DEPARTMENT OF THE ARMY PERMIT

Permittee: Brevard County BCC
2725 Judge Fran Jamieson Way
Viera, Florida 32940

Permit No: SAJ-2006-5472(IP-AWP)

Issuing Office: U.S. Army Engineer District, Jacksonville

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: The placement of clean fill material in 11.97 acres of jurisdictional waters of the United States (wetlands) for the extension of State Road (SR) 404 west from U.S. Highway 1 to Interstate 95 (I-95). The work described above is to be completed in accordance with the 19 pages of drawings and 4 attachments affixed at the end of this permit instrument.

Project Location: The proposed project is located in Sections 24, 25, & 26, Township 26 South, Range 36 East, Melbourne, Florida. The project as proposed will impacts waters of the United States (wetlands), which are hydrologically connected to the Indian River via drainage ditches.

Directions to site: From the intersection of US Highway 1 and SR 404 proceed west. The project will extend from U.S. Highway 1 to I-95. The extension will incorporate the existing Grand Haven subdivision.

Latitude & Longitude: Latitude 28.19342 North
Longitude 80.6935 West

Permit Conditions

General Conditions:

1. The time limit for completing the work authorized ends on April 7, 2013. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature and the mailing address of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to

ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee agrees to implement and follow the *Standard Protections Measures for the Eastern Indigo Snake* over the entire project site. The *Standard Protections Measures for the Eastern Indigo Snake* are included as Attachment 2 of this permit instrument.

2. A Biological Opinion (BO) provided by the U.S. Fish and Wildlife Service (USFWS) indicates the construction of Pineda Extension will result in the loss of 4.92 acres of habitat occupied by two Florida scrub-jay families located on-site. The Florida scrub-jay is a federally listed species. The USFWS has provided reasonable and prudent measures and conservation recommendations in a BO, which shall be made apart of this DA permit.

3. This permit does not authorize you to take an endangered species, in particular two Florida scrub-jay families located on-site or any eastern indigo snake which may be located on-site. In order to legally take a listed species, you must have a separate authorization under the Endangered Species Act (ESA). The enclosed USFWS BO (Attachment 3) contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the BO. Your authorization under this DA permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached BO, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your DA permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its BO, and with the ESA.

4. Within 10 days from the date of initiating the authorized work, the Permittee shall provide to the Corps a written notification of the date of commencement of work authorized by this permit.

5. Prior to the initiation of any work authorized by this permit, the Permittee shall install erosion control measures around all work areas to prevent the displacement of fill material. Immediately after completion of the final grading of the land surface, all slopes, land surfaces, and filled areas adjacent to wetlands shall be stabilized using sod, degradable mats, or a combination of similar stabilizing materials to prevent erosion. The erosion control measures shall remain in place and be maintained until all authorized work has been completed and the site has been stabilized.

6. Within 30 days from the date of initiating the authorized work or 12 months from the effective date of this permit, whichever first occurs, the Permittee shall provide verification to the Corps that 8.3 federal mitigation bank credits have been purchased from the TM Econ Mitigation Bank (SAJ-2001-7089(IP-TSB)). The required verification shall reference this project's permit number (SAJ-2006-5472(IP-AWP)).

7. All reports, documentation and correspondence required by the conditions of this permit shall be submitted to the following address: U.S. Army Corps of Engineers, Regulatory Division, Enforcement Section, P.O. Box 4970, Jacksonville, FL 32232 and US Army Corps of Engineers, Cocoa Regulatory Field Office, Attn: Andrew Phillips, 400 High Point Drive, Suite 600, Cocoa, Florida 32926.

8. Within 60 days of completion of the authorized work or at the expiration of the construction window of this permit, whichever occurs first, the Permittee shall submit as-built drawings of the authorized work and a completed As-Built Certification Form (Attachment 3) to the Corps. The drawings shall be signed and sealed by a registered professional engineer and include the following:

a. A plan view drawing of the location of the authorized work footprint (as shown on the permit drawings) with an overlay of the work as constructed in the same scale as the attached permit drawings (8½-inch by 11-inch). The drawing should show all "earth disturbance," including wetland impacts, water management structures, and any on-site mitigation areas.

b. List any deviations between the work authorized by this permit and the work as constructed. In the event that the completed work deviates, in any manner, from the authorized work, describe on the As-Built Certification Form the deviations between the work authorized by this permit and the work as constructed. Clearly indicate on the as-built drawings any deviations that have been listed. Please note that the depiction and/or description of any deviations on the drawings and/or As-Built Certification Form does not constitute approval of any deviations by the U.S. Army Corps of Engineers.

c. The Department of the Army Permit number.

d. Include pre- and post-construction aerial photographs of the project site, if available.

9. In the event the permit is transferred, proof of delivery of a copy of the recorded conservation easement to the subsequent Permittee or Permittees must be submitted to the Corps together with the notification of permit transfer.

10. A representative of the Corps will be allowed to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of this permit.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the

circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

John Dennighoff for Brevard County 3/31/08
(PERMITTEE) (DATE)

John Dennighoff for Brevard County
(PERMITTEE NAME-PRINTED)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

7 APR 08
(DISTRICT ENGINEER) (DATE)
Paul L. Grosskruger
Colonel, U.S. Army
District Commander

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____
(TRANSFEREE-SIGNATURE) (DATE)

_____
(NAME-PRINTED)

_____
(ADDRESS)

_____
(CITY, STATE, AND ZIP CODE)

Attachments to Department of the Army Permit Number SAJ-2006-5472(IP-AWP)

1. PERMIT DRAWINGS: 19 pages, dated November 30, 2006

2. EASTERN INDIGO SNAKE PROTECTION MEASURES: 1 page

3. USFWS BIOLOGICAL OPINION: 34 pages

4. WATER QUALITY CERTIFICATION: Specific Conditions of the water quality permit/certification in accordance with General Condition number 5 on page 2 of this DA permit. 7 pages.

5. AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER: 1 page

WETLAND IMPACTS SUMMARY

WETLAND	DESCRIPTION	PERMANENT IMPACTS (Ac)		SECONDARY IMPACTS (Ac)	TOTAL IMPACT (Ac)	REMARKS
		FILL	Dredge			
12	1021+24.05	0.00	0.00	0.00	0.00	
11	1028+00 to 1033+50	2.78	0.64	2.70	6.12	
11A	1033+50 TO 1037+00	0.60	0.00	0.11	0.71	
10	1042+00 TO 1052+00	3.17	0.00	8.43	11.60	
7	1063+00 TO 1071+00	0.00	0.00	3.00	3.00	
4	1089+00 TO 1103+50	2.47	0.00	15.10	17.57	
	TOTALS:	9.02	0.64	29.43	39.00	

Rev. 11/29/06

RECEIVED
DEC 07 2006
Palm Bay Service Center

U.S. Army Corps of Engineers
Permit # SAJ-2006-5472
Date: 3/20/08
Attachment: 1

Engineer of Record:
PBSJ
License No. 24
AMY S. LUNDIN
P.E. # 56796
482 South Keller Road
Orlando, FL 32810
(407) 647-7275
www.pbsj.com

PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: IMPACT SUMMARY
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
SHEET 1 OF 19

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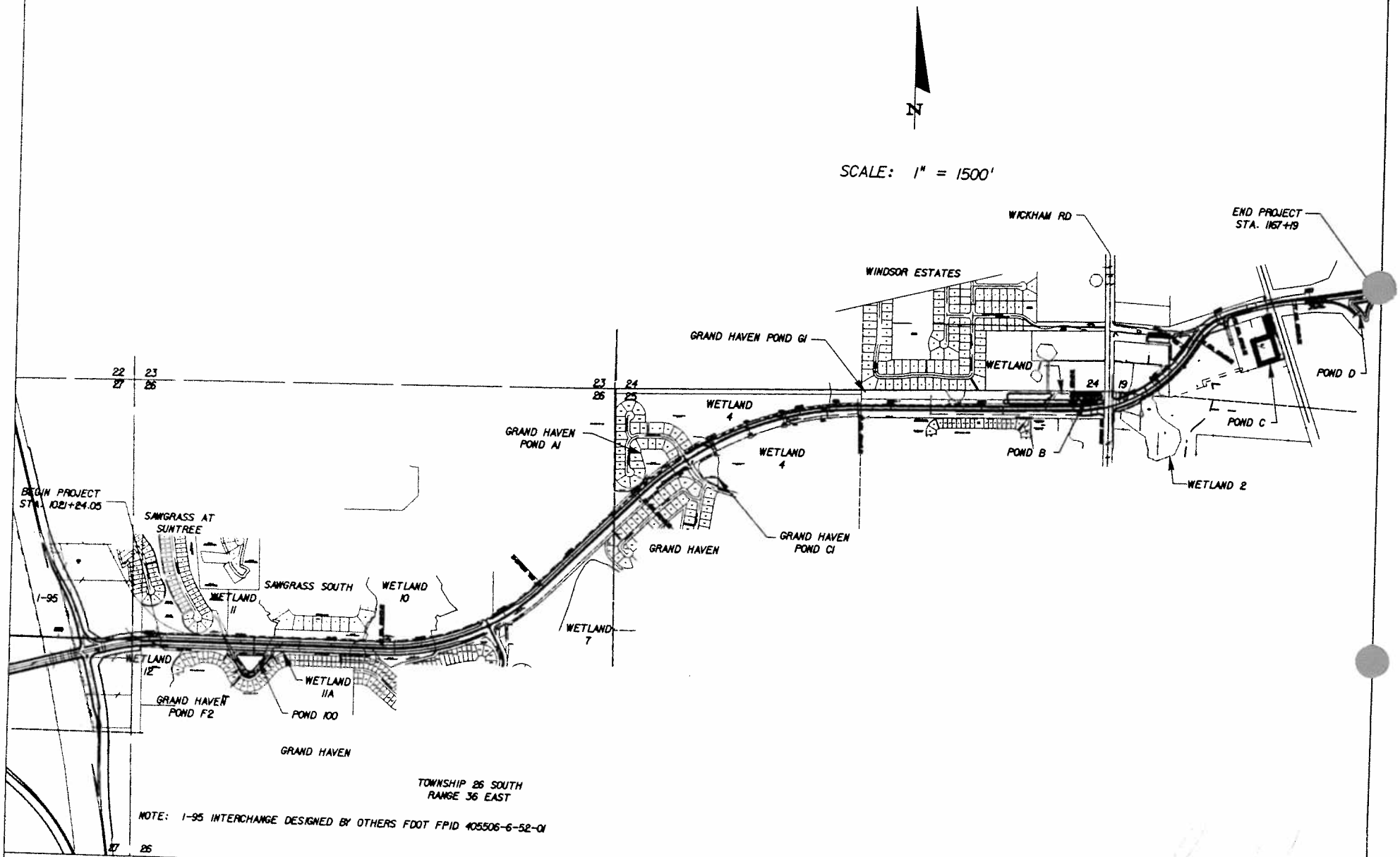

