Acorns of the live oak may be a major component of the diet. Predation probably is not a limiting factor (Kantola 1992), but food supply probably limits fox squirrel populations in some areas. Populations may decline if pinecone and acorn crops fail.

Females may produce 2 litters per year, though 1 is more common. Most litters are born in either Jan-Feb or June-Aug. Gestation lasts 44 days, with litter sizes ranging from 1 - 4, with 2 - 3 being the norm. Young remain in the nest for up to 2.5 months and are weaned at 90 days, reaching sexual maturity at 9 months. This animal is relatively long-lived, with a low reproductive potential.

Management and Protection Guidelines:

Avoid management activities that may lead to extreme variation in food availability, which can reduce survivorship of the squirrels (Steele and Koprowski 2001).

Potential Impacts as a Result of Construction Activities:

Habitat in and around the Cowbone Marsh is not indicative of that required by the Sherman fox squirrel. However, if this species is present, it will be in the oak hammocks present where the 2 acre borrow pit is located. Impacts to the species in this habitat could include the removal of oak trees associated with the borrow pit excavation. Also, if tree

removal occurs during the time of year when squirrels have litters, then construction activities could impact both adults and offspring. In particular, adult females could be displaced from their litters and this could jeopardize young. Mortality both young and adults occur as a result of tree removal. As a result, it will be imperative to have a biologist onsite during all construction activities to ensure live specimens are dealt with properly. If live specimens are encountered, efforts will be taken to stop construction activity and properly relocate outside of the construction area.



South Florida Rainbow Snake

The last confirmed specimens of the South Florida rainbow snake were collected from Fisheating Creek in 1952. No occurrences have been confirmed since then. There is currently an ongoing effort to conduct presence/ absence surveys for the species.



Listing status: USFWS = none

FWC = none

Life History:

In Florida, the South Florida Rainbow Snake is known only from a single population in Fish Eating Creek, Glades County, flowing into the western side of Lake Okeechobee, in the southern peninsula. The Southern Florida Rainbow Snake is one of the rarest snakes in the United States. Only 3 specimens have been found, between 1949 and 1952.

Life history information for the south Florida subspecies is thought to be similar to that of other rainbow snakes. Due to the rarity of the southern subspecies, no data has been collected specifically for the southern subspecies. Rainbow snakes are found in the Coastal Plain of the southern United States from southern Virginia to eastern Louisiana and are absent from the Piedmont and Mountains. A small population of rainbow snakes once inhabited the vicinity of Lake Okeechobee in southern Florida. However, no snakes have been found there for several decades, and rainbow snakes are currently presumed to be absent from the southern half of the Florida peninsula.

Rainbow snakes are found in a variety of aquatic habitats but are most common in cypress swamps and flowing-water habitats such as blackwater creeks, streams, and rivers. In coastal areas, rainbow snakes can be found in tidal or even brackish water. In South Carolina young rainbow snakes sometimes inhabit heavily-vegetated seasonal wetlands and move to more permanent water bodies as adults. Although highly aquatic, rainbow snakes occasionally move overland and are sometimes found far from water. Rainbow snakes are highly aquatic and spend most of their lives hidden amongst aquatic vegetation and debris. Unlike many of the water snakes in our region, rainbow snakes seldom bask out of the water and thus are seldom seen, even by dedicated naturalists and herpetologists. Rainbow snakes are perhaps most frequently encountered crossing roads adjacent to aquatic habitats, particularly on rainy summer nights. When captured, rainbow snakes do not bite.

Although large females may lay over 50 eggs, average clutch size is probably closer to 20. Young hatch in late summer but may overwinter in the nest before

emerging. Due to their secretive habits, relatively little is known about the ecology of rainbow snakes. Much of what we know about this unusual species is from research conducted at the Savannah River Ecology Lab where large numbers of rainbow snakes have been captured compared to other regions.

Management and Protection Guidelines:

This species relies on aquatic habitats and eels for prey, which may put them at risk if wetlands are destroyed or degraded or if damming rivers results in eel declines.

Potential Impacts as a Result of Construction Activities:

The habitat in and around Cowbone Marsh and the construction route are not indicative of good rainbow snake habitat. Therefore, construction is likely to have little if any impact on this particular species, as there are not likely to be any significant changes to hydrology or water quality.



Southeastern American Kestrel

There are no records of the Southeastern American Kestrel occurring on FEC or the conservation area in WildObs or the FLEO; however the Florida Breeding Bird Atlas lists a number of possible and probable locations of kestrel breeding in Glades County. There are also a number of confirmed observations in Highlands County, so it is possible the species may use the areas.

Listing status: USFWS = none

FWC = threatened



Life History:

The southeastern American kestrel is a resident subspecies of the American kestrel (*Falco sparverius*). *Paulus* kestrels are slightly smaller and the males often have reduced spotting on flanks and breast compared to migrant *sparverius* kestrels. Kestrels observed in Florida during the breeding season are assumed to be resident southeastern American kestrels (Collopy 1996). Male southeastern American kestrels are slightly smaller than females, with slate-blue wings. Females have brown wings with black barring.

Southeastern American kestrels are found in upland habitats, including sandhills and longleaf savannas, pastures, sand pine scrub, and prairies. As secondary cavity nesters and sit and wait predators, they require suitable cavity trees and perches in their territories, as well as open ground cover to see and capture their prey. Average breeding territory size is approximately 50 hectares (124 acres), though more area may be required if habitat is not high quality (Lane and Fischer 1997). Conversely, territories may overlap or be smaller than 50 hectares in high-quality habitat.

Cavity availability appears to be the main factor limiting southeastern American kestrels across their range. As secondary cavity nesters, they use cavities that have already been created, generally in dead pines (Stys 1993). Microhabitat should include low ground-cover at the base of the tree and an unobstructed entry to the cavity. Management efforts should include snag management (i.e. protect snags when possible during prescribed burning and other management actions).

Courtship in southeastern American kestrels begins in late January. Aerial displays, vocalizations and other behaviors are common during this period and are good indicators that a breeding territory is being established. 3-5 eggs are laid mid-March to mid-May in Florida with an incubation period of 28-31 days. Fledging occurs approximately 30 days after hatching. Dispersal of young occurs 23-24 days post-fledging (Lane and Fischer 1997). Southeastern American kestrels do well in old-growth longleaf pine sandhills and may be an indicator species for sandhill.

Typical prey items include insects and lizards, with small rodents, and small birds occasionally taken. Hunting takes place while perched or in flight. Hover hunting is commonly observed in southeastern American kestrels, but is generally reserved for areas lacking suitable perches. Most hunting occurs in areas of sparse ground cover (Collopy 1996).

Management and Protection Guidelines:

Practice snag management. Whenever practical and safe, snags should be protected during prescribed burning operations, especially if southeastern American kestrels are known to forage or breed in the area. Prescribed burning often creates snags; these should be allowed to remain standing on the landscape whenever safely possible.

Create/maintain open habitats through prescribed burning or mechanical treatment. It is not recommended to treat the entire territory at one time; a mosaic approach should be used. Kestrels may be tolerant of moderate levels of disturbance. For example, kestrels routinely use nest boxes located along busy highways. Also, caution should be used when approaching the nest site just prior to fledging as this could cause the young to fledge prematurely. Stys (1993) recommended a nest buffer of 500 ft (150 m); this has not been evaluated empirically.

Reduce pine/hardwood overstory through harvest. Do not remove all snags or known nest trees. If leaving standing dead or dying trees with existing cavities, clear trees in front of cavity to encourage use by kestrels.

<u>Potential Impacts as a Result of Construction Activities:</u>

Potential suitable habitat exists in and around the Cowbone Marsh for the American kestrel. In particular, areas surrounding the potential borrow pit location. Impacts include the removal of trees with cavities suitable for nesting. Additionally, the construction activities are planned for the time of year when kestrels nest; so, particular attention will be needed to identify trees that have suitable cavities for nesting and measures should be taken to deter nesting and, if nests have been established in the project area, efforts be taken to disturbance near the nest tree.



Snail Kite

There are no observations of nesting snail kites on the WMA; however the Breeding Bird Atlas shows several confirmed nesting locations just west of Lake Okeechobee. The snail kite is not contained in the Fisheating Creek Bird List, however it is possible there are individuals utilizing the WMA.



Listing status: USFWS = Endangered

FWC = Endangered

Life History:

The snail kite is an endangered raptor whose distribution in the United States is restricted to the south Florida ecosystem. The snail kite is considered a wetland-dependent species as they feed primarily on Florida apple snails that are present in the upper 5 cm of the water column, typically attached to emergent vegetation. Non-native species of apple snails may provide forage for snail kites. However, initial evidence suggests that these species are not consistent with maintaining sustainable wetland communities. Maintaining a healthy population of Florida's native apple snail, and working to control non-native snail species is a more sustainable management strategy. Typical foraging habitat for kites consists of large expanses of spikerush, eleocharis, or maidencane interspersed with open water.

Nesting occurs primarily from January through August, and almost always occurs over water (USFWS 2004). Egg-laying takes place from January to July and young are typically fledged from March to September. Snail kites nest in flooded vegetation, of either woody or non-woody species. They may nest more than once per year, and produce 1-3 chicks per nest. From the time that they begin nest-building, it takes approximately 80-90 days (three months) for them to hatch and fledge young. During this time, they are closely tied to the nest site, and are particularly vulnerable to disturbance and habitat impacts. Hatching success is variable from year to year and between areas.

Snail kites nest in wide range of habitats within inland flooded freshwater marshes and other freshwater wetlands. Nests are almost always built over water, which deters predators, and nests are generally most successful in low woody species such as willow, buttonbush, pond apple, and other wetland shrubs that remain inundated for the entire nesting period (USFWS 2006). Typical nesting habitat has surrounding low physiographic landscape near foraging areas. Nests are open or hidden, but with aerial access from above. Nesting substrates over water include small trees, generally < 10 m in height. Nesting substrates may be alive, dead, or a combination. During periods of low water, snail kites frequently build nests in weak non-woody substrates. Nesting in

non-woody substrates, such as cattail or bulrush, increases the probability that the nest will either collapse during windy or wavy conditions or fall over when the stem buoyancy is lost, resulting in high rate of failure. This is common on the lakes as often times no other substrate is available. Nests in herbaceous substrates are subject to collapse from wind or waves and settling from weight of nests and birds (Sykes et al. 1995).

Low water levels impact snail kites directly (via impacts to nesting substrate) and indirectly (via access to snails). Low water levels reduce access to snails by either causing the snail to burrow in the bottom sediments or matting down the emergent vegetation and reducing the visual location of snails by the kites. Darby et al. (1997) found that reproductive (adult) snails were less likely to survive a prolonged dry-down. Finally, lack of water or lower lake levels may provide predators (snakes and raccoons) access to the nests, which might be reduced by either deeper water or the presence of alligators (in deeper water). High water has both positive and negative effects on kites. Higher water levels encourage nesting in flooded woody nesting substrates, such as willow, buttonbush and cypress. However, very high water levels can be detrimental to kites. Submersion of apple snail eggs has been found to delay development and decrease embryo survival, reducing the amount of available food for kites. Apple snail eggs are more plentiful and successful during years of steady or slightly falling water levels (Darby et al. 1997).

Snail kites are highly mobile, and may travel through most of the south Florida wetland systems during their lifetime. Kites will generally stay in one area as long as they can find food, but will seek another wetland that has food available if foraging conditions decline. Recent studies suggest that bird movements are strongly influenced by habitat fragmentation, with snail kites moving extensively among contiguous wetlands but less so among isolated wetlands (Martin et al. 2006).

Management and Protection Guidelines:

- See USFWS Snail Kite Management Guidelines
- Increased activity and water level alteration is prohibited within a 1,640-foot limited activity buffer zone of active nests
- Continue year-round monitoring and identify new and historical nesting locations.
- Preserve extensive freshwater wetlands, including suitable refuges for kites during droughts
- Interagency coordination of management activities throughout the range of the snail kite is necessary to avoid disturbance of snail kites during the nesting season and to ensure there is potential habitat available for nesting.
- Maintaining Florida apple snail populations, and the vegetation types that support healthy Florida apple snail populations is critically important to maintaining snail kite habitat:

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- Control exotic and invasive plant species such as water hyacinth and water lettuce.
- Maintain a healthy population of Florida's native apple snail and work to control non-native snail species.

Potential Impacts as a Result of Construction Activities:

Potential habitat exists in and around the Cowbone Marsh for the snail kite, but foraging and nesting has not been documented. Due to the erratic hydroperiods and water depths in and around the project area and as a result of few observations of apple snail egg clusters, it is not likely that snail kites will use Cowbone Marsh for foraging or nesting. Additionally, the only apple snail egg clusters that have been found in the project area have been in the cut itself. Thus, impacts to the snail kite are expected to be negligible, if at all. Potential impacts could be resultant from changes in hydrology in and around the access road needed for restoration purposes. In particular, flow paths could be change such that water may not enter marshes east of the project area and therefore, would prevent that area from being accessible to snail kites for foraging. However, much better foraging habitat can be found a few miles to the east in Lake Okeechobee. Snail kite nesting is not expected in and around the project area, but if it does occur, construction activities could result in nest abandonment if within 1,640ft of the nest. If nesting does occur, avoidance measures should be taken to prevent nest abandonment.



Wading Birds

Listing status:	State	Federal
Great Egret (*Ardea alba*)	None	None
Snowy Egret (*Egretta thula*)	SSC	None
Tricolored Heron (*Egretta tricolor*)	SSC	None
Little Blue Heron (*Egretta caerulea*)	SSC	None
White Ibis (*Eudocimus albus*)	SSC	None

Life History:

Great Egret: Breeding habitat includes marshes, swamps, irrigation ditches, estuaries, and fresh/brackish water margins. Constructs nests made of sticks and twigs that are unlined. Is a colonial nester in mixed-species colonies with 10 to 1,000s of other birds. 1 brood annually and young leave nest at 3 weeks. Birds can forage alone or in mixed flocks. Adult diet includes insects, amphibians, reptiles, fish, and small birds. Young are usually fed frogs, fish, and crayfish.

Snowy Egret: Breeding habitat includes marshes, lakes, ponds, and shallow coastal habitats. Builds a nest made of sticks and lined with finer twigs or rushes. Is a highly colonial nester and often nests in mixed colonies. Nest in flooded woody plants or vegetation on islands. Asynchronous hatching, 1 brood annually, and young leave nest at 5-6 weeks. Uses yellow feet to stir mud and flush prey. Roosts communally at night when not breeding. Diet includes fish, other small vertebrates and insects.

Tricolored Heron: Breeding habitat includes marshes, ponds, and rivers. Nests are created in shrubs and are flat platforms of sticks and twigs; lined with finer twigs, grasses, and leaves. Nest in flooded woody plants or vegetation on islands. Is a colonial nester and often nests with other species. Single brood annually and young are expert climbers at 3 weeks and are able to swim. Diet includes fish, small vertebrates, aquatic invertebrates, and insects.

Little Blue Heron: Breeding habitat includes marshes, ponds, lakes, meadows, streams, and mangroves. Often nests right above the water and nest is a small platform of sticks and with a slight depression to hold the eggs. Nests in multispecies colonies but often nests in close proximity with conspecifics. Single brood annually, and during egg laying males seldom leave nest for > 5 minutes. Diet includes a wide variety of prey primarily aquatic insects, shrimp and fish.

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White Ibis: Breeding habitat includes marshes, mangroves, lakes, and estuaries. Nest in flooded woody plants or vegetation on islands. Nests are constructed of loosely overlaid dry sticks, live twigs, roots and leaves; continually added to during breeding.

Colonial nester and forms dense colonies with thousands of birds. Single (possibly more) brood annually and young leave nests around to 6-8 weeks. Fish Crow is a major nest predator and usually destroy entire clutch. Diet includes crabs, crayfish, snails, snakes, and insects.

Management and Protection Guidelines:

Protect and restore coastal/freshwater wetlands, ponds, lakes, and marshes from siltation and non-point source pollution by fencing livestock and stabilizing banks through plantings of native aquatic and shoreline vegetation. Reduce herbicide use in areas near water, particularly when application will reduce availability of invertebrates used for food.

Restore/maintain natural hydrology to degraded wetlands; promote seasonal draw-downs when appropriate.

To promote cover for colonial nesters, protect and maintain large forested tracts.

Enhance the interspersion of various habitat components in a focal area given the foraging and dispersal potential of many wading bird species.

Habitat conservation guidelines for wood storks are available at http://www.fws.gov/northflorida/WoodStorks/Documents/Wood-stork-habitat-guidelines-1990.pdf. These include limiting activities close to known colonies.

A 100 m buffer around colonies should be maintained during nesting.

Potential Impacts as a Result of Construction Activities:

Suitable habitat exists in and around the Cowbone Marsh for the wading birds. Although nesting colonies have not been documented within Cowbone Marsh for several years, the potential still exists. If nesting is present, construction activities could cause nest abandonment or simply cause adult birds to leave nest unattended for an inordinate amount of time leading to eventual nest failure. If nests are identified, activities within 300 feet must be prevented. Additionally, activities within this buffer zone must be curtailed until the end of nesting season. An additional impact to wading birds is changes in hydrology as a result of construction activities. Water flow patterns during construction could impact marsh conditions to the east of the project. In particular, water levels may be changed so that they are not conducive for wading bird foraging. This impact may be unavoidable, but adequate foraging can be found elsewhere nearby; namely in the marshes adjacent to Lake Okeechobee.





West Indian Manatee

Listing status: USFWS = Endangered

FWC = Endangered

Life History:

Manatees may be found in any coastal or estuarine waters, but are most common in peninsular Florida. Coastal waters, bays, rivers, and (occasionally) lakes. They require warm-water refugia such as springs or cooling effluent during cold weather. Sheltered coves are important for feeding, resting, and calving.

There are no reliable population estimates because of the difficulty in censussing. Recent winter counts at aggregation areas have been in the vicinity of 2,000 individuals. Overall population may be stable, but is threatened by increased boat traffic and other accidents associated with expanding development in Florida. Sanctuaries have been established to protect some wintering and calving areas.

The Florida manatee lives in freshwater, brackish and marine habitats. Submerged, emergent, and floating vegetation are their preferred food. During the winter, cold temperatures keep the population concentrated in peninsular Florida and many manatees rely on the warm water from natural springs and power plant outfalls. During the summer they expand their range and on rare occasions are seen as far north as Rhode Island on the Atlantic coast and as far west as Texas on the Gulf coast.

The most significant problem presently faced by manatees in Florida is death or injury from boat strikes. The long-term availability of warm-water refuges for manatees is uncertain if minimum flows and levels are not established for the natural springs on which many manatees depend, and as deregulation of the power industry in Florida occurs. Their survival will depend on maintaining the integrity of ecosystems and habitat sufficient to support a viable manatee population.

Management and Protection Guidelines:

- Reduce boat traffic in waters that manatees use regularly.
- Provide sanctuaries to prevent accidental collisions and harassment.
- Implement the manatee protection plan developed by the USGS Caribbean Science Center's Sirenia Project.

Potential Impacts as a Result of Construction Activities:

The habitat in and around Cowbone Marsh and the construction route are not typical manatee habitat. Therefore, construction will have little if any impact on this particular species. However, if were present, construction activities could impact manatees by direct injury via construction equipment if boats or motors are running in open water. If live manatees are present, construction activities in water should be paused until the animal moves out of the area.

Whooping Crane

Glades county is outside the primary range of non-migratory whooping cranes in Florida, though the area is within the range noted in dispersal of the Florida population beyond the primary range, so it is possible both dispersing whooping cranes may rarely occur in the area..

Listing status: USFWS = Endangered

FWC = None



Life History:

The whooping crane occurs only in North America and is North America's tallest bird, with males approaching 1.5 m (5 ft) when standing erect. The whooping crane adult plumage is snowy white except for black primaries, black or grayish alula (specialized feathers attached to the upper leading end of the wing), sparse black bristly feathers on the carmine crown and malar region (side of the head from the bill to the angle of the jaw), and a dark gray-black wedge-shaped patch on the nape.

The common name "whooping crane" probably originated from the loud, single-note vocalization given repeatedly by the birds when they are alarmed. Whooping cranes are a long-lived species; current estimates suggest a maximum longevity in the wild of at least 30 years.

Whooping cranes currently exist in the wild at 3 locations and in captivity at 12 sites. The July 2010 total wild population was estimated at 383. There is only one self-sustaining wild population, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, and winters in coastal marshes in Texas at Aransas. In addition, there is a small captive-raised, non-migratory population in central Florida, and a small migratory population of individuals introduced beginning in 2001 that migrate between Wisconsin and Florida in an eastern migratory population.