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P.E. # 56796

PBSJ
License No. 24

482 South Keller Road
Orlando, FL 32810
(407) 647-7275
www.pbsj.com

PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: OVERALL PLAN VIEW
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
SHEET 2 OF 19

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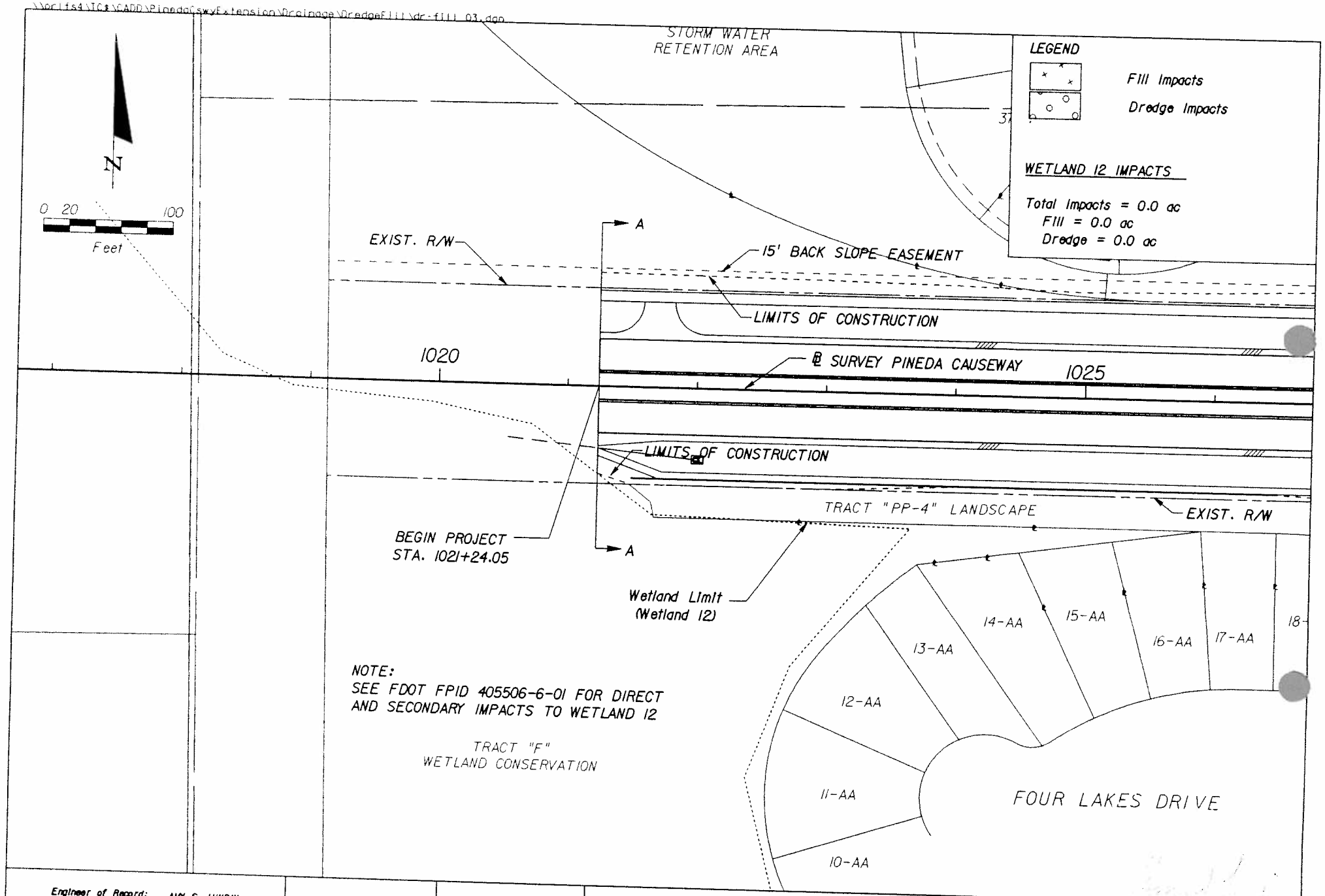

Engineer of Record: AMY S. LUNDIN P.E. # 56796

PBSJ
License No. 24

482 South Keller Road
Orlando, FL 32810
(407) 647-7275
www.pbsj.com

PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: WETLAND 12 IMPACTS - PLAN VIEW
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
SHEET 3 OF 19

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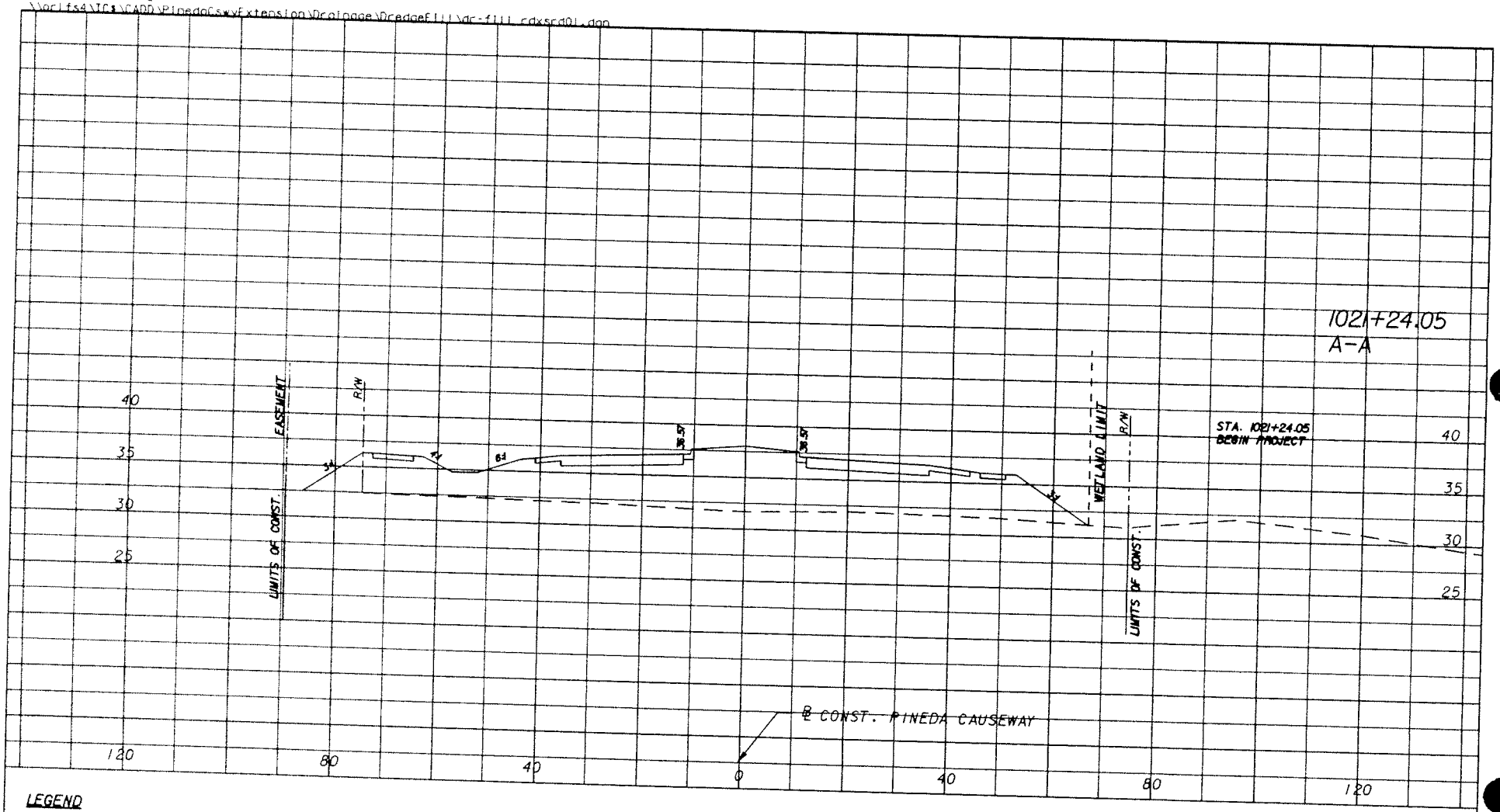

LEGEND

Fill Impacts

Dredge Impacts

Note:

1. SEE FDOT FPID 405506-6-52-01 for direct and secondary impacts to Wetland 12.

HORIZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 15'

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License No. 24

AMY S. LUNDIN
P.E. # 56796

482 South Keller Road
Orlando, FL 32810
(407) 647-7275
www.pbsj.com

PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: CROSS SECTION - WETLAND 12
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
SHEET 4 OF 19

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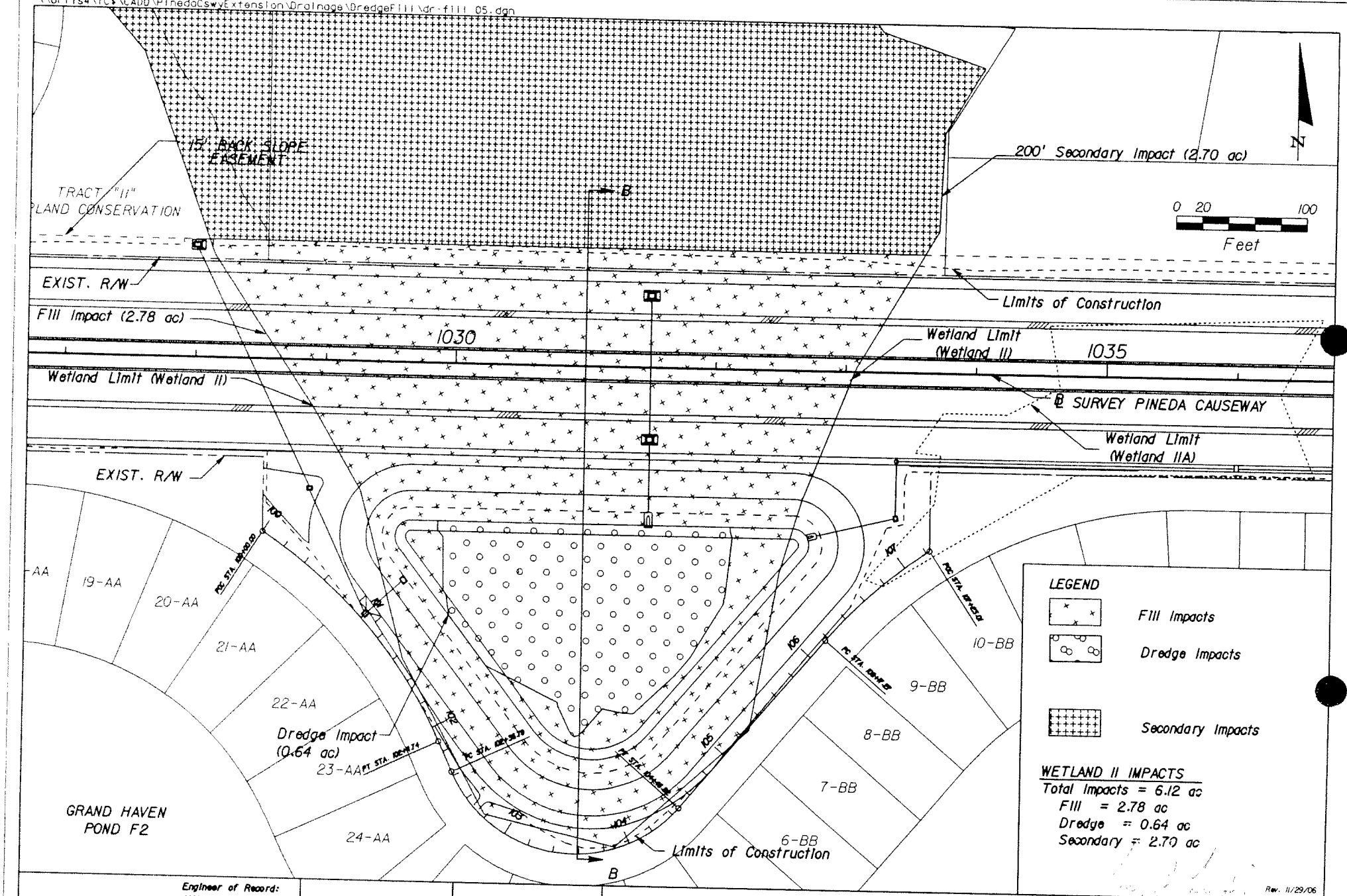

PBSJ
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P.E. # 56796

482 South Keller Road
Orlando, FL 32810
(407) 647-7275
www.pbsj.com

SEAL OF BREVARD COUNTY FLORIDA

PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: WETLAND II IMPACTS - PLAN VIEW
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
SHEET 5 OF 19

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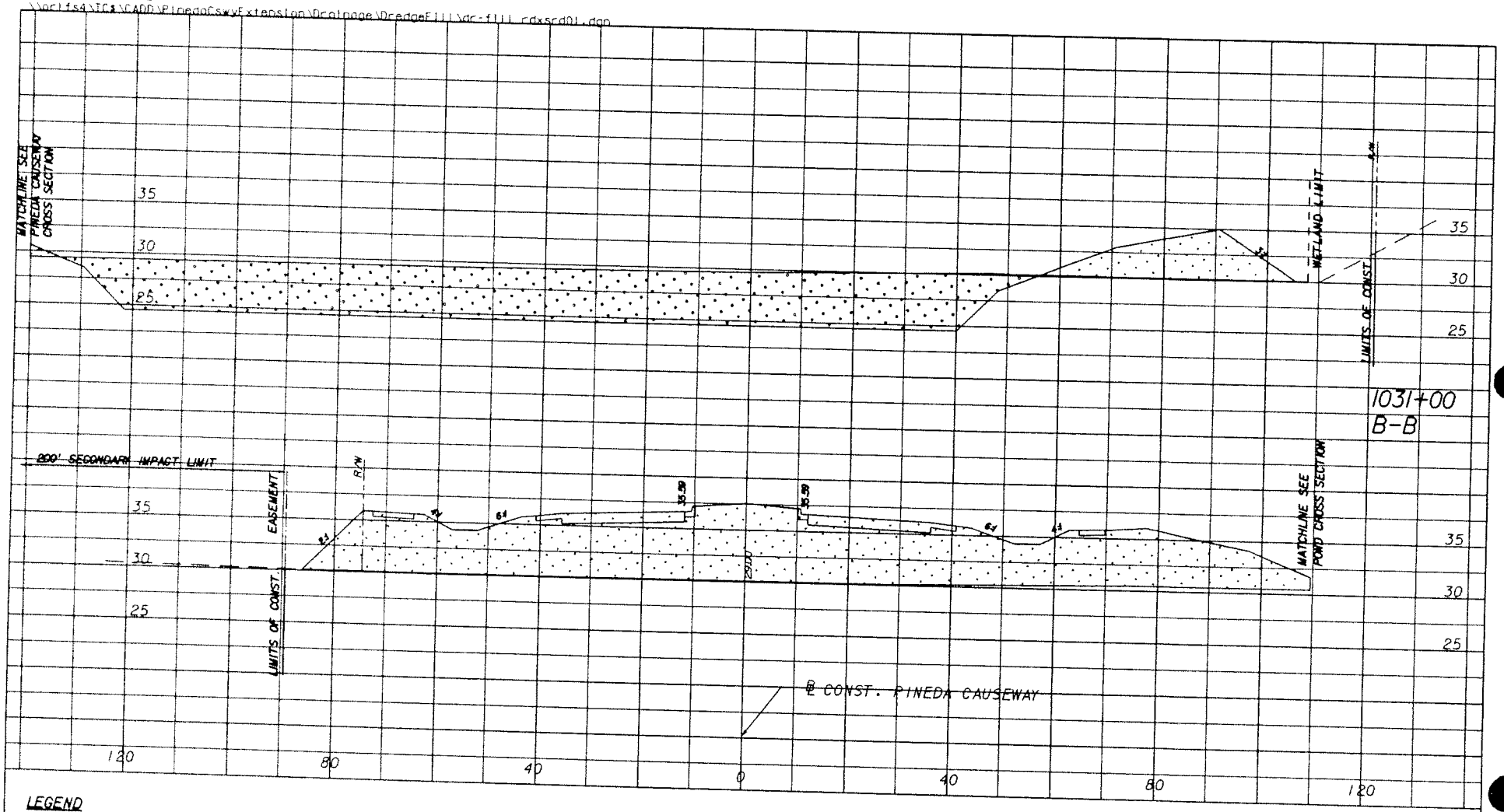

LEGEND

Fill Impacts

Dredge Impacts

HORZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 15'

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www.pbsj.com

SEAL OF BREVARD COUNTY FLORIDA

PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: CROSS SECTION - WETLAND II
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
SHEET 6 OF 19