The whooping crane breeds, migrates, winters, and forages in a variety of wetland and other habitats, including coastal marshes and estuaries, inland marshes, lakes, ponds, wet meadows and rivers, and agricultural fields. Whooping cranes breed and nest in wetland habitat in Wood-Buffalo National Park, Canada. Bulrush is the dominant vegetation type in the potholes used for nesting, although cattail, sedge, musk-grass, and other aquatic plants are common. Nest sites are primarily located in shallow diatom ponds that contain bulrush. During migration, whooping cranes use a variety of habitats; however wetland mosaics appear to be the most suitable. For feeding, whooping cranes primarily use shallow, seasonally and semi permanently flooded palustrine wetlands for roosting, and various cropland and emergent wetlands. In Nebraska, whooping cranes also often use riverine habitats. Wintering habitat in the Aransas National Wildlife Refuge, Texas, includes salt marshes and tidal flats on the mainland and barrier islands, dominated by salt grass, saltwort, smooth cordgrass, glasswort, and sea ox-eye.

Whooping cranes are omnivorous, probing the soil subsurface with their bills and taking foods from the soil surface or vegetation. Young chicks are fed by their parents. Summer foods include large nymphal or larval forms of insects, frogs, rodents, small birds, minnows, and berries. Foods utilized during migration are poorly documented but include frogs, fish, plant tubers, crayfish, insects, and agricultural grains. The largest amount of time is spent feeding in harvested grain fields. In the winter, whooping cranes forage for blue crabs, clams and the plant wolfberry in the brackish bays, marshes, and salt flats on the edge of the Texas mainland and on barrier islands. Occasionally, cranes fly to upland sites when attracted by fresh water to drink or by foods such as acorns, snails, crayfish and insects, and then return to the marshes to roost. Uplands are particularly attractive when partially flooded by rainfall, burned to reduce plant cover or when food is less available in the salt flats and marshes.

Whooping cranes are monogamous, forming pairs and laying eggs as early as 3 years of age, although the average age of first egg production is 5 years. They show considerable fidelity to their breeding territories, and normally nest in the same general vicinity each year. These nesting territories, termed "composite nesting areas", vary considerably in size, ranging from about 1.3 to 47.1 km2 (0.8 to 29 mi2) but averaging 4.1 km2 (2.5 mi2). Adjoining pairs usually nest at least 1 km (0.6 mi) apart. From the initiation of egg laying, until chicks are a few months of age, the activities of pairs and family groups are restricted to the breeding territory. Eggs are normally laid in late April to mid-May, and hatching occurs about 1 month later. The incubation period is from 29 to 31 days. Whooping cranes usually produce clutches of 2 eggs laid 48-60 hours apart. Incubation begins with the first egg laid, resulting in asynchronous hatching of the eggs. This asynchrony may follow the “insurance” hypothesis, where parents add marginal offspring to their clutch/brood as a hedge against early failure of core brood members. Whooping crane parents share incubation and brood-rearing duties. Except for brief intervals, one member of the pair remains on the nest at all times (USFWS).

Management and Protection Guidelines:

Protection guidelines are simply to minimize human disturbance whenever possible and to limit construction activities to times of the year when cranes are absent. See: USFWS. 2007. Whooping Crane Recovery Plan. Third Revision. http://ecos.fws.gov/docs/recovery_plan/070604_v4.pdf

Potential Impacts as a Result of Construction Activities:

Since there is only a small introduced population in central Florida, it’s not anticipated that this project will have any impact on the whooping crane.



Wood Stork

There are no known active wood stork colonies on Fisheating Creek WMA or the conservation easement. However, the eastern portion of the WMA and the easement fall into a wood stork foraging consultation area for an active wood stork colony on the Brighton Indian Reservation.



Listing status: USFWS = Endangered

FWC = Endangered

Life History:

The southeast United States breeding population of the wood stork declined from an estimated 20,000 pairs in the 1930's to a low of ~ 5,000 pairs in the late 1970s. Nesting primarily occurred in the Everglades. The generally accepted explanation for the decline of the wood stork is the reduction in food base (primarily small fish) necessary to support breeding colonies. This reduction is attributed to loss of wetland habitat as well as to changes in water hydroperiods from draining wetlands and changing water in south Florida. Wood storks require higher prey concentrations than other wading birds. Optimal water regimes for the wood stork involve periods of flooding, during which prey (fish) populations increase, alternating with dryer periods, during which receding water levels concentrate fish at higher densities coinciding with the stork's nesting season.

Wood storks use thermals to soar as far as 80 miles from nesting to feeding areas. Since thermals do not form in early morning, wood storks may arrive at feeding areas later than other wading bird species such as herons. Energy requirements for a pair of nesting wood storks and their young is estimated at 443 pounds of fish for the breeding season (based on an average production of 2.25 fledglings per nest).

The wood stork is a highly colonial species usually nesting in large rookeries and feeding in flocks. Age at first breeding is 3 years but typically do so at 4. In South Florida, wood storks lay eggs as early as October and fledge in February or March. However, in north and central Florida, Georgia, and South Carolina, storks lay eggs from March to late May, with fledging occurring in July and August. Nests are frequently located in the upper branches of large cypress trees or in mangroves on islands. Several nests are usually located in each tree. Wood storks have also nested in man-made structures. Storks lay two to five eggs, and average two young fledged per successful nest under good conditions.

Management and Protection Guidelines :

- Reduce herbicide use in areas near water, particularly when application will reduce availability of invertebrates used for food.
- Restore/maintain natural hydrology to degraded wetlands; promote seasonal draw-downs when appropriate.

- Habitat conservation guidelines for wood storks are available at http://www.fws.gov/northflorida/WoodStorks/Documents/Wood-stork-habitat-guidelines-1990.pdf. These include limiting activities close to known colonies.
- A 1,500 ft buffer around colonies should be maintained during nesting.

Potential Impacts as a Result of Construction Activities:

Similar to impacts mentioned in the wading bird section of this report, suitable habitat exists in and around the Cowbone Marsh for the wood storks. Although nesting colonies have not been documented within Cowbone Marsh, the potential exists. If nesting is present, construction activities could cause nest abandonment or simply cause adult birds to leave nest unattended for an inordinate amount of time leading to eventual nest failure. If nests are identified, activities within 1,500 feet must be prevented. Additionally, activities within this buffer zone must be curtailed until the end of nesting season. An additional impact to wood storks, similar to what was mention in the wading bird section of this report, is changes in hydrology as a result of construction activities. Water flow patterns during construction could impact marsh conditions to the east of the project. In particular, water levels may be changed so that they are not conducive for foraging. This impact may be unavoidable, but adequate foraging can be found elsewhere nearby; namely in the marshes adjacent to Lake Okeechobee.



Cowbone Marsh Restoration Plan Potentially Affected Plants

Wildlife surveys will be necessary before and during the project to identify whether the potentially affected listed species occur or nest in the area, so the appropriate actions to avoid impacting them can be taken. Potentially impacted species and their corresponding management guidelines are listed below for Option 1. This information will be compiled for the other alternatives when more specific project location information is available for those alternatives.

Table 3. Potentially affected plants in project area and protection guidelines.

Potentially Affected Plants in Project Area	Protection Guidelines
Edison's ascyrum ***Hypericum edisonianum***	Exclude off-road vehicles and excessive ground disturbance where present.
Britton's Beargrass *Nolina brittoniana*	Avoid development where present
Scrub Blazing Star *Liatris ohlingerae*	Exclude off-road vehicles, trash-dumping, and excessive ground disturbance where present.
Cutthroat Grass *Panicum abscissum*	Avoid grazing, drainage, excessive site preparation, and soil disturbance where present.
Florida (Hairy) Jointweed *Polygonella basiramia*	Avoid degradation/ development of scrub habitat
Giant Orchid *Pteroglossaspis ecristata*	Avoid soil-disturbing activities such as bedding and plowing fire lanes where present.
Highlands Scrub St. John's-Word (Hypericum) *Hypericum cumulicola*	Avoid degradation/ development of scrub habitat
Nodding Pinweed *Lechea cernua*	Avoid degradation/ development of scrub habitat
Paper Nailwort *Paronychia chartacea* ssp. *chartacea*	Avoid large-scale clearing in areas where the species occurs.

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Potentially Affected Plants in Project Area	Protection Guidelines
Spreading (Pine) Pinweed *Lechea divaricata*	Avoid degradation/ development of scrub habitat
Okeechobee Gourd *Cucurbita okeechobeensis*	Use herbicides carefully to control exotic species in areas where it may occur; avoid aerial spraying. Maintain hydrology of Florida's rivers.
Carter's mustard (*Warea carteri*)	



Edison's ascyrum

Hypericum edisonianum

There is one observation of Edison's ascyrum on the Platt Branch mitigation park. There are two other observations within 3 miles of the WMA.

<u>Listing status</u>: USFWS = none

FWC = Endangered



<u>Habitat:</u>
Depressions in scrub, cutthroat seeps, flatwoods ponds, lake margins, wet prairies.

<u>Best Survey Season:</u>
Flowers, leaves, and bark are identifiable year-round.

<u>Range-wide Distribution:</u>
Endemic to central peninsular FL.

<u>Conservation Status:</u>
Locally abundant due to thicket-forming habit, butfound at only 25 sites, and only 5 conservation areas. Habitat has been lost to wetland drainage, fire suppression, pasture improvement, and grazing.

<u>Protection & Management:</u>
Allow prescribed fires to burn into wetlands. Maintain natural hydrology in flatwoods. Exclude off-road-vehicles and cattle. Purchase and preserve scrub habitat.

Britton's Beargrass

Nolina brittoniana

There is one observation of Britton's Beargrass along the road west of the FEC/Smoak Groves Conservation Easement.



Listing status: USFWS = Endangered

FWC = Endangered

Habitat:
Scrub, sandhill, scrubby flatwoods, and xeric hammock.

Best Survey Season:
Flowers March–May, but fruits, leaves, and growth habit are distinctive all year.

Range-wide Distribution:
Endemic to central peninsular FL.

Conservation Status:
More than 90% of Britton's beargrass habitat has been lost to agriculture and development. About 100 populations remain, with half of these occurring on 10 conservation areas.

Protection & Management:
Apply prescribed fire to stimulate flowering and eliminate competition by shrubs and trees. Complete purchases of Lake Wales Ridge scrub sites.

Carter's Mustard

Warea carteri

There are no known observations of Certer's Warea on or near Fisheating Creek WMA. The Florida Natural Areas Inventory Field Guide (2000) does not list the species as occurring in Glades County, however the Atlas of Florida Vascular Plants (2008) indicates there have been vouchered specimens from Glades County, though it does not list a date for the specimen.

Listing status: USFWS = Endangered

FWC = Endangered

Habitat:
A narrowly endemic Florida annual. Sandhill, scrubby flatwoods, inland and coastal scrub.

Best Survey Season:
Flowers.September - October



Range-wide Distribution:
Endemic to south and central FL.

Conservation Status:
Carter's mustard appears only after fire, making population estimatesdifficult. Large populations are known in 3 or 4 managed areas.

Protection & Management:
Protect privately owned sandhill and scrub by purchase or conservation easement. Manage sites with prescribed fire, and prevent trampling and ORV use. Eradicate invasive exotic grass species.

Scrub Blazing Star

Liatris ohlingerae

There are two older observations of the species just west of the FEC/Smoak Groves Conservation Easement.

Listing status: USFWS = Endangered

FWC = Endagered

Habitat:
Rosemary balds, especially edges transitional to oak scrub; scrubby flatwoods and disturbed scrub.

Best Survey Season:
Flowers June–September

Range-wide Distribution:
Endemic to the Lake Wales Ridge in Polk and Highlands counties, FL.

Conservation Status:
More than 100 populations are known, about half of which are protected. Scrub habitat has been severely reduced and fragmented.

Protection & Management:
Burn oak scrub every 15 - 20 years and rosemary scrub every 40 – 60 years. Protect sites from offroad- vehicles and trash dumping**.**



Cutthroat Grass

Panicum abscissum



There some observations on FEC west of US27.

Listing status: USFWS = Not listed

FWC = Endangered

Habitat:
Grows only on moisture-receiving seepy slopes on the sandy eastern and western slopes of the Lake Wales Ridge, Florida. It may occur on small isolated slopes which receive moisture from a scrub site at higher elevation, around small seasonal ponds in scrubby flatwoods, and around depression marshes and ponds in wet flatwoods. It is frequently found in pure stands with an open slash pine overstory.

Best Survey Season:
Flowers mid-April – late July

Range-wide Distribution:
Endemic to the Lake Wales Ridge in Polk and Highlands counties, FL.

Conservation Status:

This grass is very site-specific and has a narrow current range. The Florida Natural Areas Inventory currently has 54 occurrence records from Osceola, Polk, Highlands, and Palm Beach counties in its database.

Protection & Management:
Historically, the species was much more widespread; the dramatic decrease in its range can be attributed to agricultural and silvicultural activities, fire exclusion, grazing, drainage, excessive site preparation, and soil disturbance. Declining due to conversion of habitat.

Florida (Hairy) Jointweed

Polygonella basiramia

There are two older observations of the species on and just west of the FEC/Smoak Groves Conservation Easement.

Listing status: USFWS = Not listed

FWC = Endangered

Habitat:
Rosemary phase of sand pine scrub on white sands at higher elevations of the Lake Wales, Winter Haven, and Bombing Range Ridges.



Best Survey Season:
Flowers summer–fall.

Range-wide Distribution:
Polk and Highlands counties, FL.

Conservation Status:
Rosemary scrub habitat has been greatly reduced, and fewer than 150 populations remain; however, many large populations are protected on about a dozen parks and conservation areas.

Protection & Management:
Florida jointweed requires largescale natural disturbance, such as catastrophic fire, every 10 – 40 years, to create openings in scrub for seed germination.

Giant Orchid

Pteroglossaspis ecristata

There is one record form 2009 of the species occurring on the Platt Branch Mitigation Park.

Listing status: USFWS = None

FWC = Threatened



Habitat:
Sandhill, scrub, pine flatwoods, pine rocklands.

Best Survey Season:
Flowers July–September, fruits September–November.

Range-wide Distribution:
FL, NC, SC, GA, AL, MS, LA, Cuba. Plants have not been seen in many of the mapped FL counties in several decades.

Conservation Status:
Historically known from many managed areas, but seen recently in only a few.

Protection & Management:
Use prescribed fire to create sunny openings and reduce competition from woody species. Avoid soil-disturbing activities such as bedding and plowing fire lanes.

Highlands Scrub St. John's-Word (Hypericum)

Hypericum cumulicola

There are two older observations of the species on and just west of the FEC/Smoak Groves Conservation Easement.

Listing status: USFWS = Endangered

FWC = Endangered

Habitat:
Open patches in white sand scrubs and rosemary balds; occasionally in openings in scrubby flatwoods and oak scrubs over yellow sands.

Best Survey Season:
Flowers June–September.

Range-wide Distribution:
Endemic to Lake Wales Ridge in Polk and Highlands counties, FL.

Conservation Status:
Approximately 90% of scrub habitat has been lost to development and agriculture. Fewer than 50 populations are protected on 8 conservation areas. Another 20 populations are known from private lands.



Nodding Pinweed

Lechea cernua

There are four known observations on and west of the FEC/Smoak Groves Conservation Easement.

Listing status: USFWS = None

FWC = Threatened

Habitat:
Shrubland/chaparral. Lechea cernua is always found in deep sands, usually ancient dunes, on which the most common forest is a mixture of evergreen scrub oaks. It may be found under mature scattered pine or oak, but is more frequently in sandy openings along with species of Andropogon, Aristida, dryland species of Rhynchospora such as R. megalocarpa, and Cyperus (Kral 1983).



Best Survey Season:
No information

Range-wide Distribution:
No information

Conservation Status:
Responds positively to fire and soil (sand) disturbance. Scrub habitat is being rapidly developed for agricultural and commercial/ residential purposes.

Paper Nailwort

Paronychia chartacea ssp. *chartacea*

There are two known observations west of the FEC/Smoak Groves Conservation Easement.

Listing status: USFWS = None

FWC = Threatened

Habitat:
Shrubland/chaparral. Sand scrub of ancient dunes, in pure, white sand clearings or blowouts. Also on the sandy shores of sinkhole lakes. An early successional species.

Best Survey Season:
No information

Range-wide Distribution:
Lake, Orange, Polk, Highlands, DeSoto Counties, Fla.

Conservation Status:
Endemic to Florida. The species is suffering from loss of habitat and successional pressures, but is locally abundant in some protected areas having appropriate management to maintain scrub habitats. Plants abound in local clearing but are eliminated from large-scale clearings; can tolerate and probably promoted by fire.



Spreading (Pine) Pinweed

Lechea divaricata

There is one known observation north of the Platt Branch Mitigation Park.

Listing status: USFWS = None

FWC = Endangered

Habitat:
Scrub and scrubby flatwoods.



Best Survey Season:
Flowers May–October

Range-wide Distribution:
Endemic to peninsular FL

Conservation Status:
Apply prescribed fire in scrub to maintain a mosaic of habitats and sandy openings. Purchase and protect scrub sites on Lake Wales and Atlantic Coastal Ridge.

Okeechobee Gourd

Cucurbita okeechobeensis



May occur based on habitat and location.

Listing status: USFWS = Endangered

FWC = Endangered

Habitat:
Pond apple swamps and mucky soils on Lake Okeechobee shores and islands; floodplain forests along the St Johns River.

Best Survey Season:
Flowers spring and summer; vines and fruits most visible in fall and winter.

Range-wide Distribution:
Endemic to central FL

Conservation Status:
Once locally abundant in the mucky soils of the lower Kissimmee River basin, now known only from a few sites around Lake Okeechobee and along the St. Johns River, where populations seem to be declining.

Protection & Management:
Monitor and regulate water levels in Lake Okeechobee to promote germination and seedling establishment. Restore pond apple swamps around lake. Use herbicides carefully to control exotic species in lake; avoid aerial spraying. Maintain hydrology of Florida's rivers. Survey for more populations. Research biology of species.

Cowbone Marsh Restoration Plan Potential Effects on Flora and Fauna and General Avoidance Measures

Birds

A historical wading bird colony has been identified nearby, but birds have not used the colony for a number of years and even if they have, the proposed project footprint is well out of the required protective 100 m buffer. If woodstorks utilized this particular colony, the project footprint would be within the required 1,500 ft buffer; however, no records of nesting woodstorks within Fisheating Creek Wildlife Management Area exist. If this occurs, then all construction activity within the no activity buffer would be stopped until all nesting efforts have completed.

A historical eagle nest is located near the project site, but current plans call for the construction route to follow the levee west of the nest and should not come within the required no activity buffer zone. If construction plans change and the route does follow the levee west from SR 78, then travel along the levee would have to be curtailed until the nesting activity is complete.

Of particular concern with this restoration project is disturbance to the American Swallow-Tailed Kite. As described on figure 1, a historical communal roosting colony is located in Cowbone Marsh and is adjacent to the route leading from the sand mine to the project site. Along this route, large trucks loaded with sand will be driving past this site several times a day during construction. Typically, the colony is utilized from June to September; however, all construction activity is scheduled when the colony is inactive.

If swallow-tailed kite activity is observed during nesting season, particularly if kites are observed carrying nesting material, mobbing, or in groups of 3 or more, this information will be documented and an effort to locate the nest will be made. If a nest is located all efforts will be made to ensure construction activities do not disturb the nest to include maintaining a 330 ft buffer of no activity.

During the swallow-tailed kite migration (June 1 – September 30), migratory roosts are particularly susceptible to disturbance. In addition to protection and observance of no-activity zones during this period, if aggregations of kites (3 or more) are observed near the migratory roost during other times of the year, efforts will be made to verify whether the migratory roost is actively being used. If a significant number of kites are found to be using the roost area at any time of the year, consultation with species experts will be necessary before activity is continued or increased to avoid potential impacts to the species.

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Migratory Birds

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) that was amended last in October 1998 (16 USC 703-712). This act provides protection that states it is unlawful at any time to pursue, hunt, take, capture, kill, or attempt to transport migratory birds. Therefore, in order to provide as much protection as possible for all wildlife in the project area, FWC will adhere to the following guidelines within the upland portion of the project area (2 acre borrow pit) where migratory birds are likely to be impacted.

1) Conduct wildlife surveys during breeding/nesting season at beginning of project to understand history of nesting. Look for known nests/nesting areas, conduct wildlife survey again prior to construction to observe any potential nesters.

2) Use deterrents to prevent nesting within construction area (e.g. noise/sirens, predatory bird decoys, flooding, stakes with flagging, other measures) outside of nesting season. All deterrents should be coordinated with the appropriate resource agencies.