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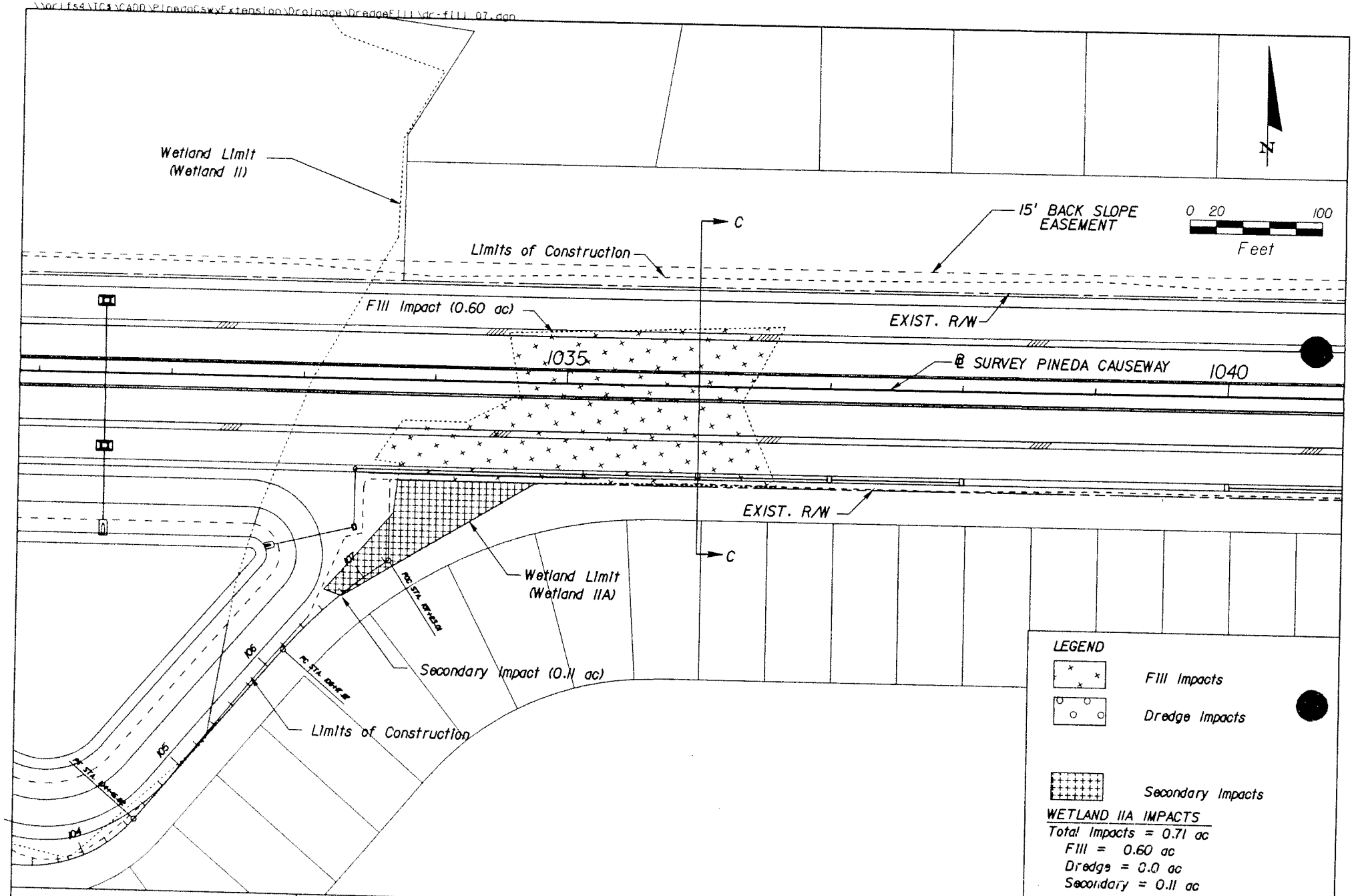

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PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: WETLAND IIA IMPACTS - PLAN VIEW
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
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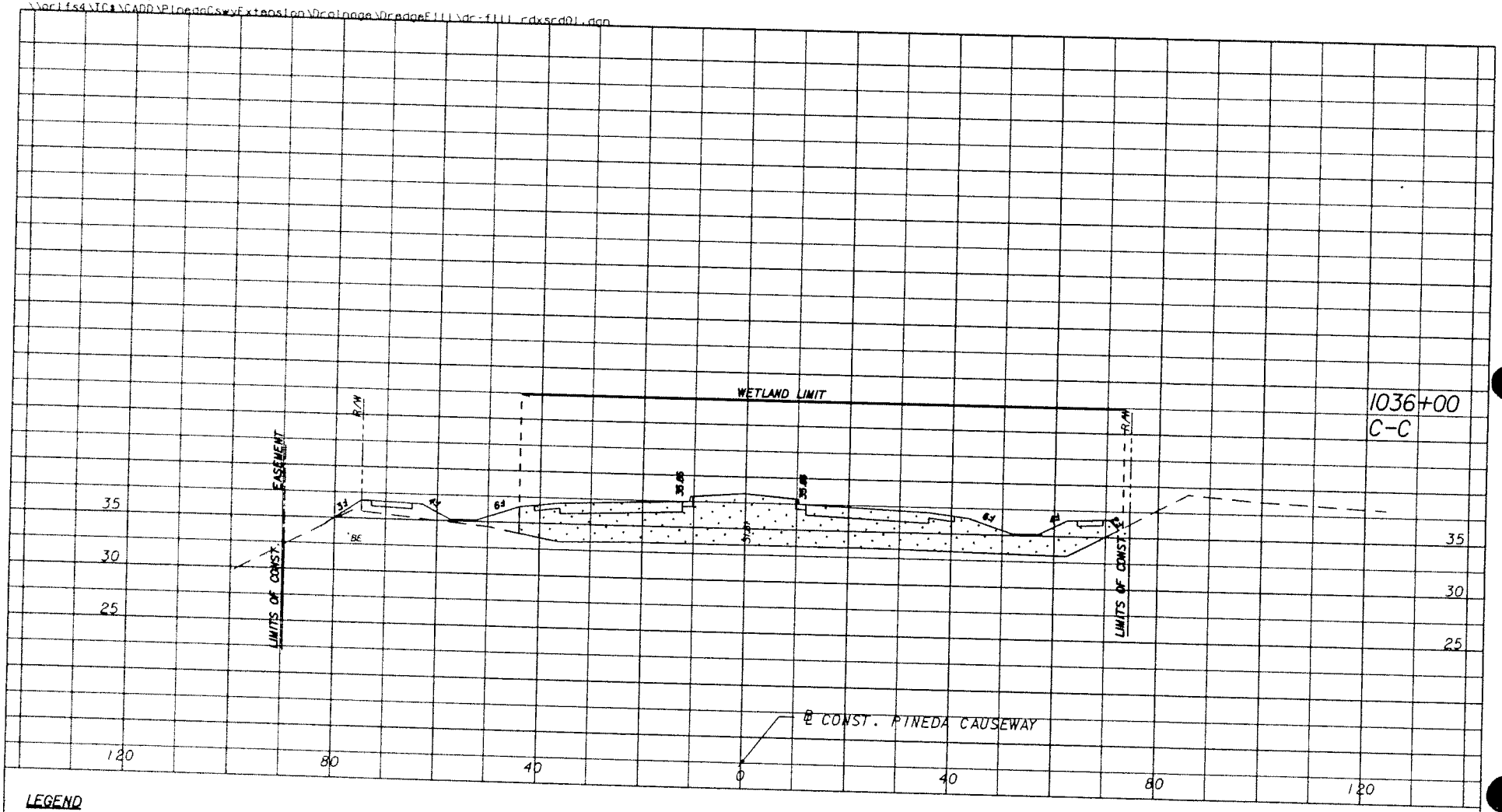

LEGEND

Fill Impacts

Dredge Impacts

HORZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 15'

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License No. 24

AMY S. LUNDIN
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482 South Keller Road
Orlando, FL 32810
(407) 647-7275
www.pbsj.com

PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: CROSS SECTION - WETLAND IIA
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
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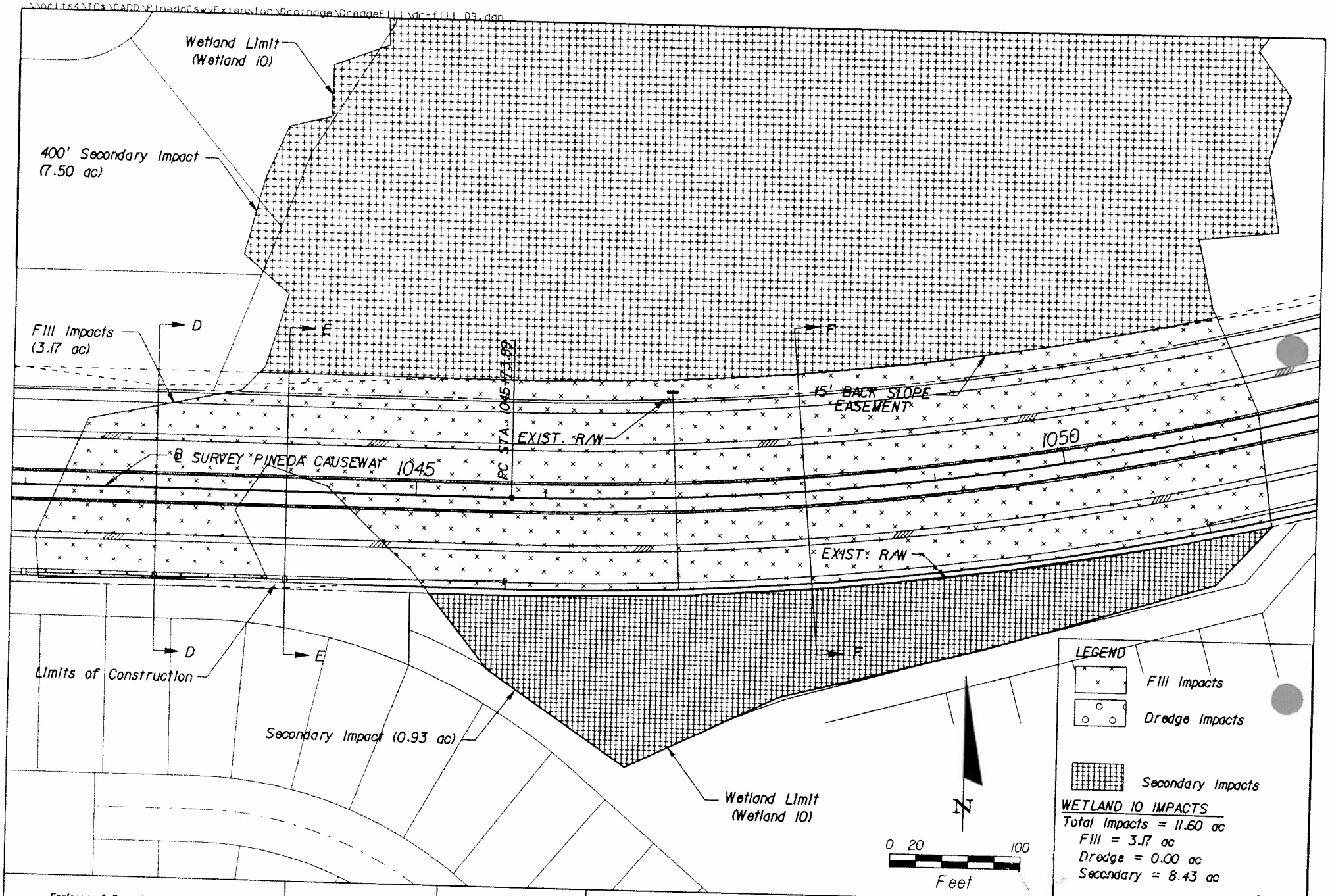