3) Remove inactive nests/nesting platforms (proper coordination/permits with FWS and other regulatory agencies).

4) Write language into construction specifications to alert contractors of the potential for migratory bird nesting and encourage them to have back-up plans (examine on job-by-job basis) in case they encounter a migratory bird so construction may not have to stop.

5) Hold preconstruction/pre-bid meetings on-site and discuss MBTA and likelihood of migratory birds being present during construction activities.

Ensure the contractor's employees receive training on the migratory birds that may be encountered at the project site. Ensure the contractor's employees understand the environmental protection specifications and their responsibilities related to migratory birds.

Ground Species

Ground-disturbing activities and increased use of roads must be undertaken with caution in areas where ground-dwelling species potentially occur, such as indigo snakes, gopher tortoises, burrowing owls, and gopher frogs. The most significant threat to ground-dwelling species is direct injury or mortality from vehicles and equipment.

Where ground-disturbing activities are necessary, area staff will warn equipment operators to stop their activity if large black snakes are observed and wait until the snake leaves the area to resume work. Equipment operators must also be prepared to identify and avoid species that are known to occur on or near roads, such as gopher tortoises and burrowing owls. Operators should not drive near any known burrows, and should observe safe speed limits to avoid direct mortality. Staff biologists will also provide operators with photographs to help with

identification. A trained biologist will also be onsite during construction activities to ensure impacts to wildlife are minimized and to ensure observations of listed species are reported.

Plants

Florida Natural Areas Inventory has observations of listed plants recorded near Fisheating Creek Wildlife Management. Additionally, they have recently completed a rare plant survey along the construction route and footprint (Appendix 1). Many rare plant species are susceptible to trampling and destruction by heavy equipment. If listed species are found to occur on the construction site, care should be taken to avoid trampling or destruction by vehicles and equipment.



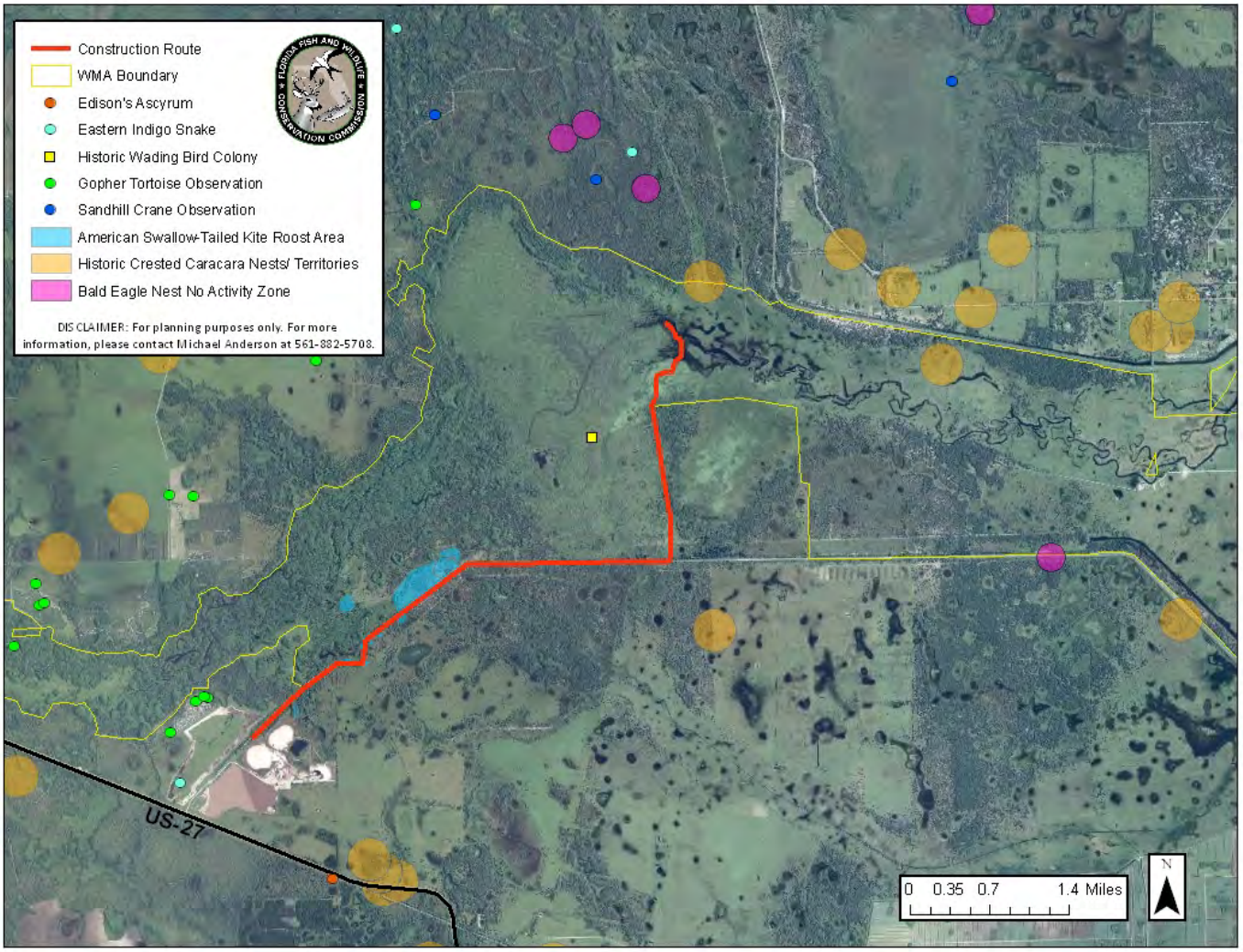


Figure 1. Map illustrating locations of potentially affected plants and wildlife within Cowbone Marsh, Fisheating Creek Wildlife Management Area (WMA), and environs.

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Appendix 1. ASSESSMENT OF LISTED SPECIES OF COWBONE MARSH

PRELIMINARY REPORT

Project: FWC Cowbone Marsh Task Assignment 003

Contract Number: 11367

Project Title: Assessment of Listed Species of Cowbone Marsh.

Date Report was Submitted: June 7, 2012



FLORIDA Natural Areas INVENTORY

Assessment of Listed Species of Cowbone Marsh



Revised Preliminary Report: July, 2012

Introduction

The Florida Fish and Wildlife Conservation Commission (FWC) is taking steps to restore the hydrology of Cowbone Marsh after a channel was cut approximately 2 miles into the marsh from the eastern edge of the marsh. Six check dams have been installed to help re-establish pre-impact flow patterns. A complete backfill of the channel is being considered and will require transportation of fill material to the site. Possible source sites for fill and transportation routes from the fill sites to the cut channel have been proposed.

Florida Natural Areas Inventory (FNAI) was contracted to conduct an ecological assessment and monitoring of the channel within Cowbone Marsh as well as access routes to address two primary resource issues: 1) the status of state and federally listed threatened and endangered plant and wildlife species that depend on the marsh, and 2) the impacts restoration activities will have on these species. The assessment is to be conducted over a five-year period to develop a baseline and to identify trends in species responses to potential changes in the marsh.

The Florida Natural Areas Inventory (FNAI) is part of the Florida Resources and Environmental Analysis Center at Florida State University. Our mission is to gather, interpret, and disseminate information that is critical to the conservation of Florida's biological diversity. To further this mission FNAI works cooperatively with the Florida Fish and Wildlife Conservation Commission (FWC) and other agencies on inventory and monitoring projects throughout Florida. Dan Hipes and Katy NeSmith conducted the initial assessment and will be the primary personnel for the project:

Dan Hipes, Chief Scientist
Dan has been the Chief Scientist at Florida Natural Areas Inventory (FNAI) since 2001. In this role he coordinates both the field and office activities of the ecology, botany, and zoology sections of the program. Dan has been with FNAI since January of 1993 when he was hired as a field biologist. As a field biologist and later as chief scientist he developed extensive experience conducting natural community mapping throughout Florida, combining field data collection, GPS expertise, and GIS mapping technical skills. Dan supervises FNAI's team of scientists who evaluate projects submitted to the state's land acquisition programs, providing objective, science-based guidance to the Florida Department of Environmental Protection. Dan coordinated the production of FNAI's Field Guide to the Rare Animals of Florida, which includes summarized information and exceptional photographs of more than 150 of Florida's rarest animals. Dan's education focused on management of upland game species and waterfowl. He has since added rare species and natural systems to his viewpoint of land management,

allowing him to contribute a broad perspective during his participation in land management planning and review. Dan has a Master of Science degree in Wildlife Science from Auburn University.

Katy NeSmith, Research Zoologist

Katy has been with the Florida Natural Areas Inventory since 1986. She began as Data Manager and was responsible for all aspects of database development and maintenance. Katy moved into her current position as Zoologist in 1993 and is generally considered the staff ornithologist. Katy oversees the bird data compiled by FNAI, including coordinating and conducting field surveys for rare species. Katy was responsible for updating our understanding of the distribution and status of seaside sparrows and marsh wrens on the east coast of Florida. She plays an important role in identifying, evaluating, and describing high priority natural areas and participating in the natural resource assessment and boundary evaluation of projects submitted to the state's land acquisition programs. She has worked on county inventories and has been involved in several current and historic natural community mapping projects throughout the state. Katy has a Master's degree in Biological Science from Florida State University where she studied avian breeding ecology.

Initial Surveys of Listed Animal and Plant Species

An initial site visit was undertaken on 29 and 30 May 2012. All sections of the proposed construction route (ca. 10 miles including the cut channel; Fig. 1) were surveyed for state and federally listed animal and plant species potentially present in the study area (Table 1 and Table 2). We also examined a rectangular 2-acre area that is proposed as a fill source (borrow pit) site. During the initial assessment we determined the suitability of the habitats within the construction route for each species on our target list; a description of this determination along with notes of surrounding occurrences or habitat are provided in Table 1 and Table 2.

Surveys were conducted by foot, swamp buggy, and canoe. Locations of rare or listed species were recorded when encountered with Trimble GPS dataloggers. Gopher tortoises (*Gopherus polyphemus*) are known to be present on the Herbert Hoover Dike portion of the proposed construction route. Two FNAI staff and two FWC staff walked transects along the 4.5 mile-portion of dike. Two people walked along each edge of the road on top of the dike and the other two walked roughly mid-slope, 25-30 feet down-slope from the surveyors on top (Fig. 2).

The approximately 3.8 miles of non-aquatic construction route north of the dike was traversed by swamp buggy with a surveyor searching the ground and evaluating the habitats on either side of the vehicle. Occasional stops were made to inspect potential gopher tortoise burrows or to identify birds along the route. The 2-acre possible borrow pit site was searched of foot. After an initial foray into the site, the perimeter of the site was walked, then one transect was walked from the southeastern corner to the northwestern corner. Notes on habitat structure and composition were recorded.

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The cut channel was surveyed by canoe. One transect was paddled up and back. Surveyors listened for birds and identified all species observed within the survey corridor along the construction route.

Initial Results

Results and notes for each species on the target list are shown in Table 1. The location of the rare species observations are shown in Figure 1. Birds observed overhead are depicted on the map as ellipses that show the area where they were observed.

Two state-listed members of the bromeliad family, not listed in Table 2, were found adjacent to sections of the proposed route. Cardinal Airplant (*Tillandsia fasciculata*), state-listed Endangered and Northern Needleleaf (*Tillandsia balbisiana*), state-listed Threatened were seen along the route parallel to the Herbert Hoover Dike through part of Fisheating Creek/Lykes Brothers Conservation Easement property and near the boundary of the proposed 2-acre fill source, respectively (Fig. 1). These *Tillandsias* are especially vulnerable to an accidentally introduced weevil, the Mexican bromeliad weevil (*Metamasius hemipterus*), which kills many plants by burrowing into, and destroying, the leafy rosettes.

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Table 1. Observation status and construction route habitat suitability evaluation for rare and listed animals.

Common name (Scientific name)	**Observation status for 29-30 May 2012 and site suitability evaluation**
American Swallow-Tailed Kite (*Elanoides forficatus*)	Observed flying over site; 1 kite was observed flying over the dike 29 May and groups of 4 and 6 were seen, one group each day over Cowbone Marsh (Fig. 1).
Southern Bald Eagle (*Haliaeetus leucocephalus leucocephalus*)	Not observed within the construction route, but a nest site is located approximately 2 miles east off of Herbert Hoover Dike; active in 2010 when last checked for activity.
Crested Caracara (*Caracara cheriway*)	Observed just outside of the construction route (Fig. 1); 1 adult caracara flew up from the creek, possibly drinking. A nest site is located approximately 2.3 miles east of the closest point on the construction route (Brandon Schad, FWC, pers. com.).
Snail Kite (*Rostrhamus sociabilis)* 	Not observed; unlikely; The dense shrubby vegetation of Cowbone Marsh is not suitable for foraging; Although egg masses of the Florida apple snail ((*Pomacea paludosa*), the preferred food item of snail kites) were observed along the cut channel portion of the construction route, the size of open area along the construction route is not sufficient for snail kite foraging.
Wood Stork (*Mycteria americana*)	Not observed; no evidence of nesting was viewed from the construction route; foraging may occur in a small stretch of the cut channel near Fisheating Creek. The cut channel portion of the construction route west of check dam #5 (2nd from the east) was too deep for wood stork foraging.
Wading Birds (*Ardea alba, Egretta thula, Egretta*	Observed 1 little blue heron (*Egretta*

Common name (Scientific name)	Observation status for 29-30 May 2012 and site suitability evaluation
tricolor, Egretta caerulea, *Eudocimus albus, Nyctanassa violacea*)	*caerulea*) foraging in a pond adjacent to the construction route and 1 adult and 1 immature white ibis (*Eudocimus albus*) flying low across the marsh adjacent to the construction route (Fig. 1). A yellow-crowned night-heron was observed along the cut channel.
Limpkin (*Aramus guarauna*)	Not observed; possible; egg masses of the Florida apple snail (*Pomacea paludosa*), the preferred food item of limpkins, were observed along the cut channel.
Southeastern American Kestrel (*Falco sparverius paulus*)	Not observed; no suitable habitat is present within the construction route.
Gopher Tortoise (*Gopherus polyphemus*)	Observed along proposed construction route: 6 active, 1 inactive, and 6 abandoned burrows were recorded on the Herbert Hoover Dike (Figs. 1 and 2); 2 inactive burrows were observed within the eastern portion of the construction route that parallels the dike within the Fisheating Creek/Lykes Brothers Conservation Easement (Fig. 1).
Florida Sandhill Crane (*Grus canadensis pratensis*)	Observed 1 pair approximately 0.9 mile to the east of the closest point on the proposed construction route (Fig. 1). The low marsh areas adjacent to Fisheating Creek at the north end of the construction route are suitable for foraging and appear suitable for nesting.
Florida Burrowing Owl (*Athene cunicularia floridana*)	Not observed; possible along the dike; however, the construction route is surrounded by a large area of unsuitable habitat (tall densely vegetated), making it an unlikely location for burrowing owls.

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Common name (Scientific name)	Observation status for 29-30 May 2012 and site suitability evaluation
Florida Pine Snake (*Pituophis melanoleucus mugitus*)	Not observed; unlikely; there is no suitable habitat within the construction route, large areas of xeric natural communities required by pine snakes do not occur within 15 miles of the construction route.
Eastern Indigo Snake (*Drymarchon couperi*)	Not observed; possible; last observed on WMA in 2006 (Florida Fish and Wildlife Conservation Commission. 2012. Cowbone Marsh restoration plan – potentially affected wildlife and plants.)
Sherman's Fox Squirrel (*Sciurus niger shermani*)	Not observed; unlikely given the lack of suitable habitat within and surrounding the proposed construction route.
Florida Grasshopper Sparrow (*Ammodramus savannarum floridanus*)	Not observed; unlikely; some small areas of remnant palmetto prairie occur adjacent to sections of the construction route (eastern portion) but they are too small to be suitable for sparrows.
Florida Scrub-Jay (*Aphelocoma coerulescens*)	Not observed; no suitable habitat occurs within or in the vicinity of the proposed construction route.
Ivory-Billed Woodpecker (*Campephilus principalis*)	Not observed; no suitable habitat occurs within or in the vicinity of the proposed construction route.
Red-Cockaded Woodpecker (*Picoides borealis*)	Not observed; no suitable habitat occurs within or in the vicinity of the proposed construction route.
Whooping Crane (*Grus americana*)	Not observed; unlikely, Florida population estimated at 19 birds (8 males, 11 females; includes 7 pairs). Marty Folk, FWC, 1 February 2012 update http://whoopingcrane.com/category/florida-updates/

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Common name (Scientific name)	**Observation status for 29-30 May 2012 and site suitability evaluation**
Florida Panther (*Puma concolor coryi*)	Not observed; possible.
Puma (*Puma concolor*)	Not observed; possible.
West Indian Manatee (*Trichechus manatus*)	Not observed; no suitable habitat occurs within or in the vicinity of the proposed construction route.
American Alligator (*Alligator mississippiensis*)	Observed on site in the cut channel; several large, ca. 10 ft alligators and many young alligators were seen along the channel portion of the construction route (Fig. 1).
Blue-tailed Mole Skink (*Plestiodon egregious lividus*)	Not observed; no suitable habitat occurs within or in the vicinity of the proposed construction route.
Sand Skink (*Neoseps reynoldsi*)	Not observed; no suitable habitat occurs within or in the vicinity of the proposed construction route.
South Florida Rainbow Snake (*Farancia erytrogramma seminola*)	Not observed; unlikely; only known from specimens collected in 1952 (beneath US 27 bridge according to P. Moler, FWC) and 1 "fairly reliable" sight record in the mid 1970s; Godley (in 1970s) and Moler (1984) failed to find (FNAI element occurrence record ID 15602).

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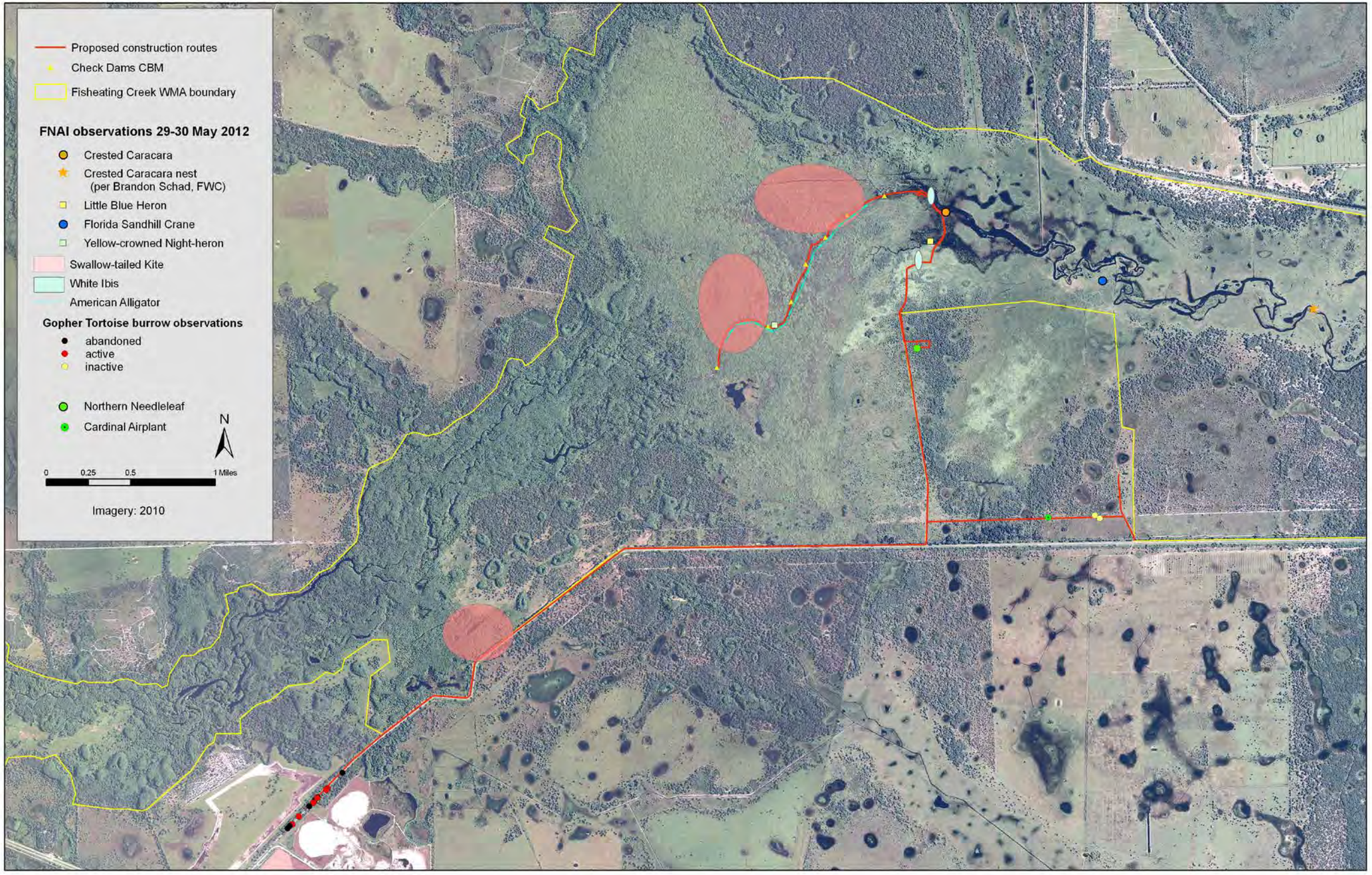
Table 2. Observation status and habitat suitability evaluation for listed plants.

Table 2. Potential listed plants within the project area	**Observation status for 29-30 May 2012 and evaluation of suitability for occurrence on site**
Edison's ascyrum (*Hypericum edisonianum*)	Not observed; no suitable habitat within or in the vicinity of the proposed construction route. Known from FEC WMA, west of US 27, in seeps up slope from Fisheating Creek at the base of scrub islands (FNAI natural community mapping data 2003).
Britton's Beargrass (*Nolina brittoniana*)	Not observed; no suitable habitat within or in the vicinity of the proposed construction route.
Scrub Blazing Star (*Liatris ohlingerae*)	Not observed; no suitable habitat within or in the vicinity of the proposed construction route.
Cutthroat Grass (*Panicum abscissum*)	Not observed; no suitable habitat within or in the vicinity of the proposed construction route. Known from FEC WMA, west of US 27, in seeps up slope from Fisheating Creek at the base of scrub islands (FNAI natural community mapping data 2003).
Florida Jointweed (*Polygonella basiramia*)	Not observed; no suitable habitat within or in the vicinity of the proposed construction route.
Giant Orchid (*Pteroglossaspis ecristata*)	Not observed; no suitable habitat within or in the vicinity of the proposed construction route.
Highlands Scrub St. John's-Wort (*Hypericum cumulicola*)	Not observed; no suitable habitat within or in the vicinity of the proposed construction route.
Nodding Pinweed (*Lechea cernua*)	Not observed; no suitable habitat within or in the vicinity of the proposed construction route.

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Table 2. Potential listed plants within the project area	**Observation status for 29-30 May 2012 and evaluation of suitability for occurrence on site**
Paper-like Nailwort (*Paronychia chartacea* ssp. *chartacea)*	Not observed; no suitable habitat within or in the vicinity of the proposed construction route.
Spreading (Pine) Pinweed (*Lechea divaricata*)	Not observed; no suitable habitat within or in the vicinity of the proposed construction route.
Carter's mustard (*Warea carteri*)	Not observed; no suitable habitat within or in the vicinity of the proposed construction route.
Okeechobee Gourd (*Cucurbita okeechobeensis*)	Not observed; possible in mucky soils on site.





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Figure 1. Locations of rare and listed plants and animals observed during a 29-30 May 2012 survey of potential construction route at Cowbone Marsh, Fisheating Creek Wildlife Management Area.

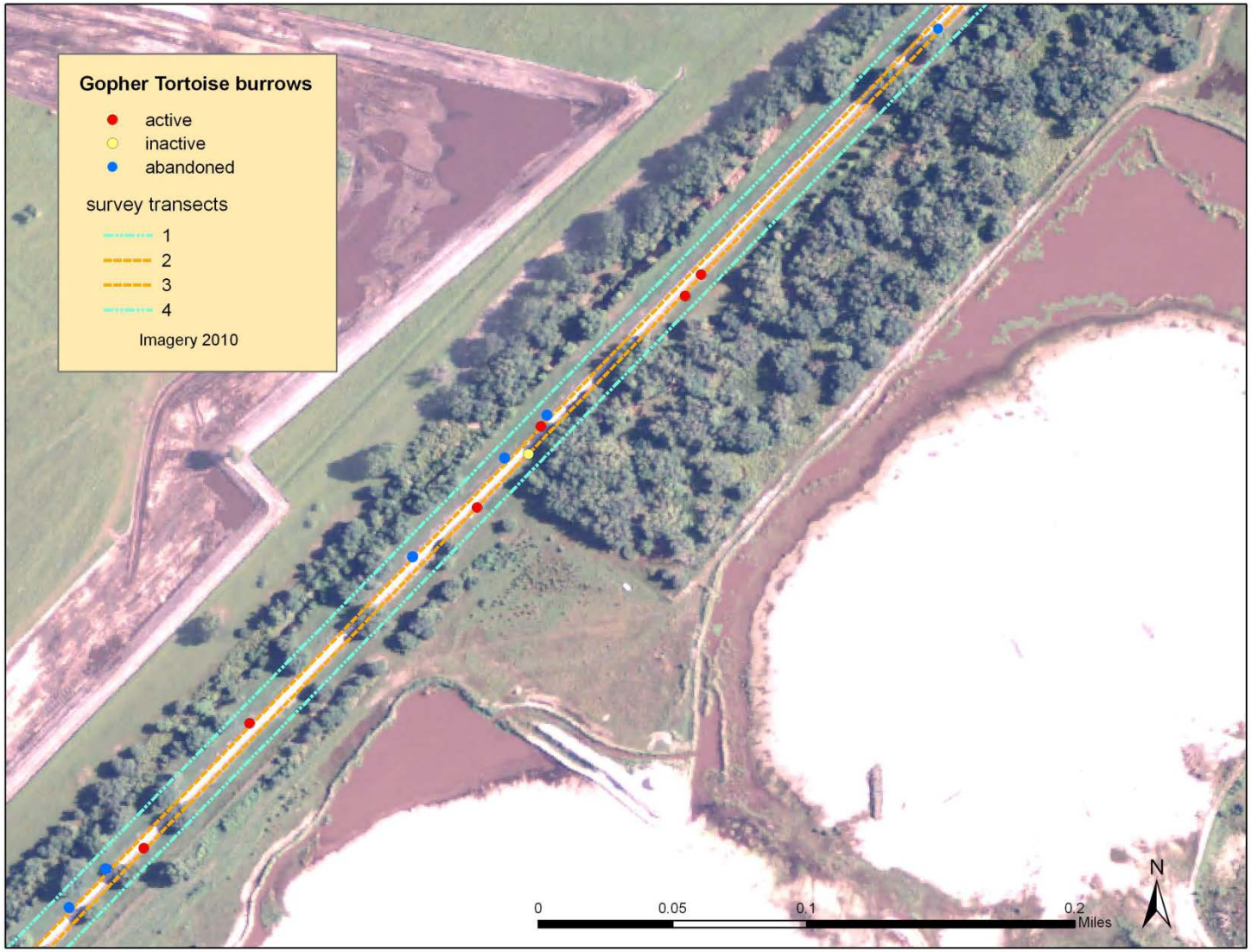


Figure 2. Distribution of Gopher Tortoise burrows and survey transects along Herbert Hoover Dike.

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Appendix 2. ASSESSMENT OF CRESTED CARACARA NESTING IN COWBONE MARSH

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Introduction

Crested Caracara surveys have been conducted in Fisheating Creek Wildlife Management Area (WMA) since acquisition through a settlement agreement between Lykes Brother, Inc. and the State of Florida in 1999. Additionally, aerial surveys were conducted from 2003 to 2006. Since 2006, anecdotal observations have been made ancillary to other field work conducted.

Crested Caracara Life History

Historically, crested caracaras were thought to occur in native dry prairie systems that have since been altered or degraded due to development and fire suppression and are no longer suitable for caracara occupation. Currently, much of the crested caracara population is found on improved or semi-improved pastures on private cattle ranches (Layne 1996, Hipes et al. 2000), further contributing to threats of habitat loss and degradation. Crested caracaras are non-migratory across their range in Florida. Average home range size is 1,200 hectares (3,000 acres). Courtship behavior and nest building begins as early as September in Florida. Nests are typically built 4-18 m above the ground in a cabbage palm (*Sabal palmetto*) in an open area with scattered trees. Caracaras construct new nests each year, but they are often in the same tree as the previous year, indicating strong nest-site fidelity (Morrison 2001).

Egg laying has been documented as early as September and as late as June; peak activity occurs from late December through February (Morrison 2001). Clutch size is 2-3 eggs, with an incubation period of 32-33 days (Layne 1996). Double brooding can occur if a nest is lost early in the season. Fledging occurs at 8 weeks. Young are dependent on parents for at least 2 months post-fledging, and may remain in the natal territory for up to 10 months. Most young in Florida leave natal territory after 4-6 months and form groups of up to 30 individuals. These groups have been observed feeding and roosting together. The Kissimmee River basin south of Lake Kissimmee is heavily used by these groups (Morrison 1996, Morrison 2001, USFWS 1999).

The crested caracara is an opportunistic feeder, taking prey items such as insects, small reptiles and amphibians, and small mammals. Eggs and carrion are also included in the diet of caracaras. Foraging for food takes place in early morning and late afternoon. Caracaras often walk through pastures searching for prey items, particularly after

disturbance such as mowing or plowing. Caracaras have also been observed feeding in recently burned areas. Hunting takes place from conspicuous perches or while in flight. Once prey is sighted, the caracara flies to the ground and walks up to prey item (Morrison 1996, Morrison 2001).

Management Guidelines

Crested caracaras have high fidelity to their home ranges and nest sites. Staff will protect known nesting sites and maintain home ranges in suitable condition if individuals are known to occupy a particular MU. Management actions like cattle grazing, mowing, shredding, and prescribed burning will improve habitat conditions by creating areas with low ground and shrub cover. Following the guidance in Morrison 2001 (cited below), staff will limit management actions during the breeding season if a nest is located. Crested caracaras are most likely to flush from the nest, which can be detrimental to eggs or young, if disturbance occurs within 1,500 feet of the nest during the first 2 - 3 weeks of nesting. Staff will maintain this distance (1,500 feet) as a buffer around known nests. Morrison (2001) suggests historic management can continue (if the birds are used to it) during nesting season, as long as the first 2 - 3 weeks of nesting are avoided. A significant increase in human activity within the home range or territory can cause caracaras to abandon the area, even outside of the nesting season.

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Survey Methods

Crested Caracara nest surveys were conducted from 2003-2006 via helicopter. Aerial surveys were conducted in May during the early morning hours when the birds were starting to come off their nests. The area surveyed was from Cowbone Marsh east to CR 78 (Figure 1). An altitude was maintained such that crested caracaras could be positively identified along transects. Systematic transects were not used during these surveys. Instead more focus was given towards those areas with good caracara nesting habitat. Once a potential nest was identified, a visit was made on the ground to verify that it was actually a nest.

Since 2006, specific surveys for caracaras have not been conducted. However, anecdotal observations have been made and any new nests have been noted. Future surveys will be from the ground and will start in January and be completed in March. Ground surveys will be conducted using Fish and Wildlife Service protocol. Survey points will be identified using an aerial photograph. The observation point selected should have a good vantage point of the construction site and surrounding area. In

particular, the borrow pit and areas that have adequate cabbage palm trees for nesting substrate within 1,500m of the construction site and route. Surveys will start a half hour prior to sunrise and be a minimum of 3 hours in duration. These surveys will be conducted every two weeks from January to March. Additionally, if inclement weather is experienced during the survey to include rain, high winds, and fog, the survey will not be used to determine nesting activity in the area.

Results

Since 2000, only 3 nests have been located within the Fisheating Creek WMA. The most recent nest location was identified in 2012 near Ft. Center. That nest was located in April from the ground while conducting routine field work. Prior to the nest found in 2012, the most recent nest location was found in 2000 by ground surveys. Figure 2 illustrates the location of nests within Fisheating Creek WMA and environs.

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Figure 1. Area surveyed for Crested Caracara nest by helicopter from 2003-2006.

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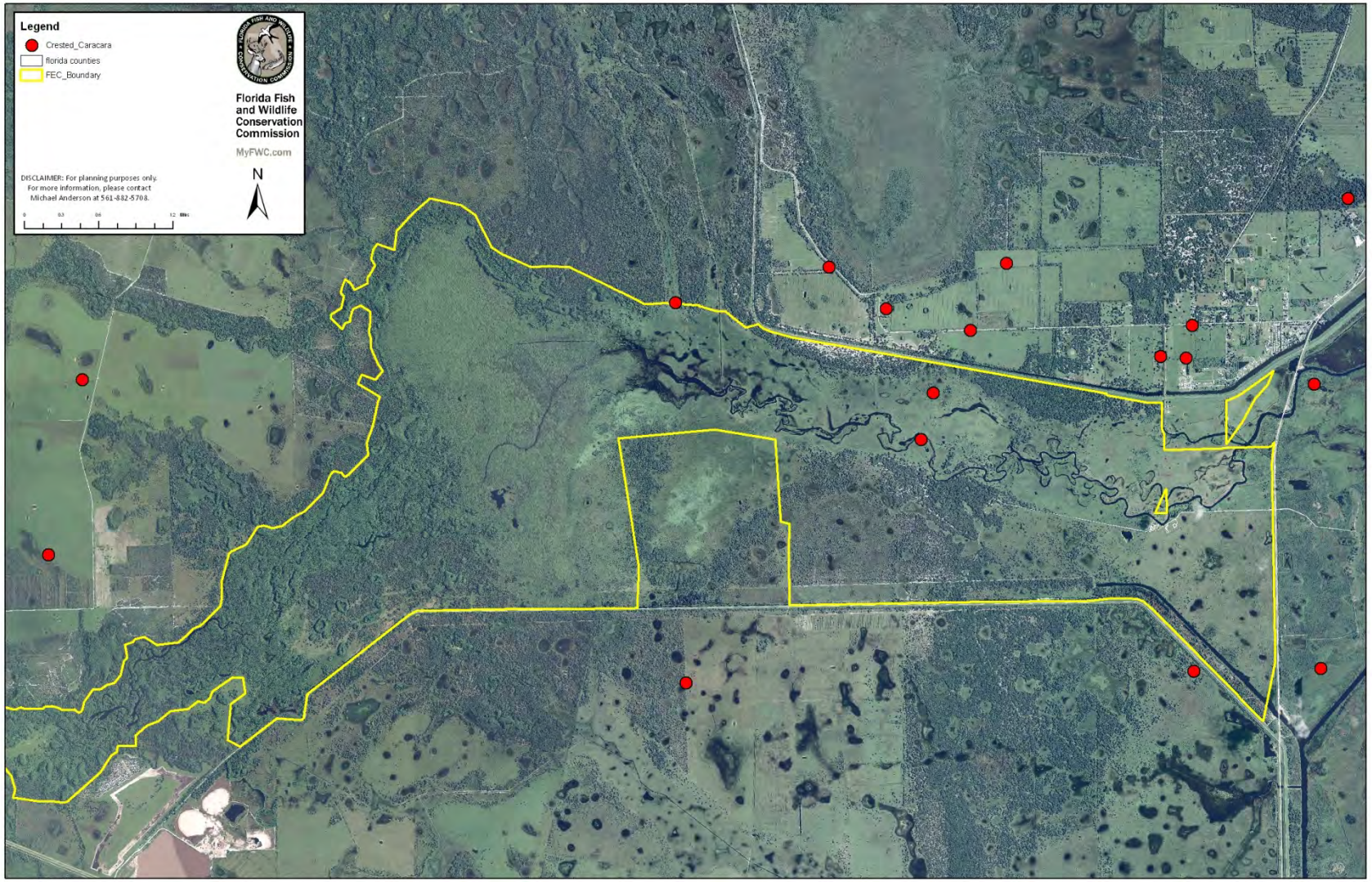


Figure2. Crested Caracara nest location within Fisheating Creek WMA and environs.

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22-0303652-002
South District
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Humphrey, S.R. and J.L. Morrison. 2000. Habitat associations, reproduction, and foraging ecology of Audubon's crested caracara in south-central Florida. Florida Fish and Wildlife Conservation Commission Final Report E-1, III-1-4. Tallahassee. 156 pp. + vii. http://research.myfwc.com/publications/publication_info.asp?id=47359

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APPENDIX 4


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Permit Number
22-0303652-002
South District
Fort Myers

INDEX OF PLANS

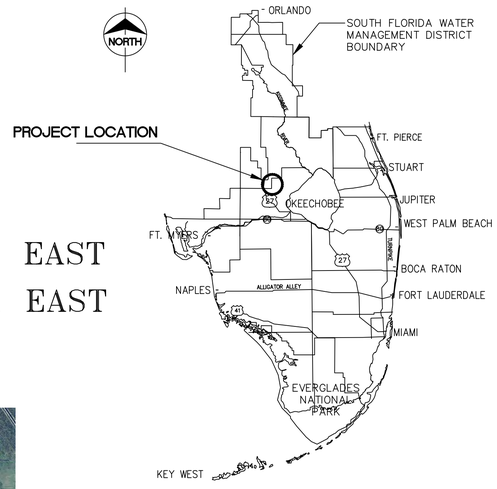
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C2.01	TEMPORARY ACCESS ROAD LAYOUT
C2.02	TEMPORARY ACCESS ROAD SHEETS LAYOUT
C2.03–C2.08	TEMPORARY ACCESS ROAD PLAN AND CROSS SECTIONS
C2.09	COMPOSITE MAT DETAILS
C2.10	TEMPORARY ACCESS ROAD ALTERNATIVES TAR–1 & TAR–2
C2.11	TEMPORARY ACCESS ROAD ALTERNATIVES TAR–2 & TAR–3
C3.01	CHANNEL SHEETS LAYOUT
C3.02–C3.10	CHANNEL PLAN VIEW AND CROSS SECTIONS
C4.01–C4.02	EROSION CONTROL DETAILS

STATE OF FLORIDA
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

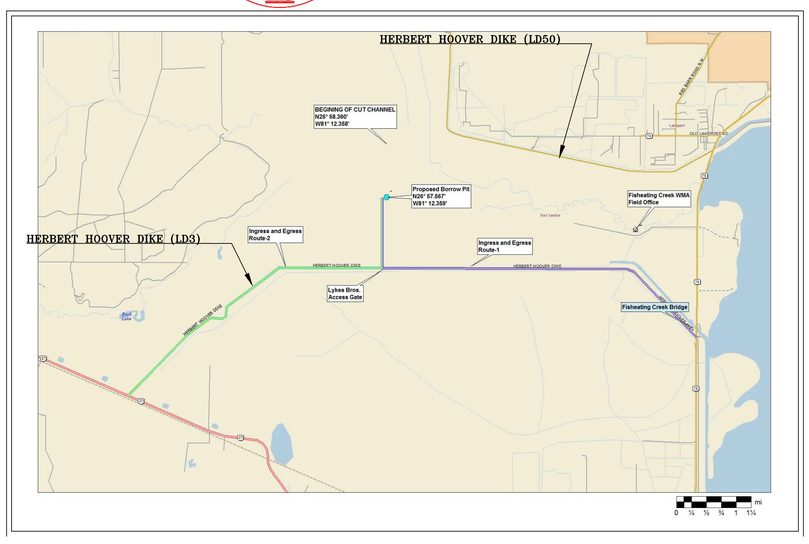
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PROJECT NUMBER FWC 11/12–

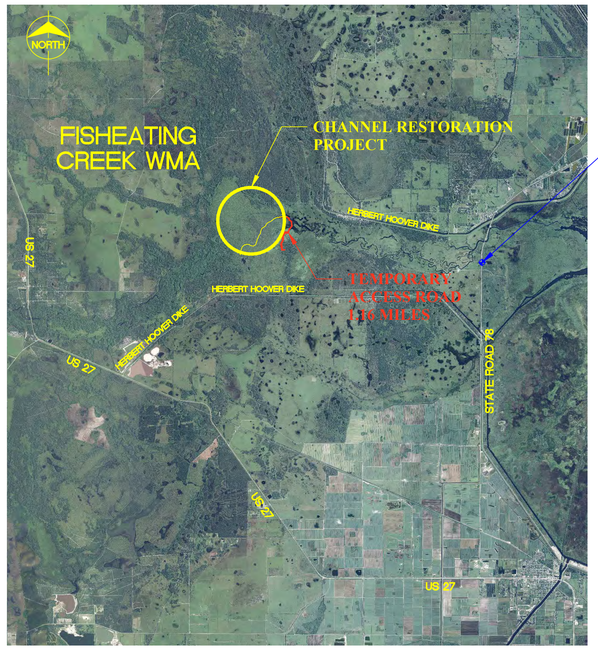
SECTIONS (26–28, 32–34), TOWNSHIP 40 SOUTH, RANGE 31 EAST
SECTIONS (3–8), TOWNSHIP 41 SOUTH, RANGE 31 EAST



NOT TO SCALE



LOCATION STREET MAP



LOCATION AERIAL MAP

SCALE: 1" = 10,000'

NATIONAL GEODETIC SURVEY
BENCHMARK W 523
PID AJ6185
SPC FL NAD 83 E, FOOT
NORTH = 952,835.43'
EAST = 616,430.67'
ELEV. = 19.44' NAVD 88

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN ALTERED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

GOVERNING SPECIFICATIONS:
SPECIFICATIONS AS ISSUED WITH THESE PLANS.