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PBSJ
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482 South Keller Road
Orlando, FL 32810
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www.pbsj.com

PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: WETLAND 10 IMPACTS - PLAN VIEW
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE: 11/30/06
SHEET 9 OF 19

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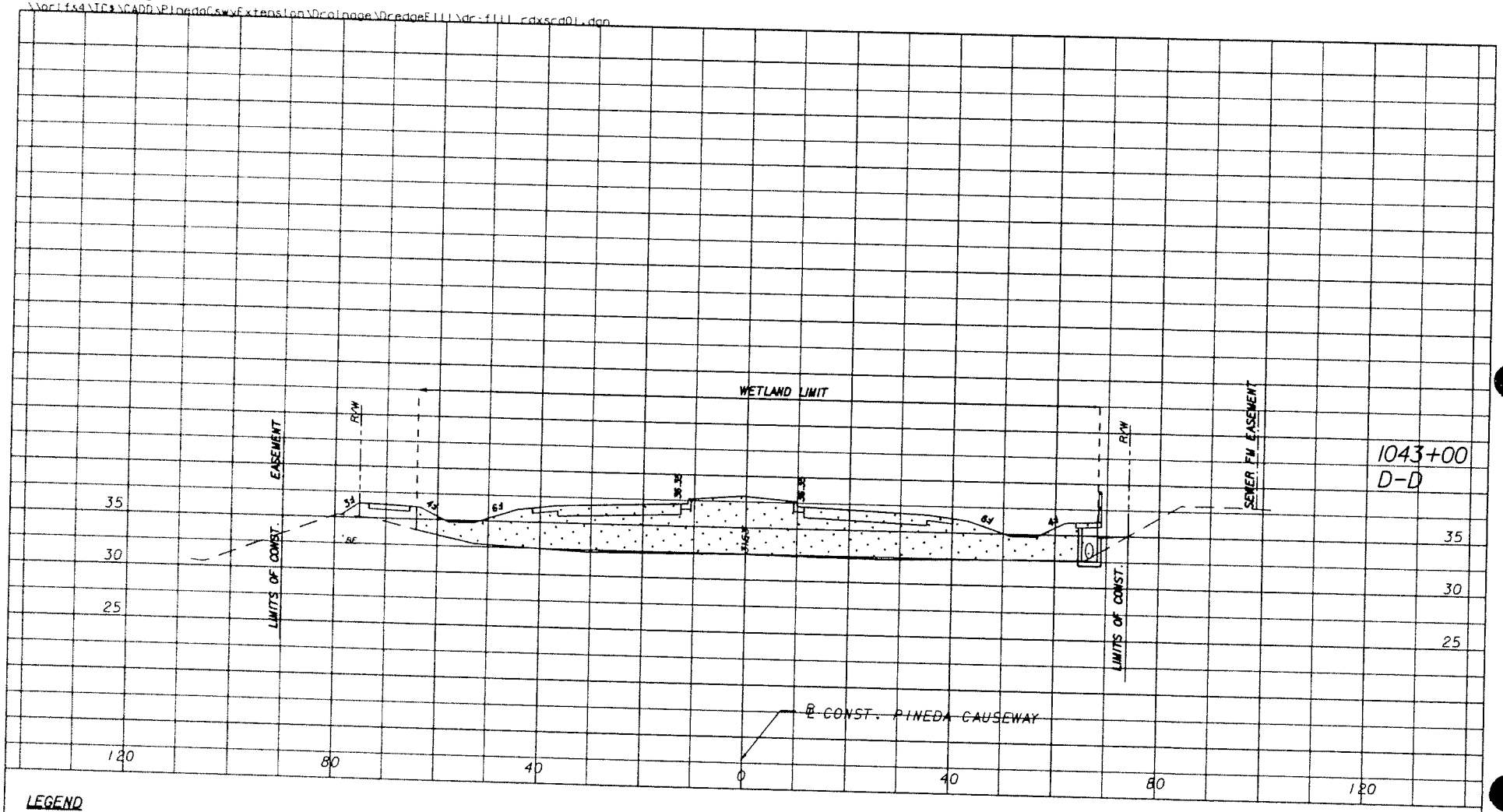

LEGEND

Fill Impacts

Dredge Impacts

HORZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 15'

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PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: CROSS SECTION - WETLAND 10
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
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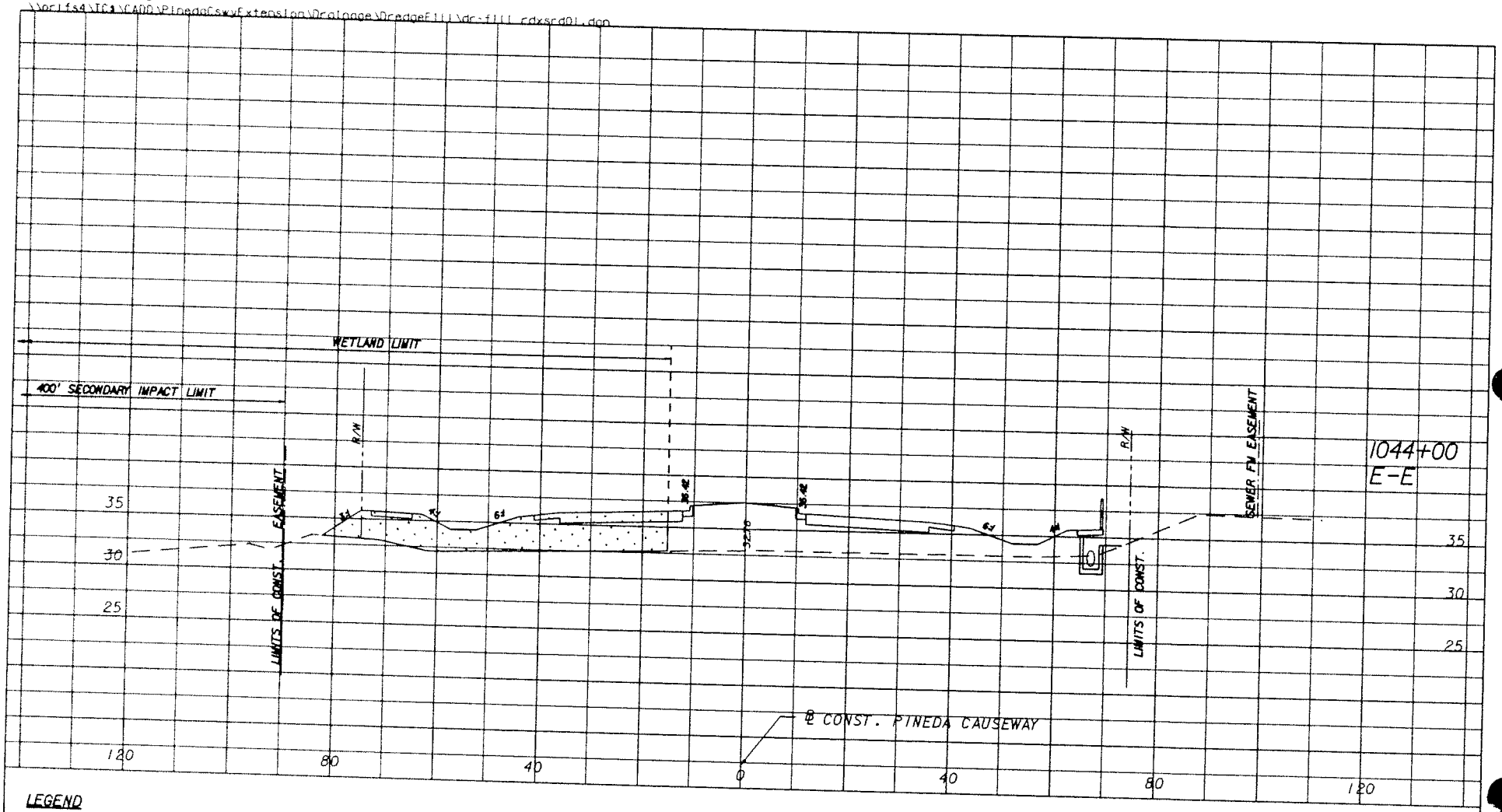