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Permit Number
22-0303652-002
South District
Fort Myers

NOTES

POINT COORDINATES ARE IN FEET, AND ARE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983.

VERTICAL INFORMATION DEPICTED HEREON, UNLESS NOTED OTHERWISE, IS BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD 88).

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

REVISIONS:		
DATE	BY	DESCRIPTION

SHEET TITLE
KEY SHEET AND VICINITY MAP

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

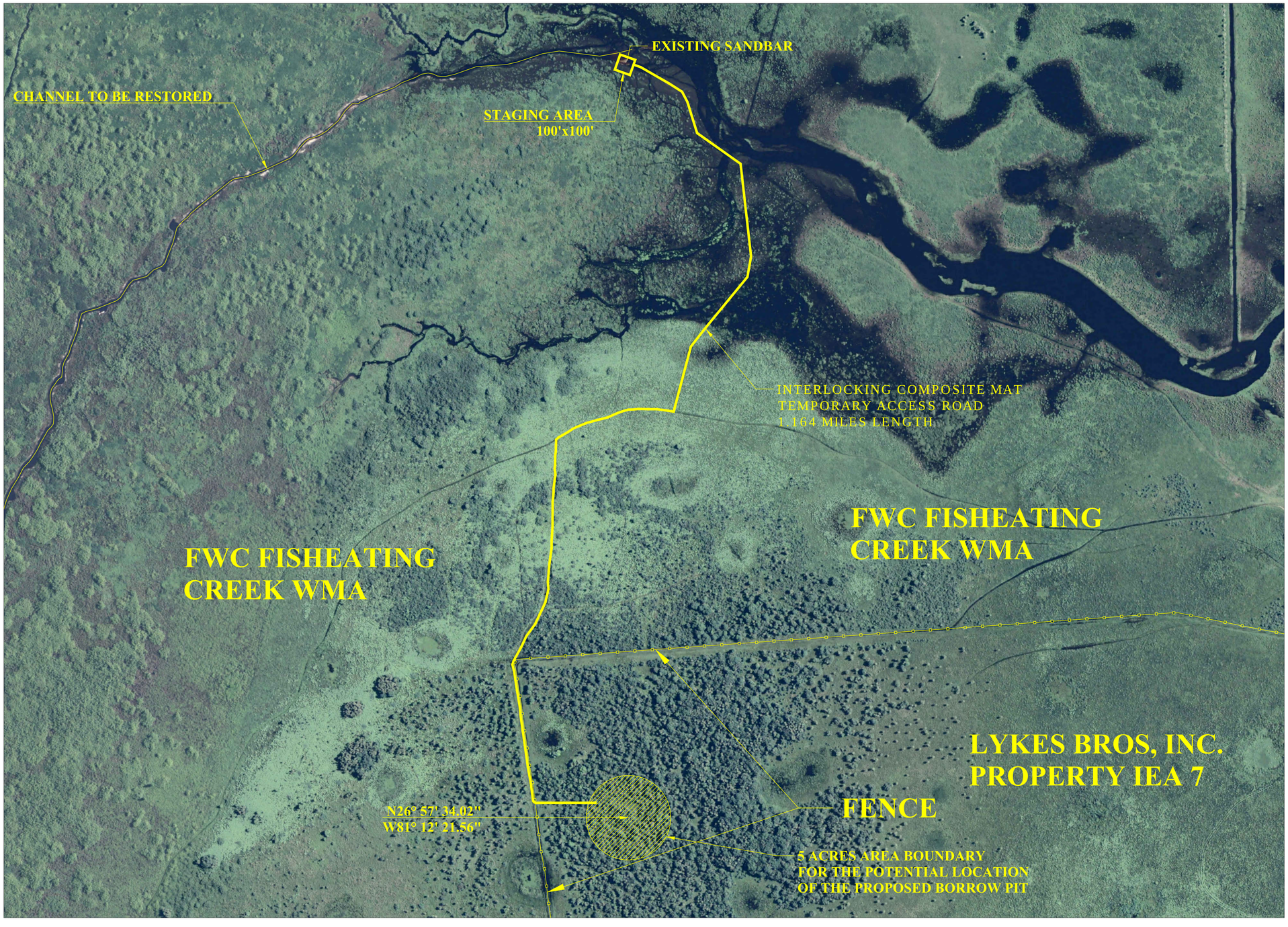
FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5521

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C1.01

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers



NORTH

SHEET TITLE
TEMPORARY ACCESS ROAD
LAYOUT

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

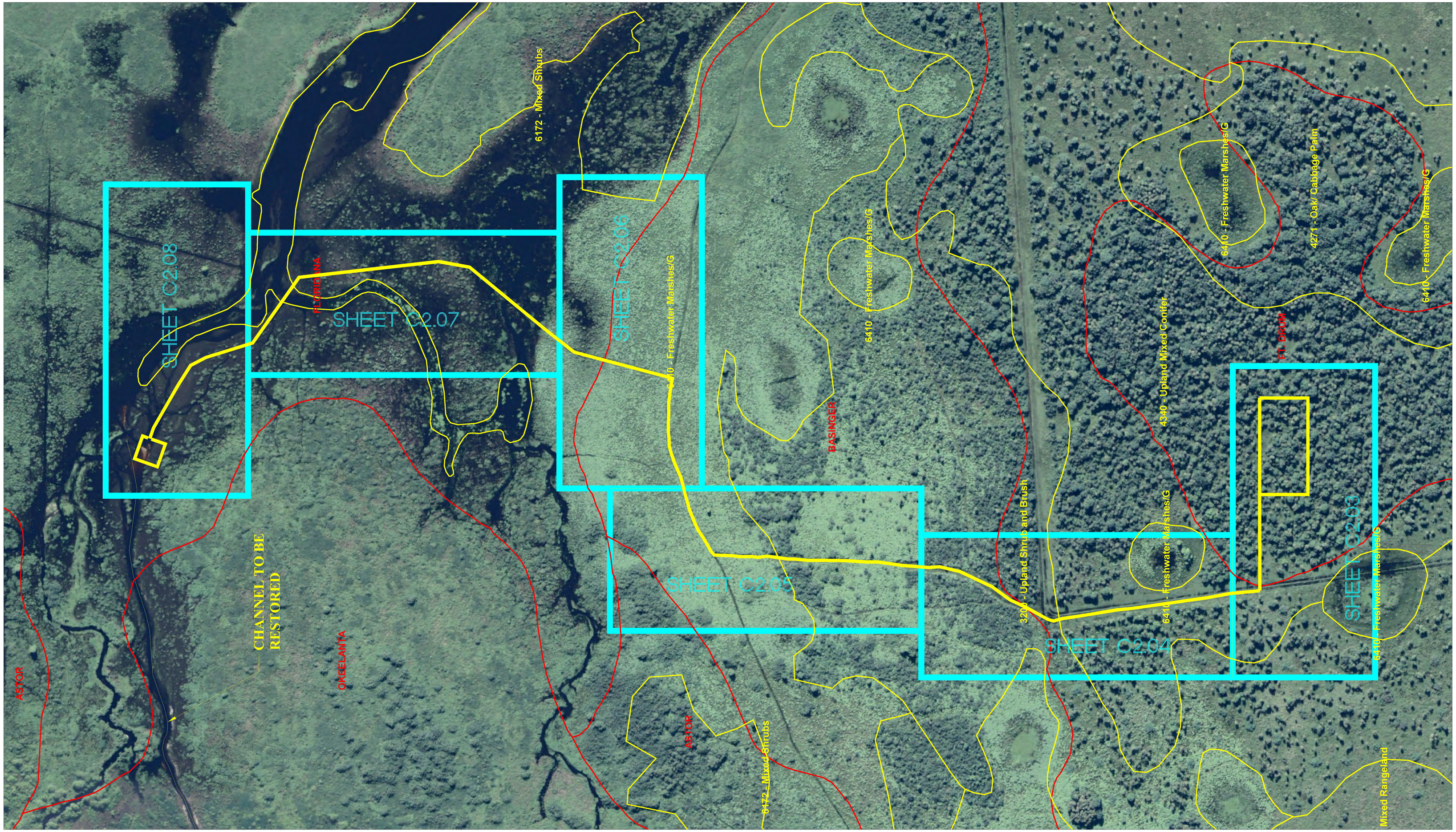
FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-0531

PROJECT NO. :
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SCALE : AS SHOWN
SHEET
C2.01

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Provider: U.S. Department of Agriculture
Aerial Photography Field Office

NORTH

0' 500' 1,000' 1,500' 2,000' 2,500'



SHEET TITLE
TEMPORARY ACCESS ROAD
SHEETS LAYOUT

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR	SEAL :
APPROVED BY : M. MADKOUR	

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

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Permit Number
22-0303652-002
South District
Fort Myers

NORTH

MATCHING LINE SHEET C2.04



SHEET TITLE
TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C2.03

SHEET TITLE

TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

PROJECT TITLE

FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

SEAL :

DRAWN BY : M. MADKOUR

APPROVED BY : M. MADKOUR

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
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(850) 488-3831

PROJECT NO. :

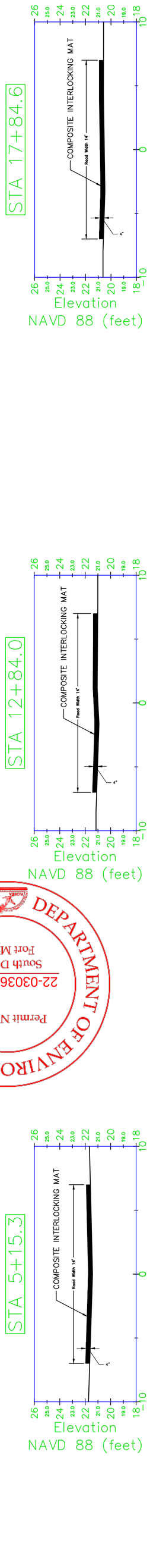
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MATCHING LINE SHEET C2.03





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Image Information:
Image Date: October, 2010
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Aerial Photography Field Office

MATCHING LINE SHEET C2.05

TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

SHEET TITLE

FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

PROJECT TITLE

SEAL :

DRAWN BY : M. MADKOUR

APPROVED BY : M. MADKOUR

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620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
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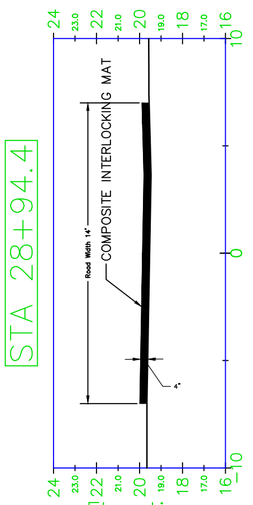
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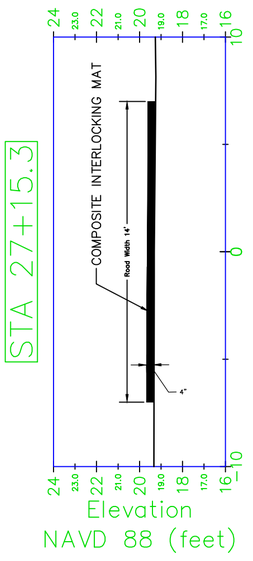
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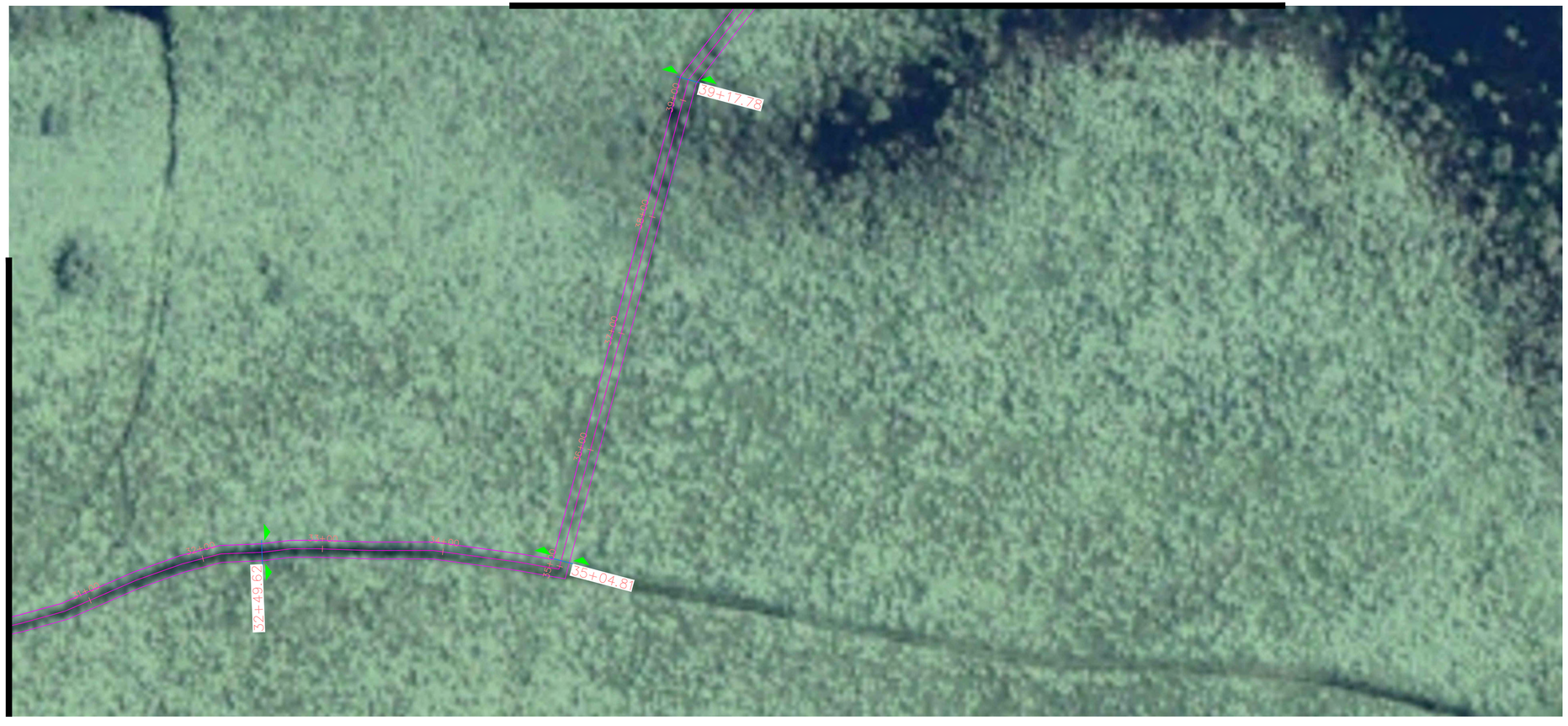


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22-0303652-002
Permit Number

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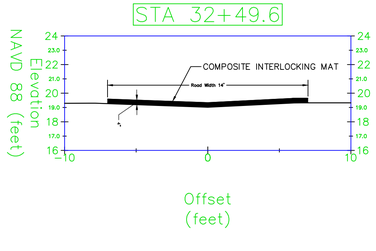
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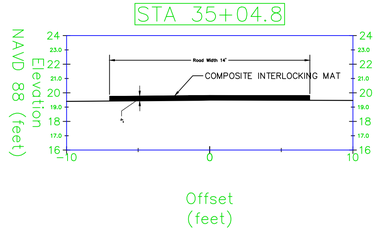


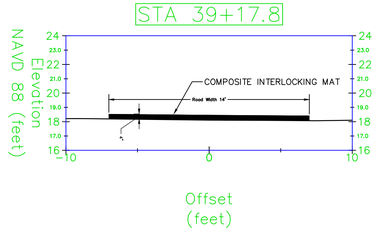
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Permit Number
22-0303652-002
South District
Fort Myers







SHEET TITLE
TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5521

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C2.06

TEMPORARY ACCESS ROAD
PLAN AND CROSS SECTIONS

SHEET TITLE

FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

PROJECT TITLE

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

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PROJECT NO. :
SHEET C2.07
DATE : MAY 2012
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Fort Myers
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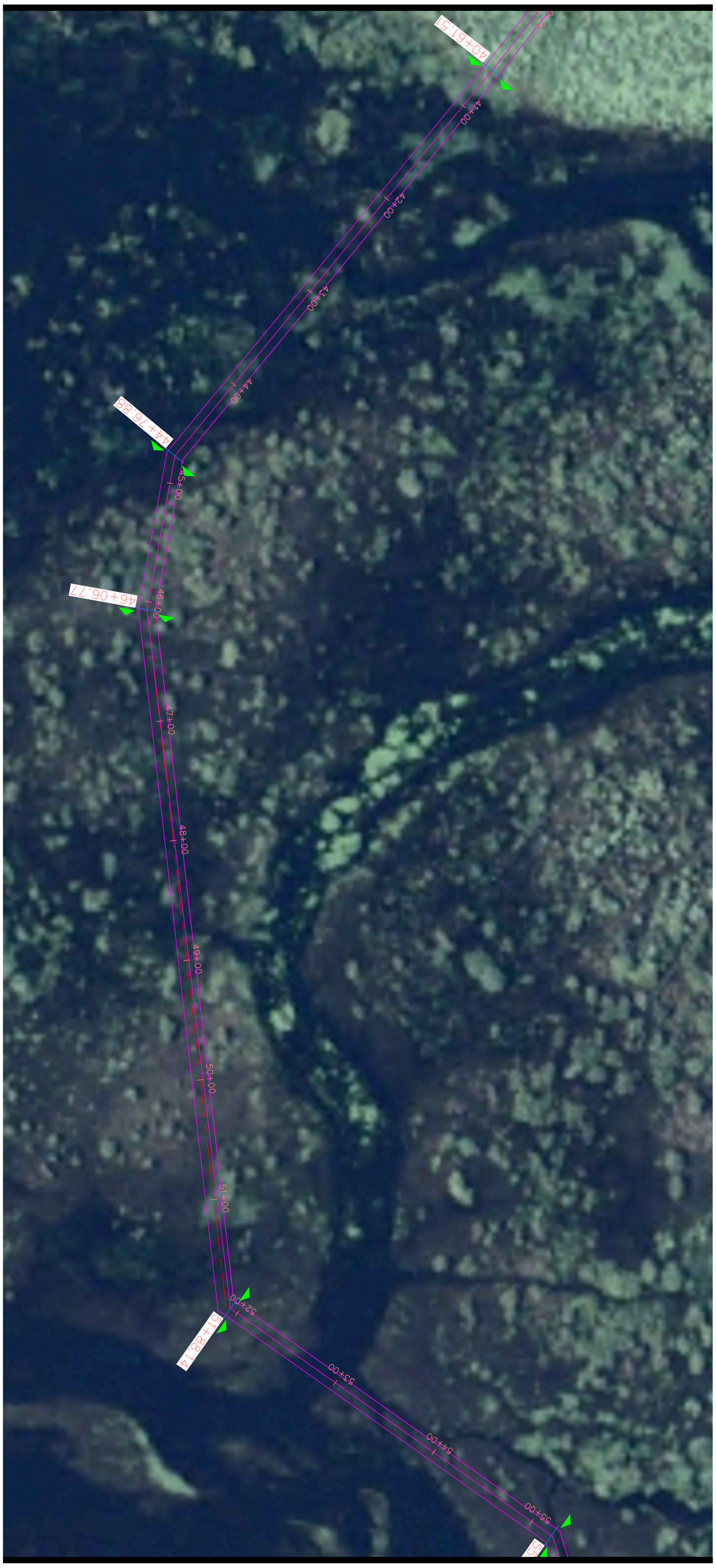