LEGEND

Fill Impacts

Dredge Impacts

HORZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 15'

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PURPOSE: CROSS SECTION - WETLAND 10
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
SHEET 11 OF 19

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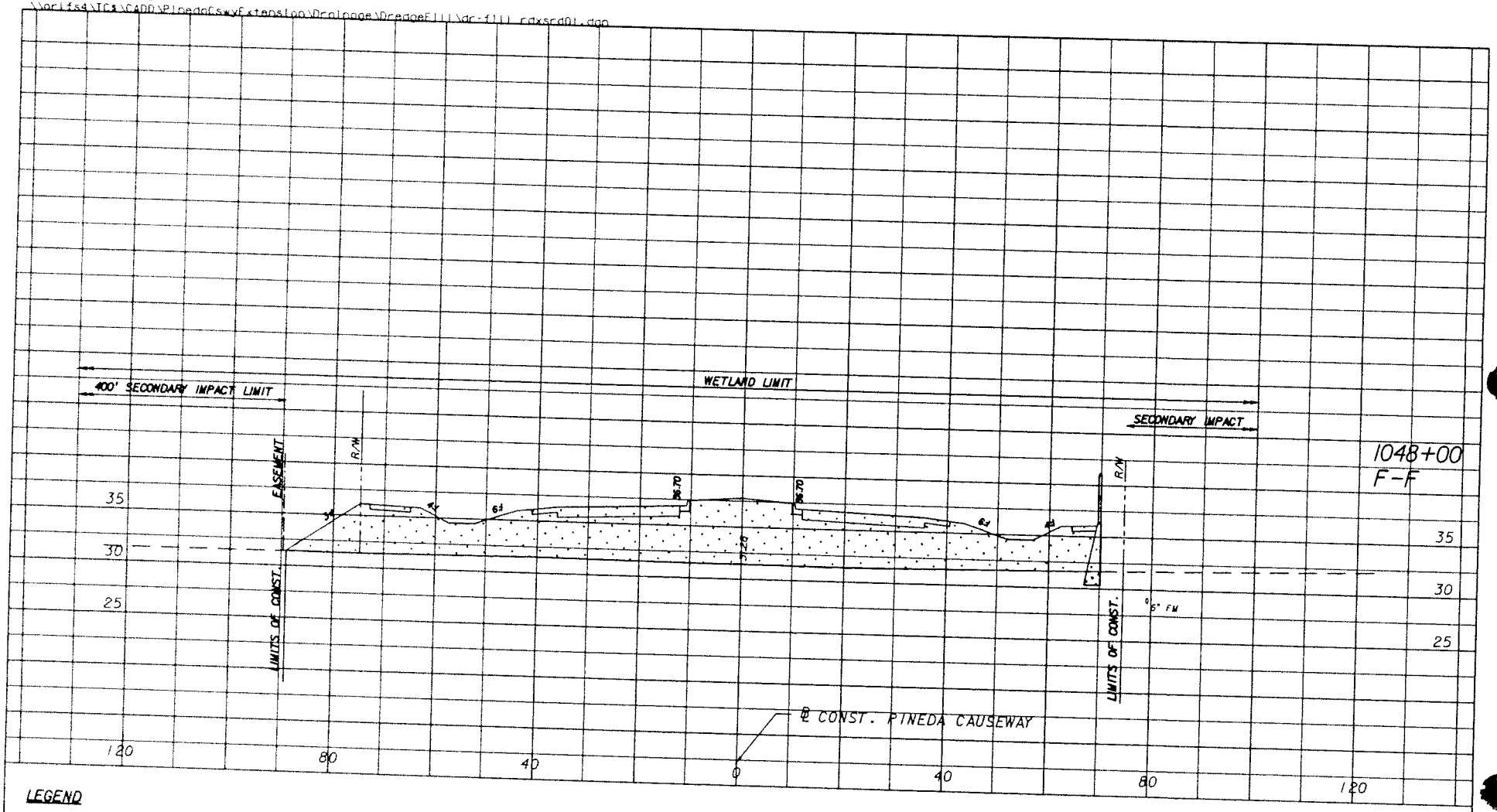

LEGEND

Fill Impacts

Dredge Impacts

HORZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 15'

Engineer of Record:
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License No. 24

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PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: CROSS SECTION - WETLAND 10
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
SHEET 12 OF 19

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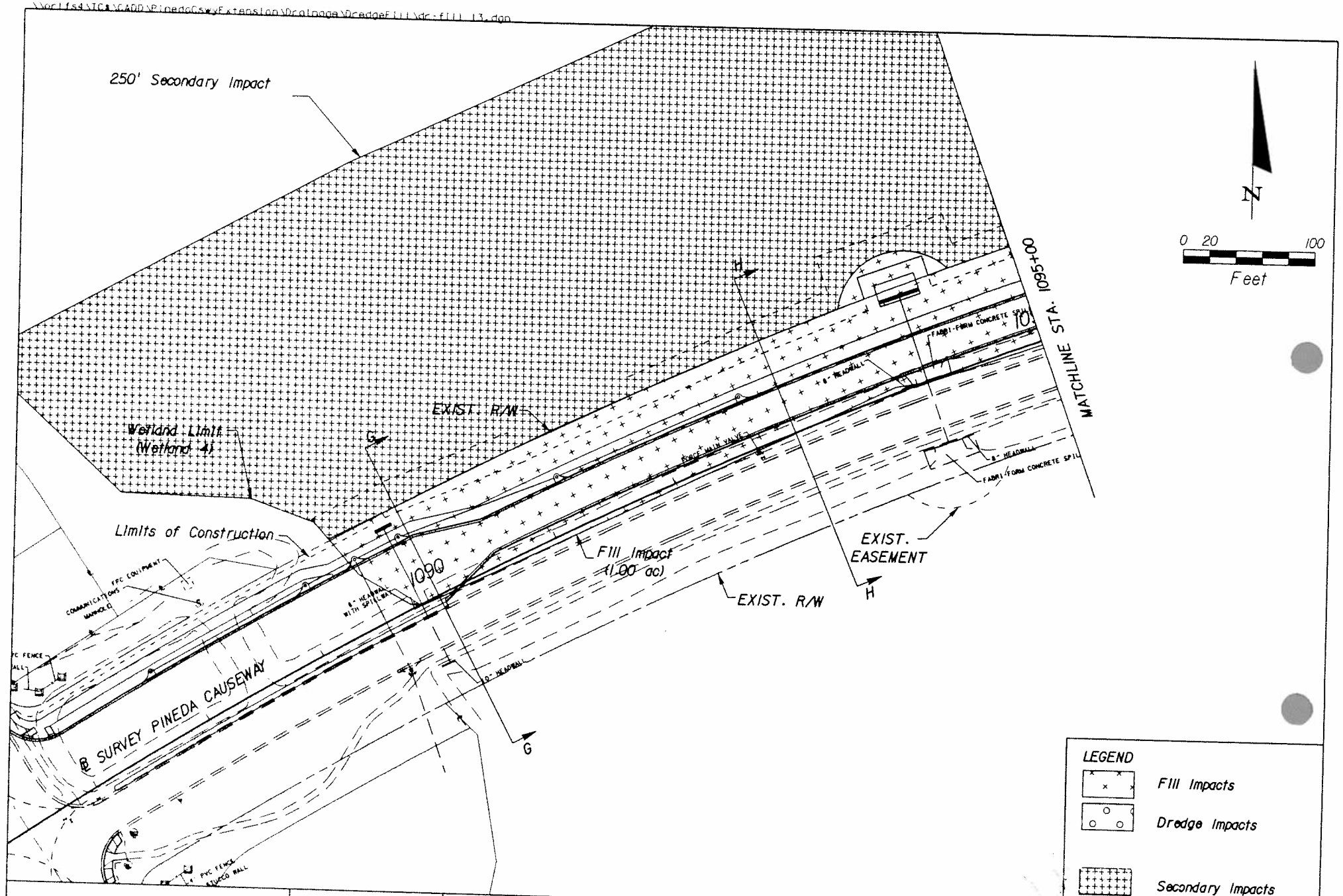

LEGEND

- Fill Impacts
- Dredge Impacts
- Secondary Impacts

Rev 11/29/06

Engineer of Record:

PBSJ

License No. 24

AMY S. LUNDIN
P.E. # 56796

482 South Keller Road
Orlando, FL 32810
(407) 647-7275
www.pbsj.com

PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
PURPOSE: WETLAND 4 IMPACTS - PLAN VIEW
DATUM: FEET NAVD 1988
LOCATION: S 25, 26 & 27, T 26 S, R 36 E
APPLICATION BY: BREVARD COUNTY