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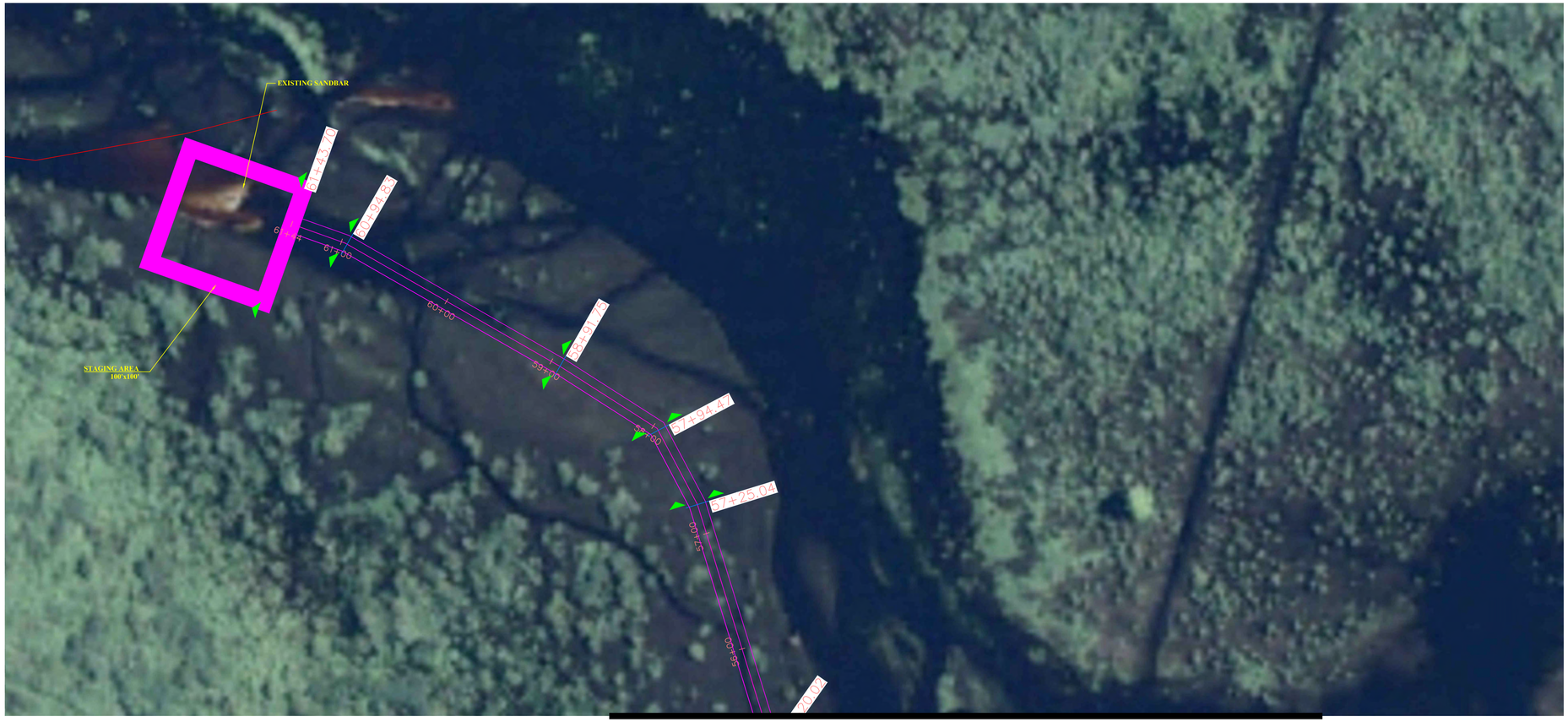
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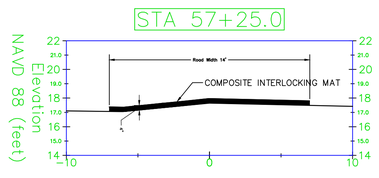
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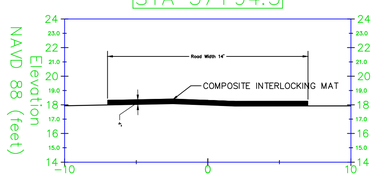
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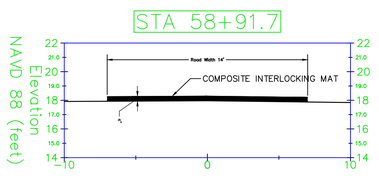
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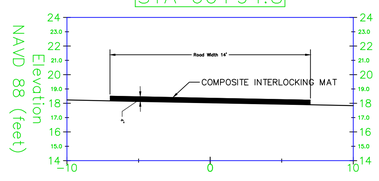


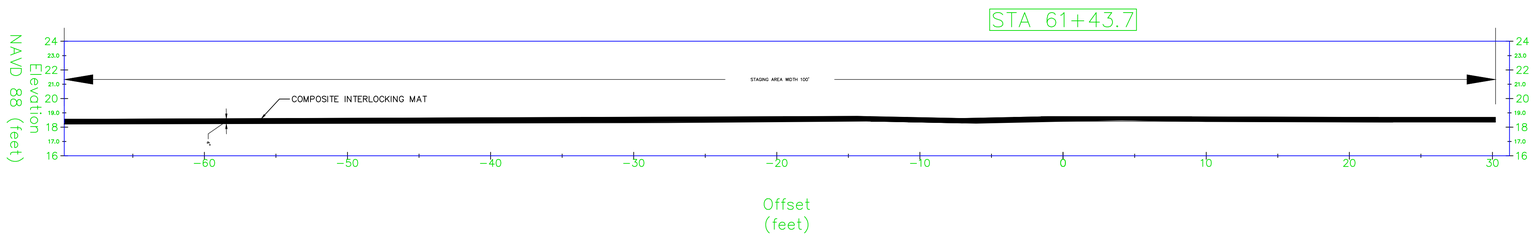
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DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

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PLAN AND CROSS SECTIONS

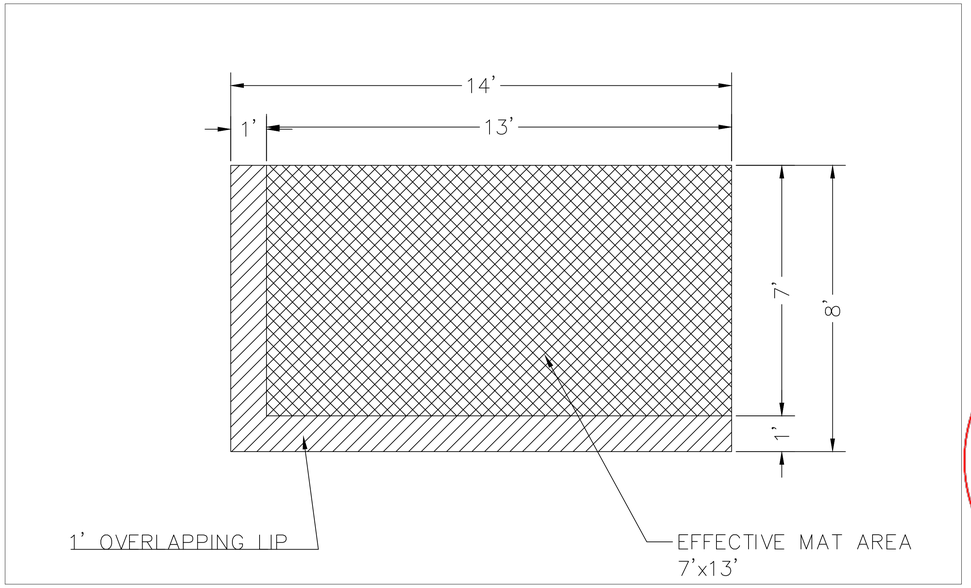
PROJECT TITLE

FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR	SEAL :
APPROVED BY : M. MADKOUR	

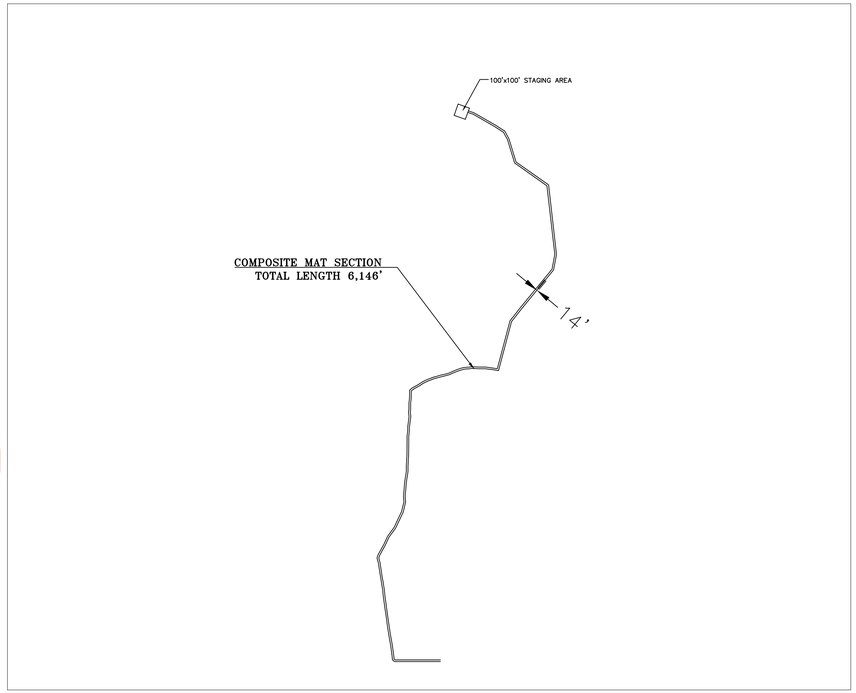
FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :	SHEET
DATE : MAY 2012	C2.08
SCALE : AS SHOWN	



SINGLE MAT DIMENSIONS

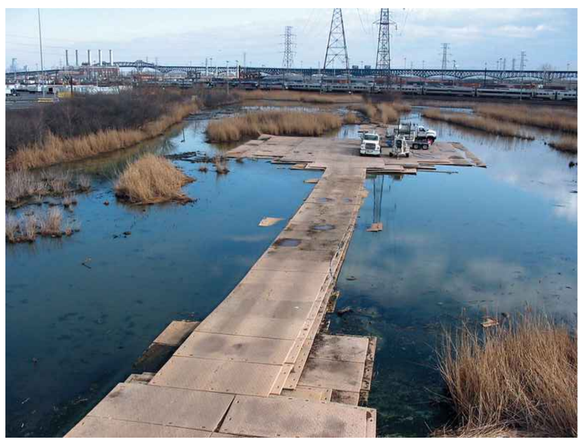
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers



TEMPORARY ACCESS ROAD
COMPOSITE MAT SECTION

NOTES: FOR RESTORATION

- AS SOON AS BACKFILLING OF THE CUT CHANNEL IS COMPLETED AND STABILIZED, CONTRACTOR WILL REMOVE ALL COMPOSITE MATS.
- IF REMOVING THE COMPOSITE MATS REVEALED THE PRESENCE OF RUTS (MORE THAN 6" HIGH) DUE TO HAULING ACTIVITIES, CONTRACTOR WILL RE-GRADE THE RUTS TO EVEN SURFACE.
- RESTORE AND RE-VEGETATE ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION.







EXAMPLES OF COMPOSITE MAT APPLICATIONS

SHEET TITLE
COMPOSITE MAT DETAILS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY :
M. MADKOUR

APPROVED BY :
M. MADKOUR

SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :

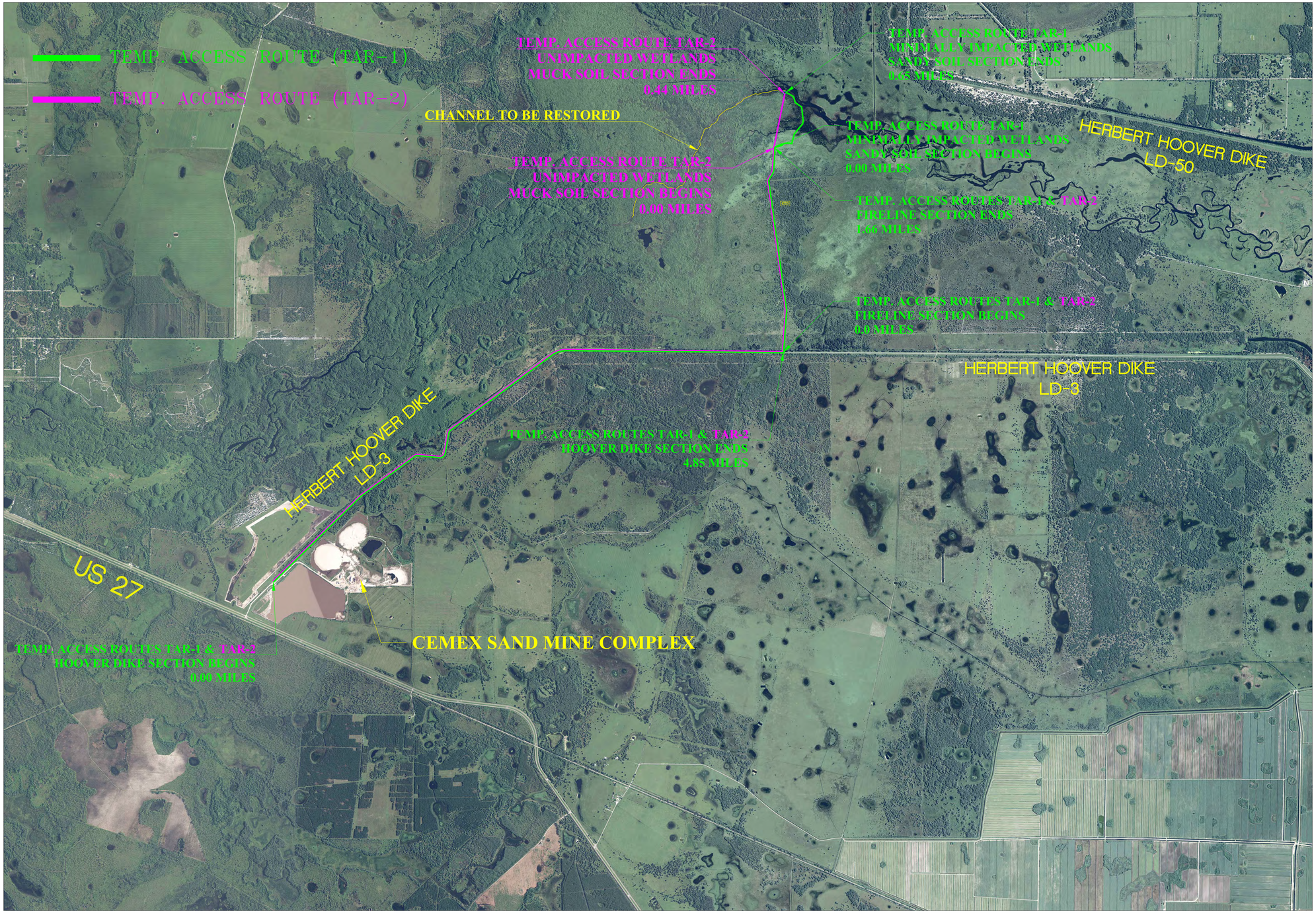
DATE :
MAY 2012

SCALE :
AS SHOWN

SHEET
C2.09

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

NORTH

SHEET TITLE
TEMPORARY ACCESS ROUTE
ALTERNATIVES TAR-1 & TAR-2

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR	SEAL :
APPROVED BY : M. MADKOUR	

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :	SHEET
DATE : MAY 2012	C2.10
SCALE : AS SHOWN	

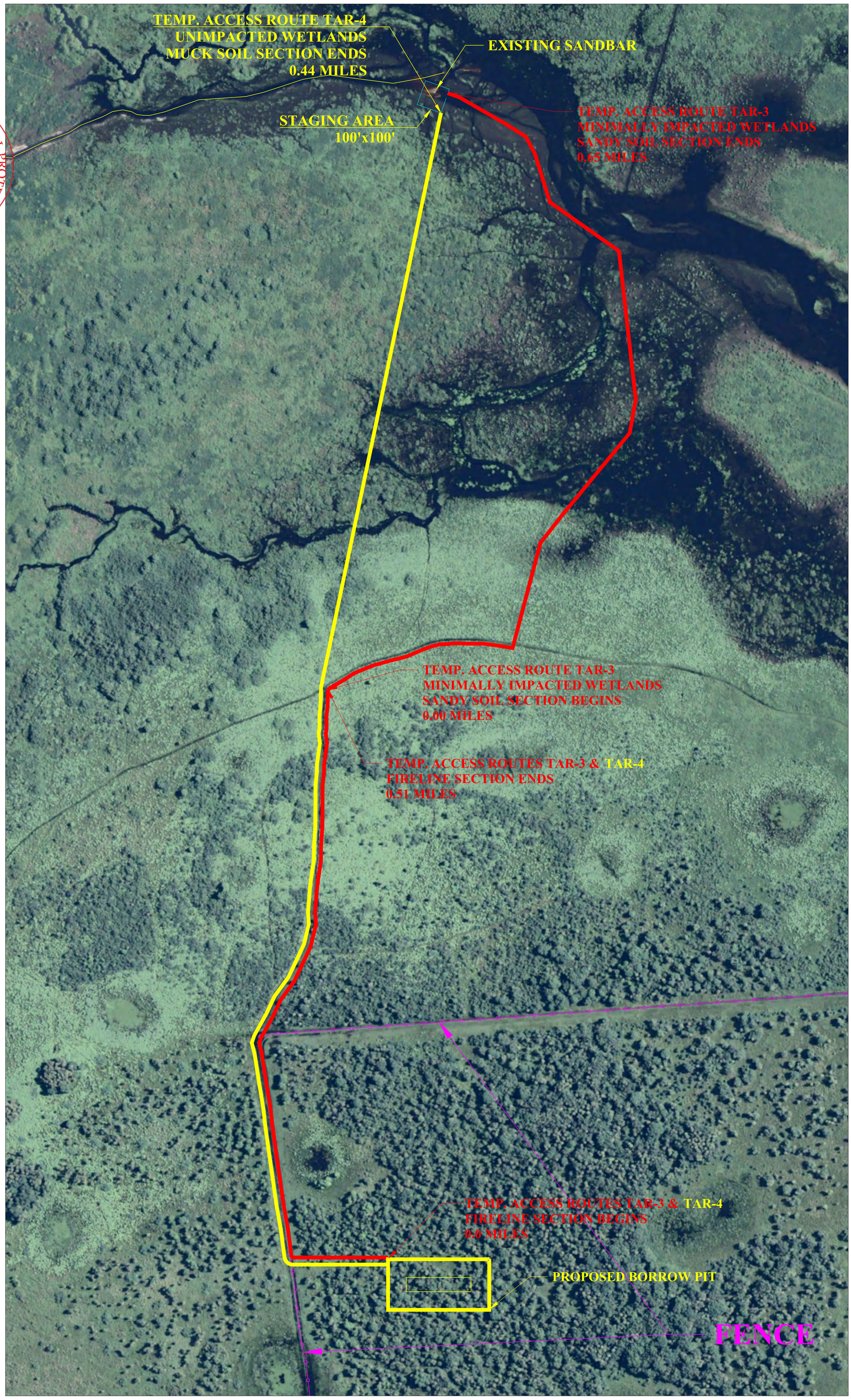
Image Information:

Image Date: October, 2010

Provider: U.S. Department of Agriculture

Aerial Photography Field Office

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

NORTH

PROJECT NO. :

DATE : MAY 2012

SCALE : AS SHOWN

SHEET C2.11

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-4551

DRAWN BY : M. MADKOUR

APPROVED BY : M. MADKOUR

SEAL :

PROJECT TITLE

FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

SHEET TITLE

TEMPORARY ACCESS ROUTE
ALTERNATIVES TAR-3 & TAR-4

Image Information:

Image Date: October, 2010

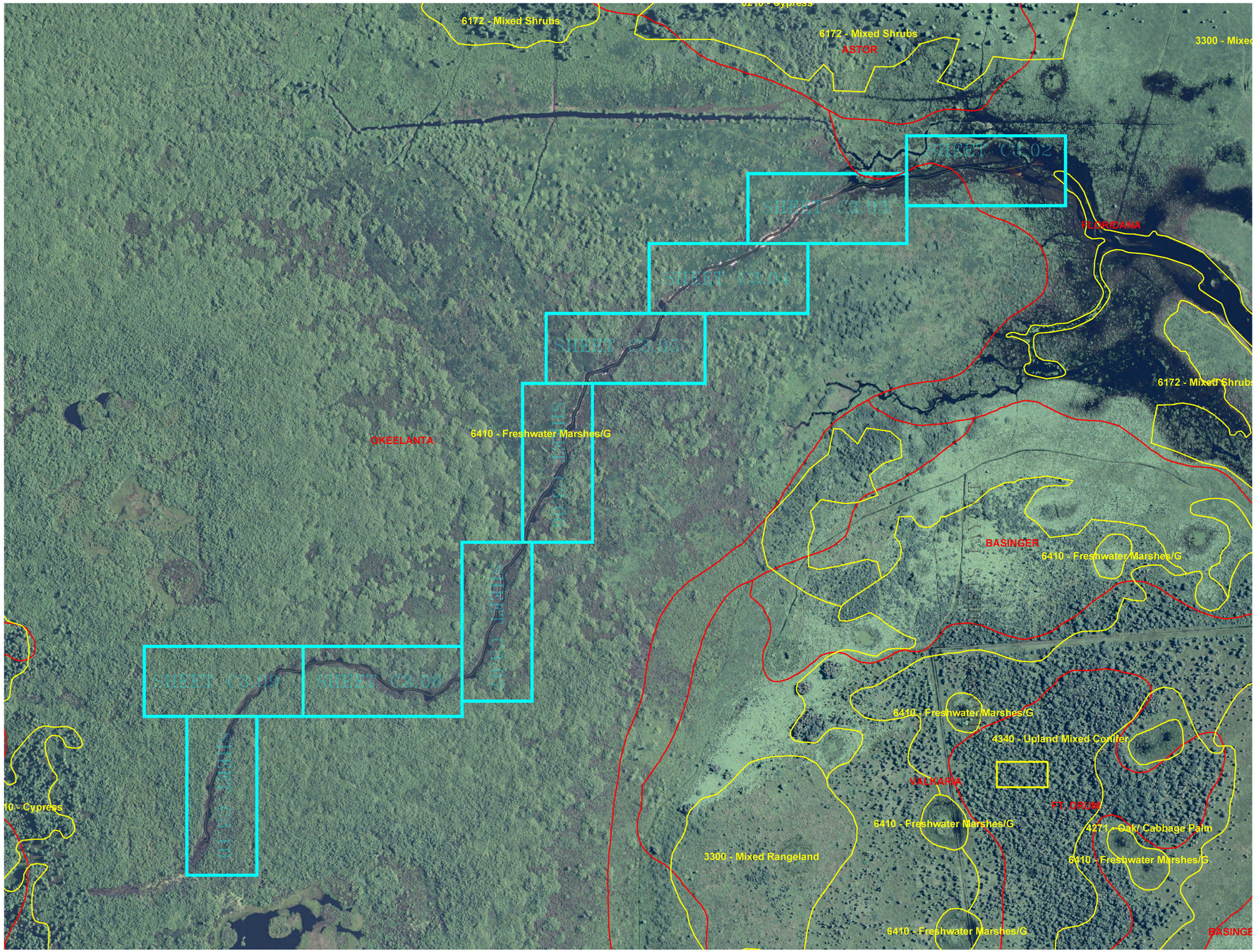
Provider: U.S. Department of Agriculture

Aerial Photography Field Office

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

NORTH



SHEET TITLE

CHANNEL SHEETS LAYOUT

PROJECT TITLE

FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

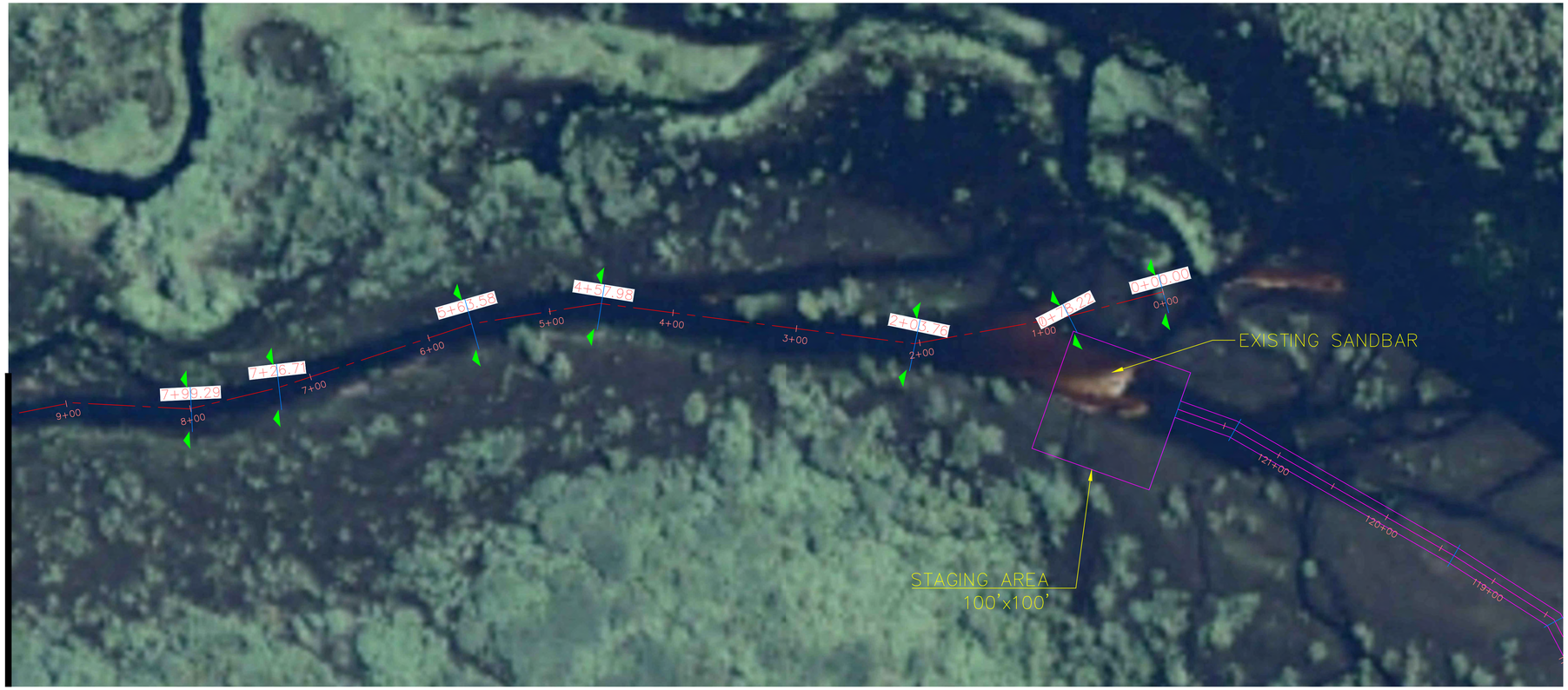
DRAWN BY : M. MADKOUR	SEAL :
APPROVED BY : M. MADKOUR	

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :	SHEET
DATE : MAY 2012	C3.01
SCALE : AS SHOWN	

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

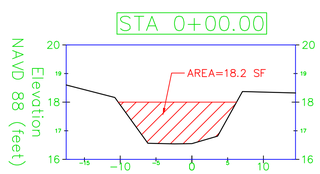
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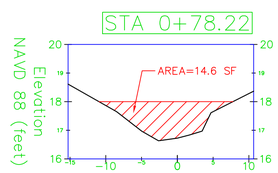


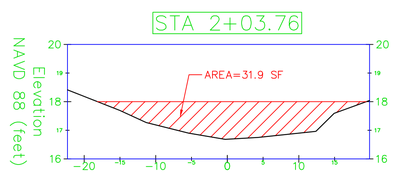
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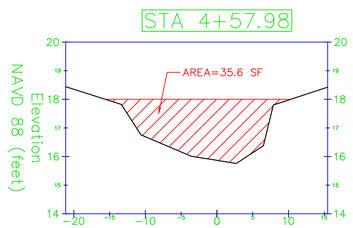
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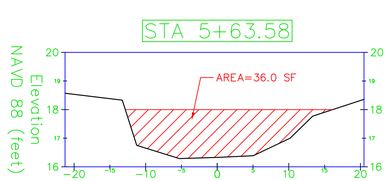


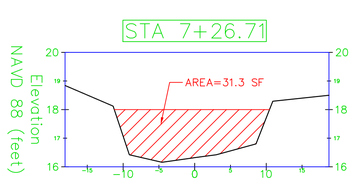


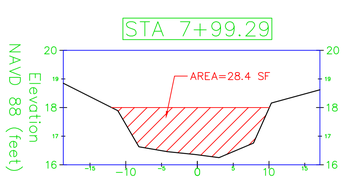












SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.02

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

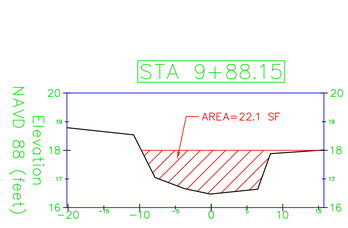
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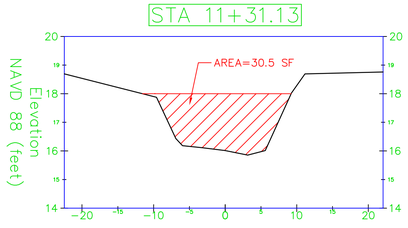


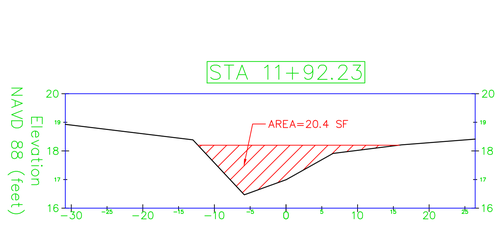
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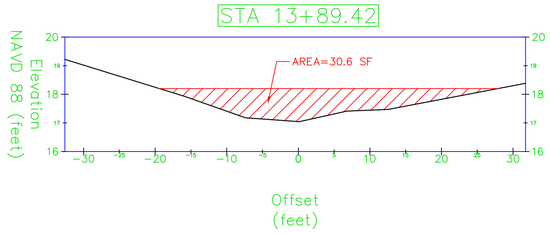
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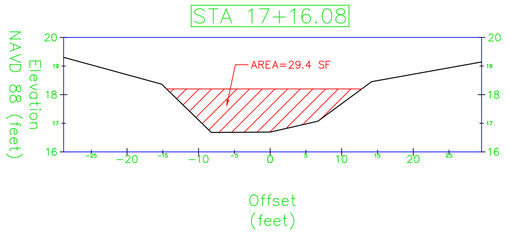
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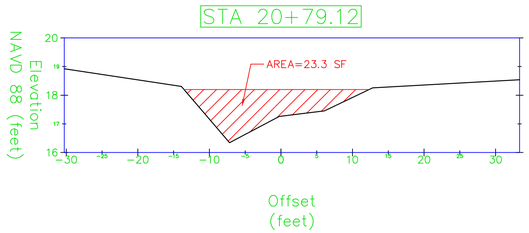












DEPARTMENT OF ENVIRONMENTAL PROTECTION
South District
Fort Myers
22-0303652-002
Permit Number

SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.03

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

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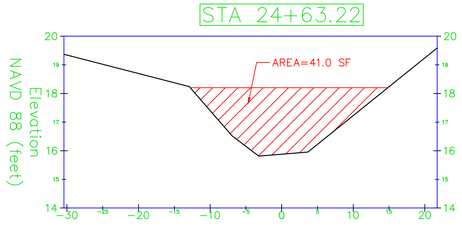
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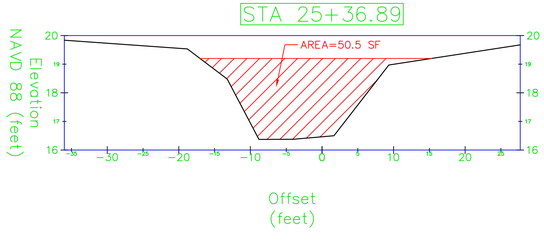


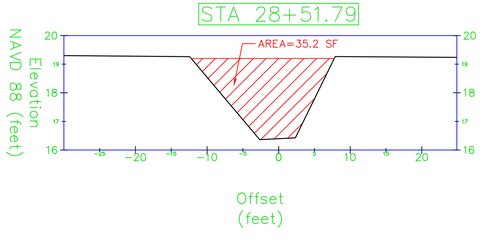
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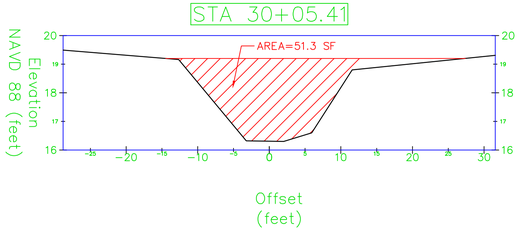
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DEPARTMENT OF ENVIRONMENTAL PROTECTION
South District
Fort Myers
Permit Number
22-0303652-002









SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5031

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.04

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

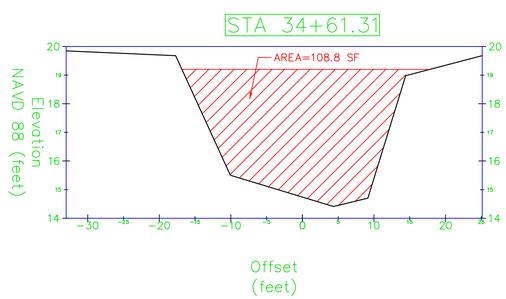
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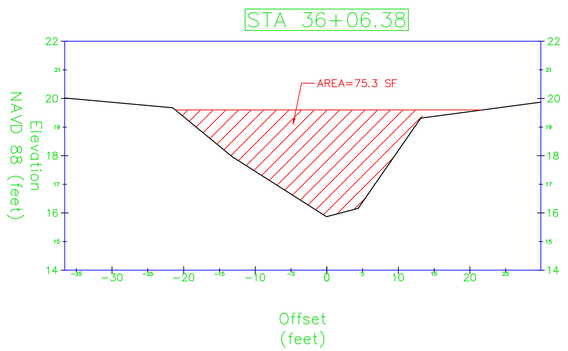
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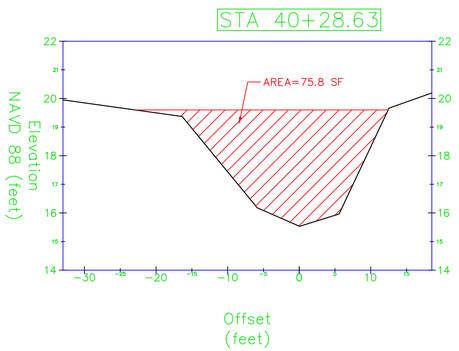


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MATCHING LINE SHEET C3.06







DEPARTMENT OF ENVIRONMENTAL PROTECTION
South District
Fort Myers
22-0303652-002
Permit Number

SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.05

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

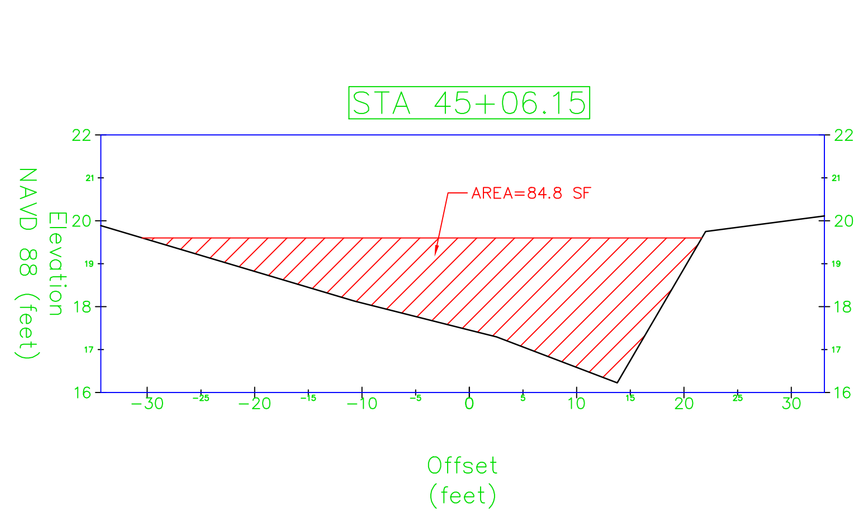
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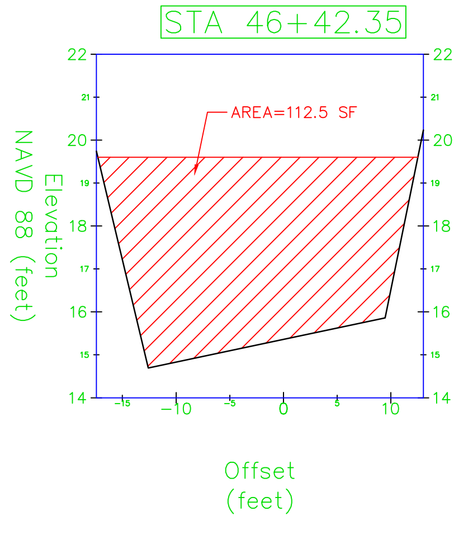
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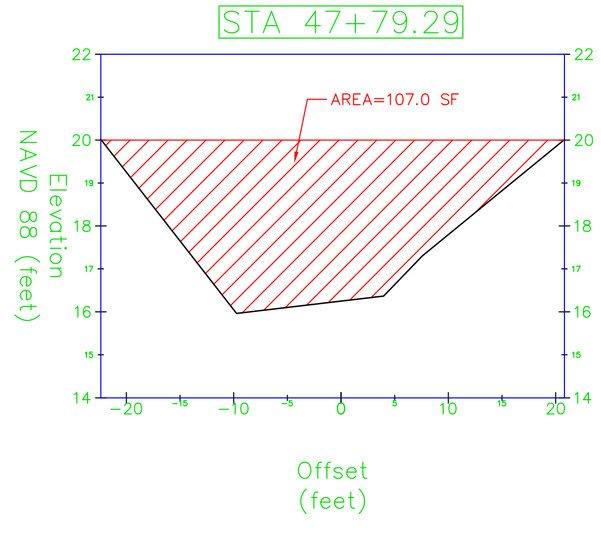


MATCHING LINE SHEET C3.07

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
South District
Fort Myers
Permit Number
22-0303652-002

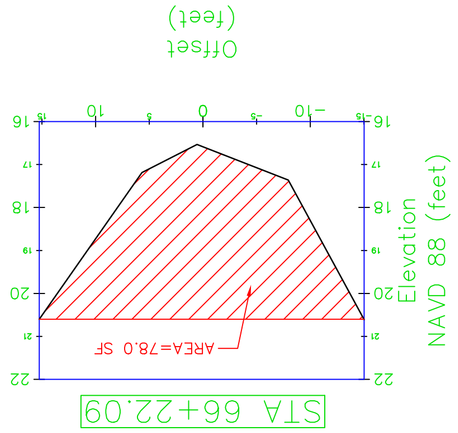
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CHANNEL PLAN VIEW
AND CROSS SECTIONS

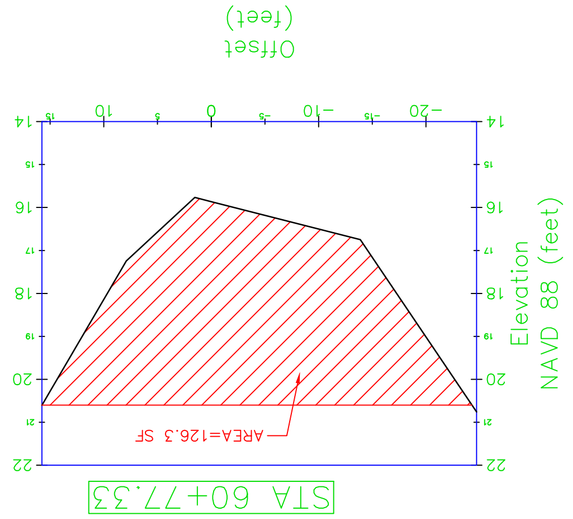
PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

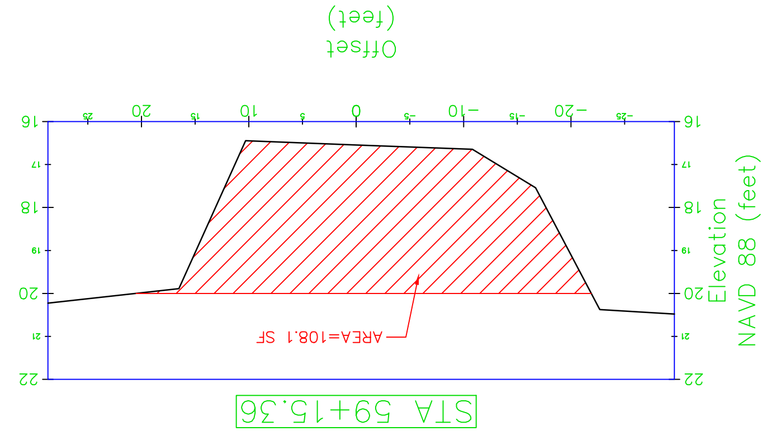
DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

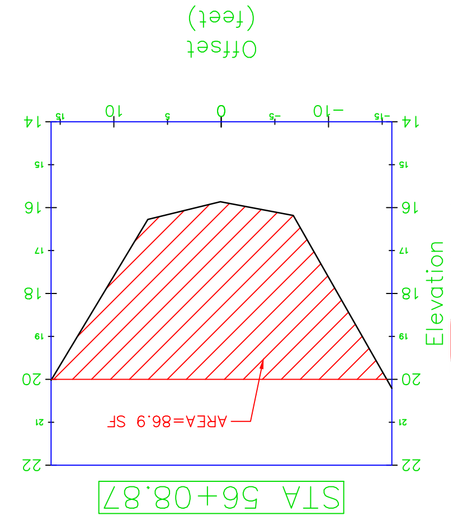
FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.06









DEPARTMENT OF ENVIRONMENTAL PROTECTION
Permit Number
22-0303652-002
South District
Fort Myers

NORTH

MATCHING LINE SHEET C3.08



0' 100' 200' 300' 400' 500'

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

MATCHING LINE SHEET C3.06

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

DRAWN BY : M. MADXOUR
SEAL :
APPROVED BY : M. MADXOUR

PLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(800) 636-0151

PROJECT NO. : SHEET
DATE : MAY 2012
SCALE : AS SHOWN

C3.07

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

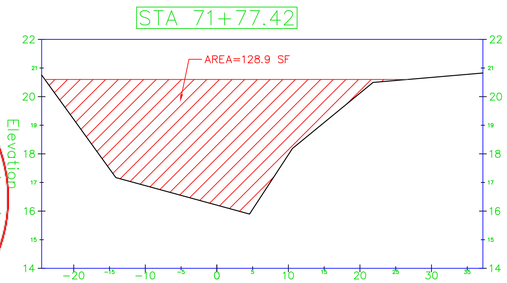
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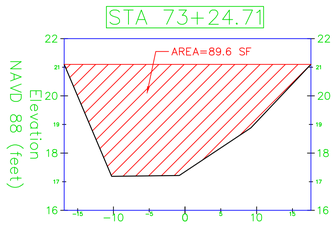
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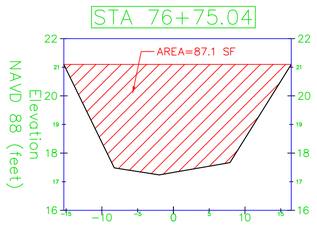


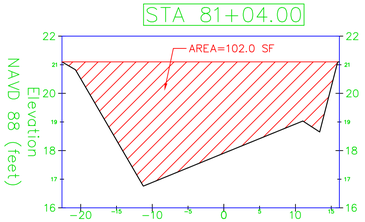
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NORTH









DEPARTMENT OF ENVIRONMENTAL PROTECTION
South District
Fort Myers
Permit Number
22-0303652-002

SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.08

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

0' 100' 200' 300' 400' 500'

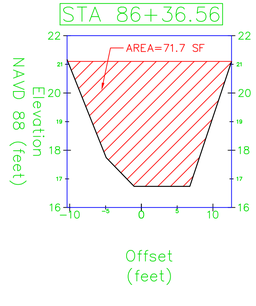


NORTH

MATCHING LINE SHEET C3.08

MATCHING LINE SHEET C3.10





SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-0531

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C3.09

Image Information:
Image Date: October, 2010
Provider: U.S. Department of Agriculture
Aerial Photography Field Office

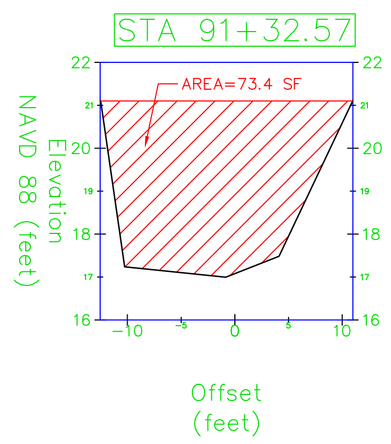
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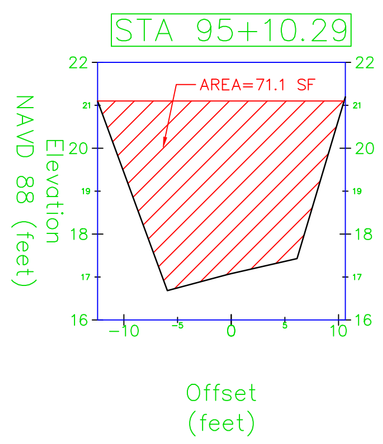


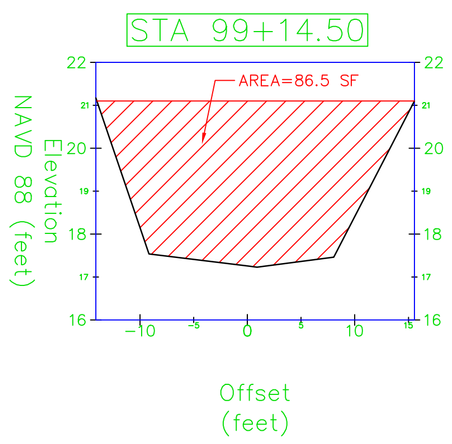
MATCHING LINE SHEET C3.09

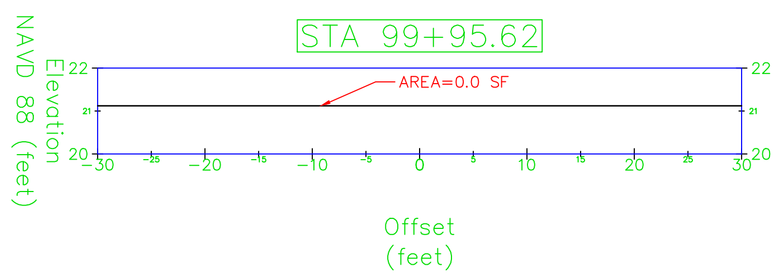
NORTH











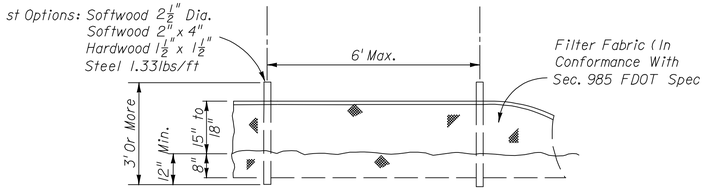
SHEET TITLE
CHANNEL PLAN VIEW
AND CROSS SECTIONS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

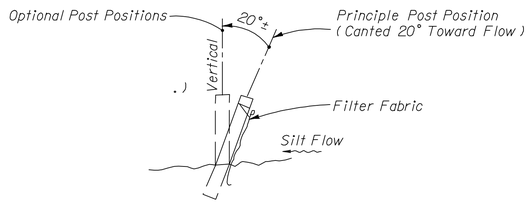
DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
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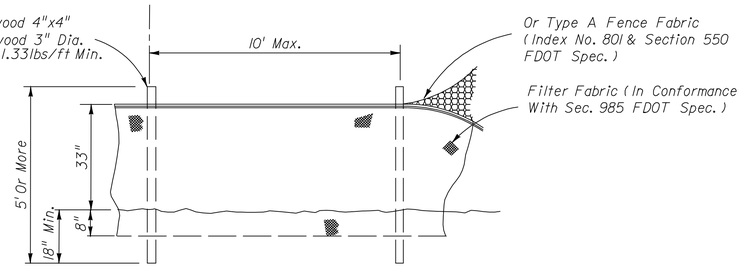


ELEVATION

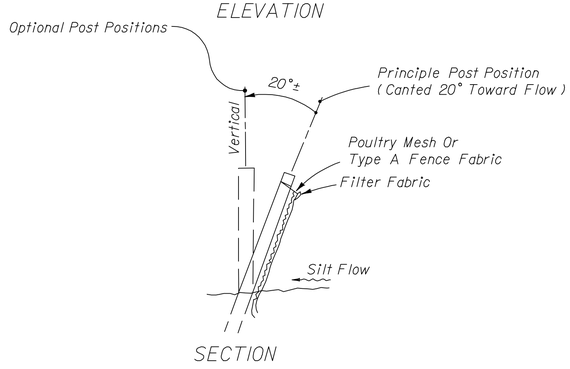


SECTION

TYPE III SILT FENCE



ELEVATION



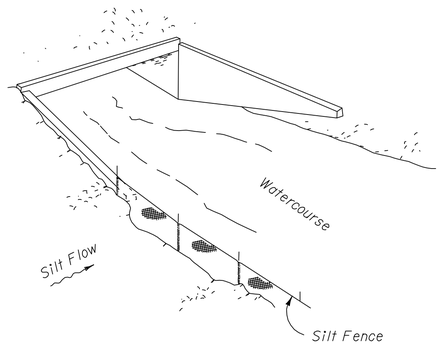
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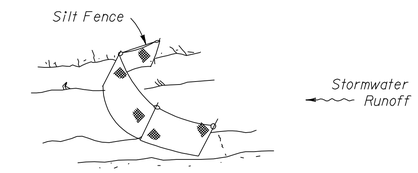
TYPE IV SILT FENCE

ENVIRONMENTAL PROTECTION DEPARTMENT OF
South District
Fort Myers
22-0303652-002
Permit Number

NOTES FOR SILT FENCES

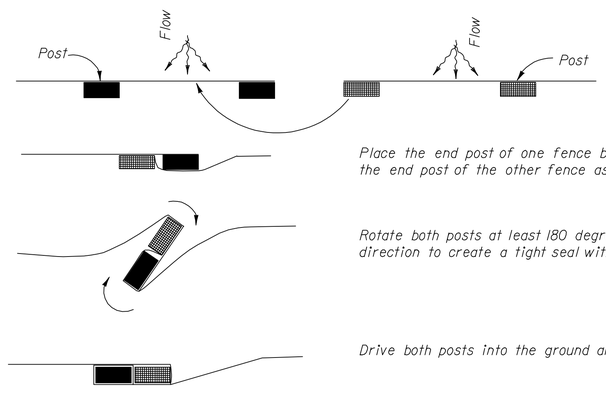
1. Type III Silt Fence to be used at most locations.
2. Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested is where fill slope is 1:2 or steeper and length of slope exceeds 25 feet.
3. Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.
4. Where used as slope protection, Silt Fence is to be constructed on 0% longitudinal grad to avoid channelizing runoff along the length of the fence.





Silt Fence Protection in Ditches with Intermittent Flow

SILT FENCE APPLICATIONS



PLAN VIEW

JOINING TWO SILT FENCES

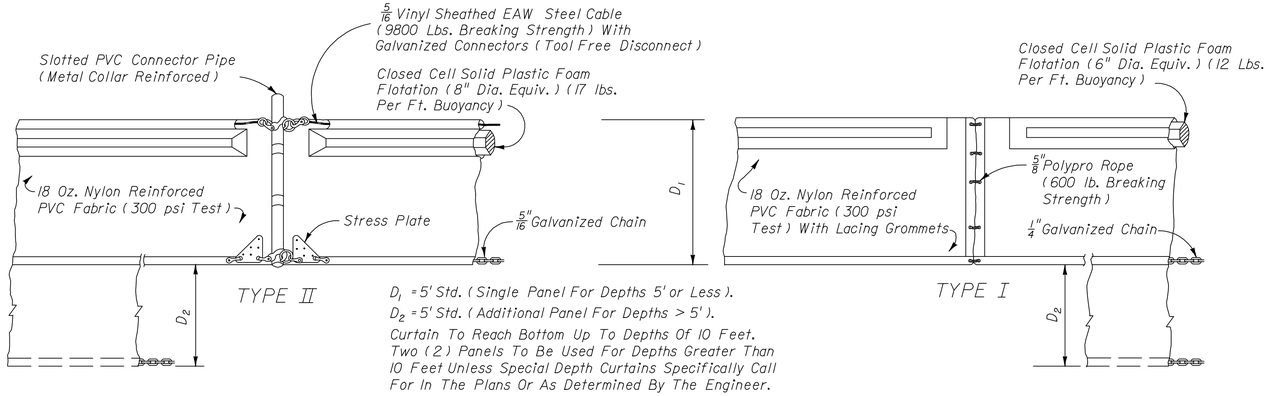
SHEET TITLE
EROSION CONTROL DETAILS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR	SEAL :
APPROVED BY : M. MADKOUR	

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5521

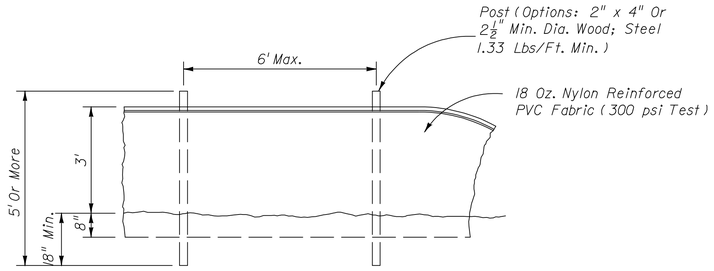
PROJECT NO. :	SHEET
DATE : MAY 2012	C4.01
SCALE : AS SHOWN	



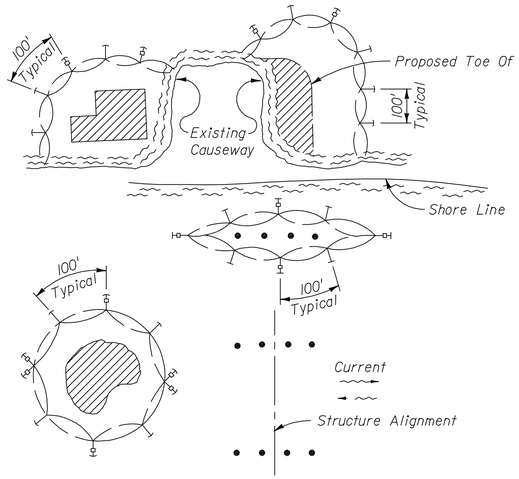
D_1 = 5' Std. (Single Panel For Depths 5' or Less).
D_2 = 5' Std. (Additional Panel For Depths > 5').
Curtain To Reach Bottom Up To Depths Of 10 Feet. Two (2) Panels To Be Used For Depths Greater Than 10 Feet Unless Special Depth Curtains Specifically Call For In The Plans Or As Determined By The Engineer.

NOTICE: COMPONENTS OF TYPES I AND II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.

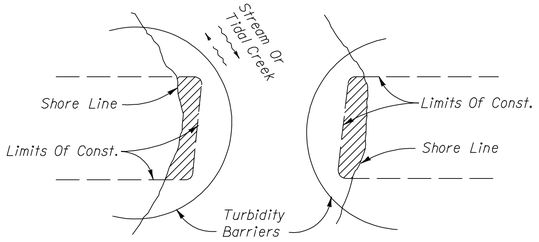
FLOATING TURBIDITY BARRIERS



STAKED TURBIDITY BARRIER



LEGEND
- Pile Locations
- Dredge Or Fill Area
- Mooring Buoy w/Anchor
- Anchor
- Barrier Movement Due To Current Action



NOTES:
1. Turbidity barriers are to be used in all permanent bodies of water regardless of water depth.
2. Number and spacing of anchors dependent on current velocities.
3. Deployment of barrier around pile locations may vary to accommodate construction operations.
4. Navigation may require segmenting barrier during construction operations.

Note:
Turbidity barriers for flowing streams and tidal creeks may be either floating, or staked types or any combinations of types that will suit site conditions and meet erosion control and water quality requirements. The barrier type(s) will be at the Contractors option unless otherwise specified in the plans, however payment will be under the pay item(s) established in the plans for Floating Turbidity Barrier and/or Staked Turbidity Barrier. Posts in staked turbidity barriers to be installed in vertical position unless otherwise directed by the Engineer.

TURBIDITY BARRIER APPLICATIONS

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
South District
Fort Myers
Permit Number
22-0303652-002

SHEET TITLE
EROSION CONTROL DETAILS

PROJECT TITLE
FISHEATING CREEK WMA
COWBONE MARSH
CHANNEL RESTORATION

DRAWN BY : M. MADKOUR
APPROVED BY : M. MADKOUR
SEAL :

FLORIDA FISH & WILDLIFE CONSERVATION COMMISSION
620 SOUTH MERIDIAN STREET
TALLAHASSEE, FL 32399
(850) 488-5531

PROJECT NO. :
DATE : MAY 2012
SCALE : AS SHOWN
SHEET C4.02

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONSOLIDATED NOTICE OF PERMIT ISSUANCE
FOR ERP ACTIVITIES ON SOVEREIGN SUBMERGED LANDS

The Department of Environmental Protection gives notice of its issuance of an environmental resource permit modification, No. 22-0303652-002, and authorization to use sovereign submerged land to Florida Fish and Wildlife Conservation Commission, c/o Mahmoud S. Madkour, Ph.D., P.E., 620 S. Meridian Street, Tallahassee, Florida 32399, to maintain the activities previously authorized under DEP file No. 22-0303652-001; additionally, to complete the restoration of Cowbone Marsh, the permittee is authorized to backfill the channel to match the surrounding grade (+/- 6-inches) with approximately 27,000 cubic yards of material, commencing at the downstream end and working upstream; the permit also authorizes the construction of a temporary access road, approximately 1.164 miles, through uplands and wetlands, the construction of a 100-foot square staging area in wetlands, within the Fisheating Creek Wildlife Management Area, and the construction of a borrow pit within uplands, approximately 2 acres in size and up to 30 feet deep, on Parcel A27-40-31-A00-0010-0000, owned by a private entity. The project is located The activities authorized by this Permit and state-owned submerged lands authorization are located within Fisheating Creek Wildlife Management Area, and Parcel A27-40-31-A00-0010-0000 Sections 27, 28, 32, and 33, Township 40 South, Range 31 East, Glades County, as shown on attachments.

The application is available for public inspection from 8:00 a.m. to 5:00 p.m. Monday through Friday except for legal holidays, at the Department of Environmental Protection, South District Office, 2295 Victoria Avenue, Suite 364, Fort Myers, Florida 33901.

This permit and consent to use sovereign submerged lands are hereby granted. This action is final and effective on the date filed with the Clerk of the Department unless a sufficient petition for an administrative hearing is filed under Sections 120.569 and 120.57 of the Florida Statutes, before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below. If a sufficient petition for an administrative hearing is timely filed, this action automatically becomes only proposed agency action on the application, subject to the result of the administrative review process. Therefore, on the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because an administrative hearing may result in the reversal or substantial modification of this action, the applicant is advised not to commence construction or other activities until the deadlines noted below for filing a petition for an administrative hearing or request for an extension of time have expired.

Mediation is not available.

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

Under Rule 62-110.106(4) of the Florida Administrative Code, a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

If a timely and sufficient petition for an administrative hearing is filed, other persons whose substantial interests will be affected by the outcome of the administrative process have the right to petition to intervene in the proceeding. Intervention will be permitted only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

In accordance with Rule 62-110.106(3), petitions for an administrative hearing by the applicant must be filed within 14 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under Section 120.60(3) of the Florida Statutes, must be filed within 14 days of publication of the notice or within 14 days of receipt of the written notice, whichever occurs first. Under Sections 120.60(3) of the Florida Statutes, however any person who has asked the Department for notice of agency action may file a petition within 14 days of receipt of such notice, regardless of the date of publication.

The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition for an administrative hearing within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57 of the Florida Statutes.

A petition that disputes the material facts on which the Department's action is based must contain the following information:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name, address and telephone number of the petitioner; the name, address and
telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;
(c) A statement of when and how the petitioner received notice of the agency decision;
(d) A statement of all disputed issues of material fact. If there are none, the petition
must so indicate;
(e) A concise statement of the ultimate facts alleged, including the specific facts that
the petitioner contends warrant reversal or modification of the agency's proposed action;
(f) A statement of the specific Rules or Statutes that the petitioner contends require
reversal or modification of the agency's proposed action; and
(g) A statement of the relief sought by the petitioner, stating precisely the action that
the petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rules 28-106.301.

Under Sections 120.569(2)(c) and (d) of the Florida Statutes, a petition for administrative hearing must be dismissed by the agency if the petition does not substantially comply with the above requirements or is timely filed.

This permit and consent to use sovereign submerged lands constitutes an order of the Department. Subject to the provisions of paragraph 120.68(7)(a) of the Florida Statutes, which may require a remand for an administrative hearing, the applicant has the right to seek judicial review of the order under Sections 120.68 of the Florida Statutes, by the filing of a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when the order is filed with the Clerk of the Department. The applicant, or any party within the meaning of Section 373.114(1)(a) or 373.4275 of the Florida Statutes, may also seek appellate review of the order before the Land and Water

Adjudicatory Commission under Section 373.114(1) or 373.4275 of the Florida Statutes. Requests for review before the Land and Water Adjudicatory Commission must be filed with the Secretary of the Commission and served on the Department within 20 days from the date when the order is filed with the Clerk of the Department.