SIGNED: AMY S. LUNDIN, P.E.
REG. FL. NO. 56796
DATE:
SHEET 13 OF 19

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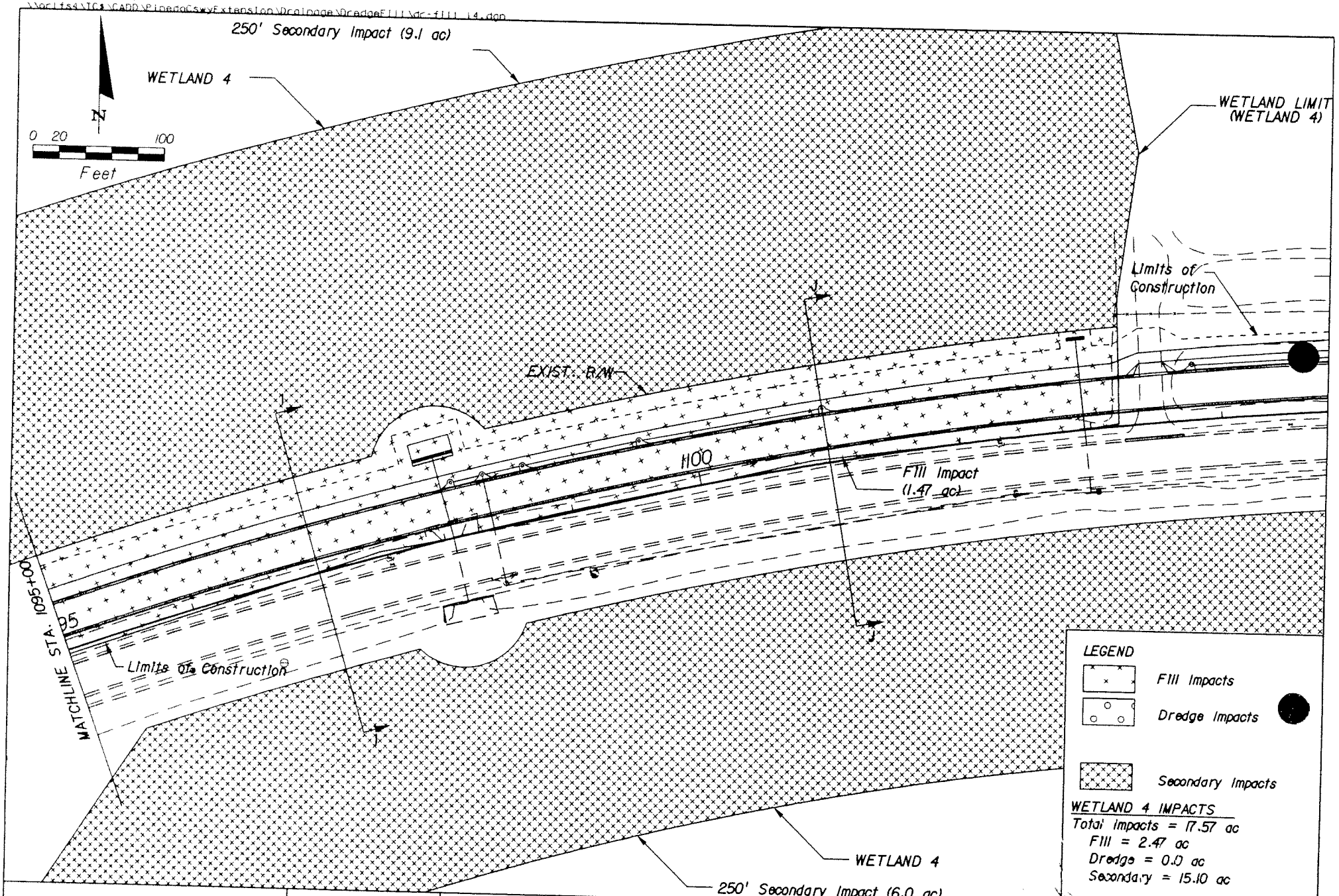

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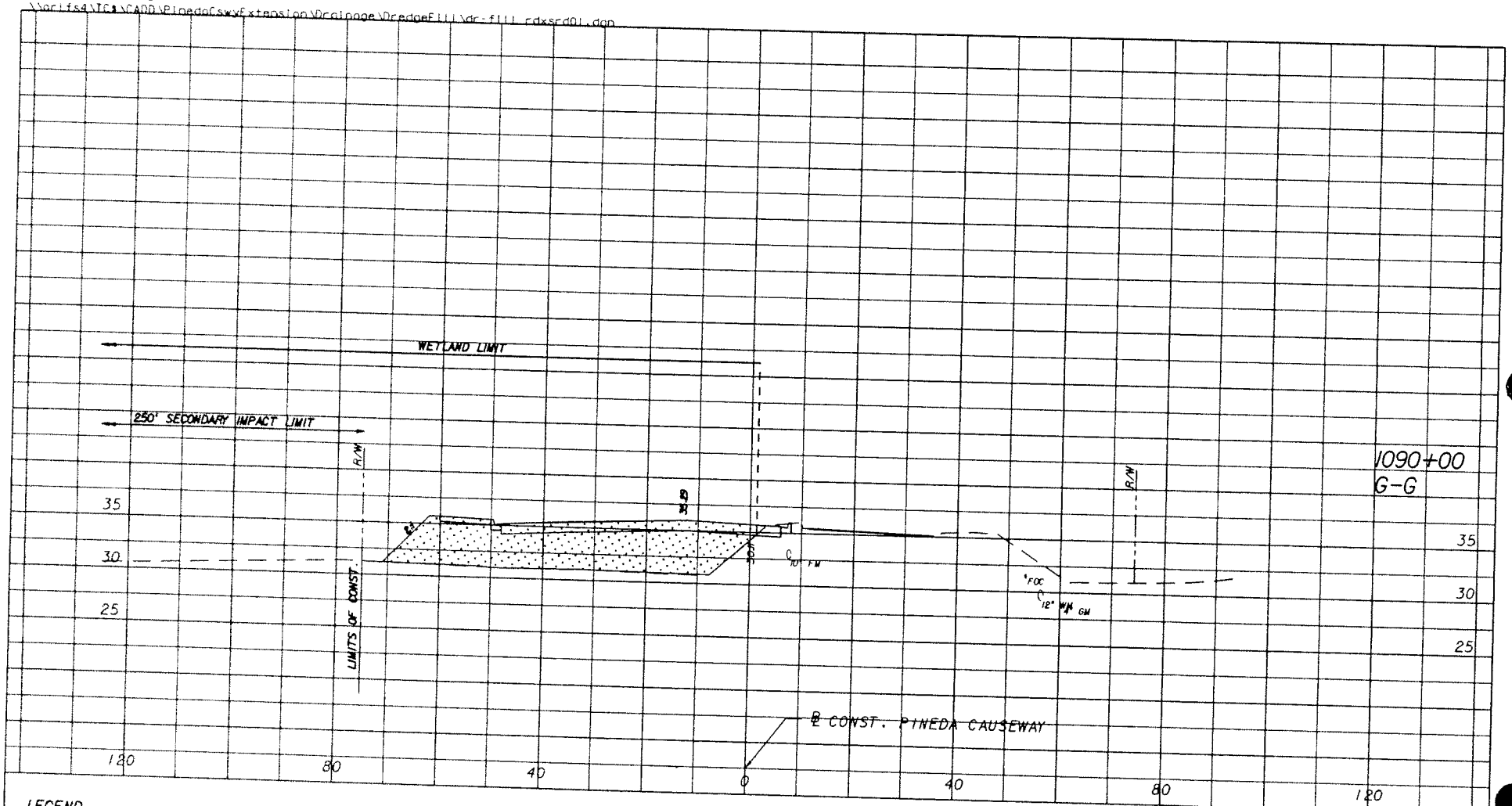

LEGEND

Fill Impacts

Dredge Impacts

HORZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 15'

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PINEDA CAUSEWAY EXTENSION

PROJECT: PINEDA CAUSEWAY EXTENSION
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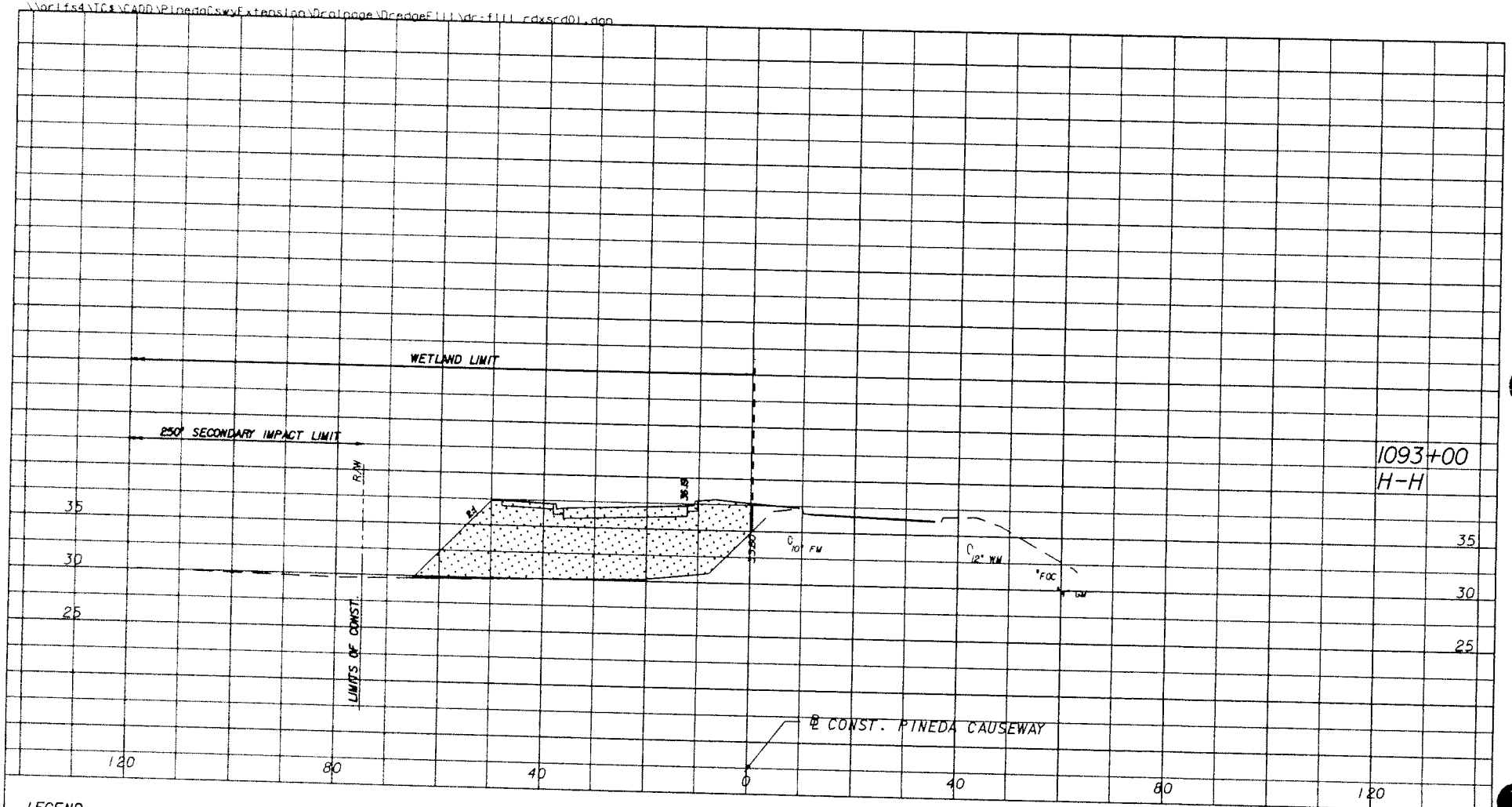

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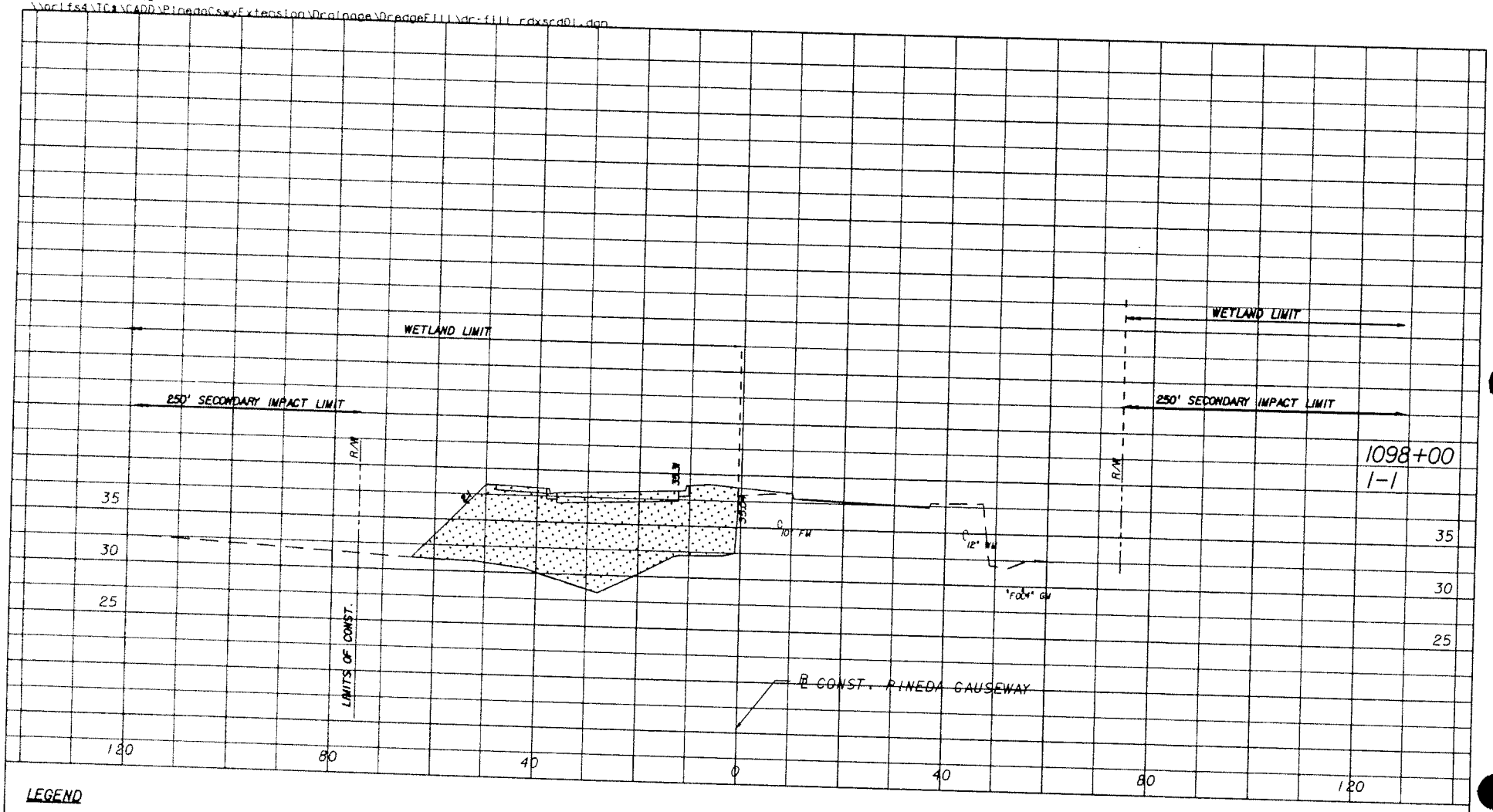

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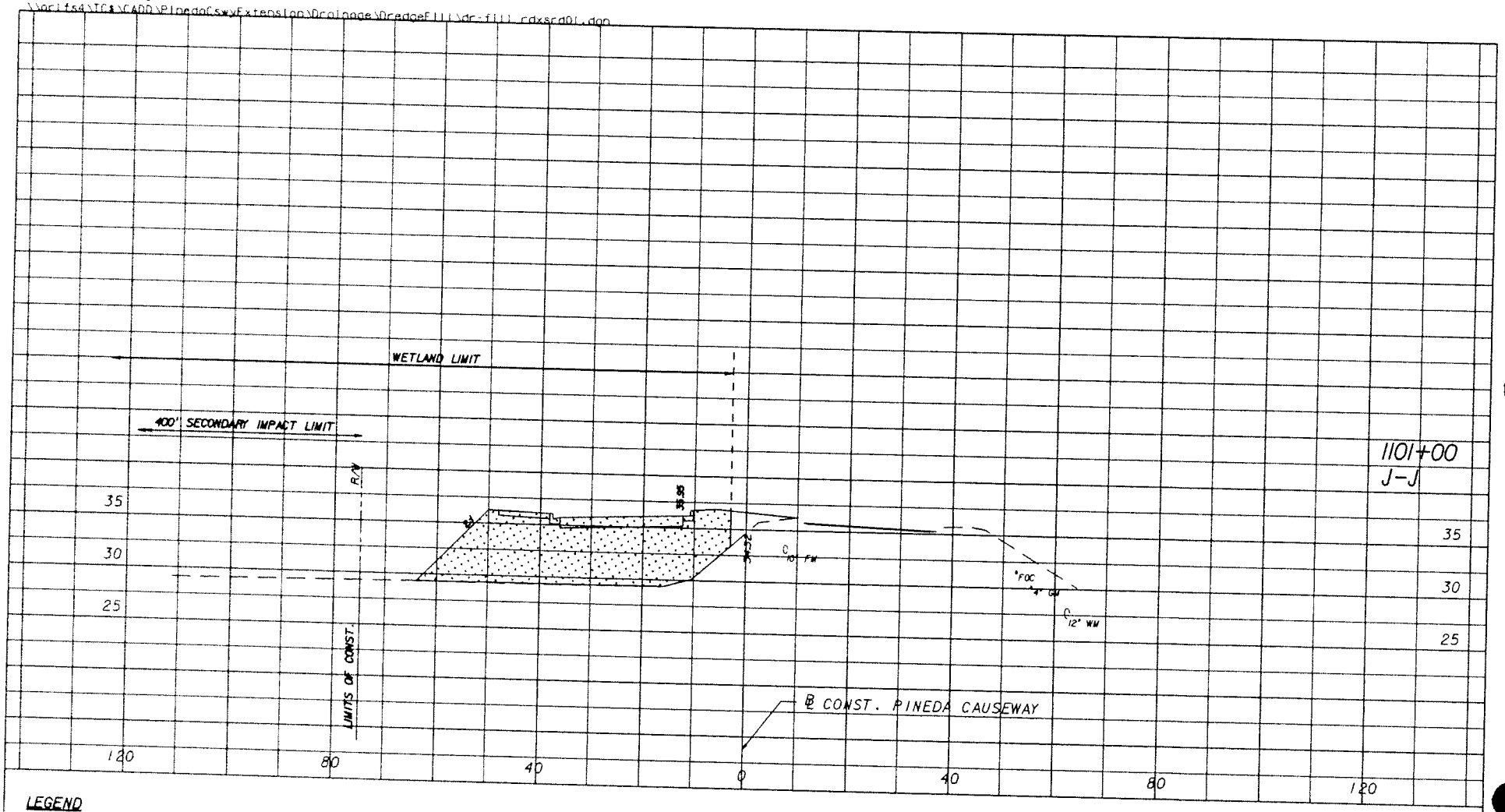

LEGEND

Fill Impacts

Dredge Impacts

HORZ. SCALE: 1" = 30'
VERT. SCALE: 1" = 15'

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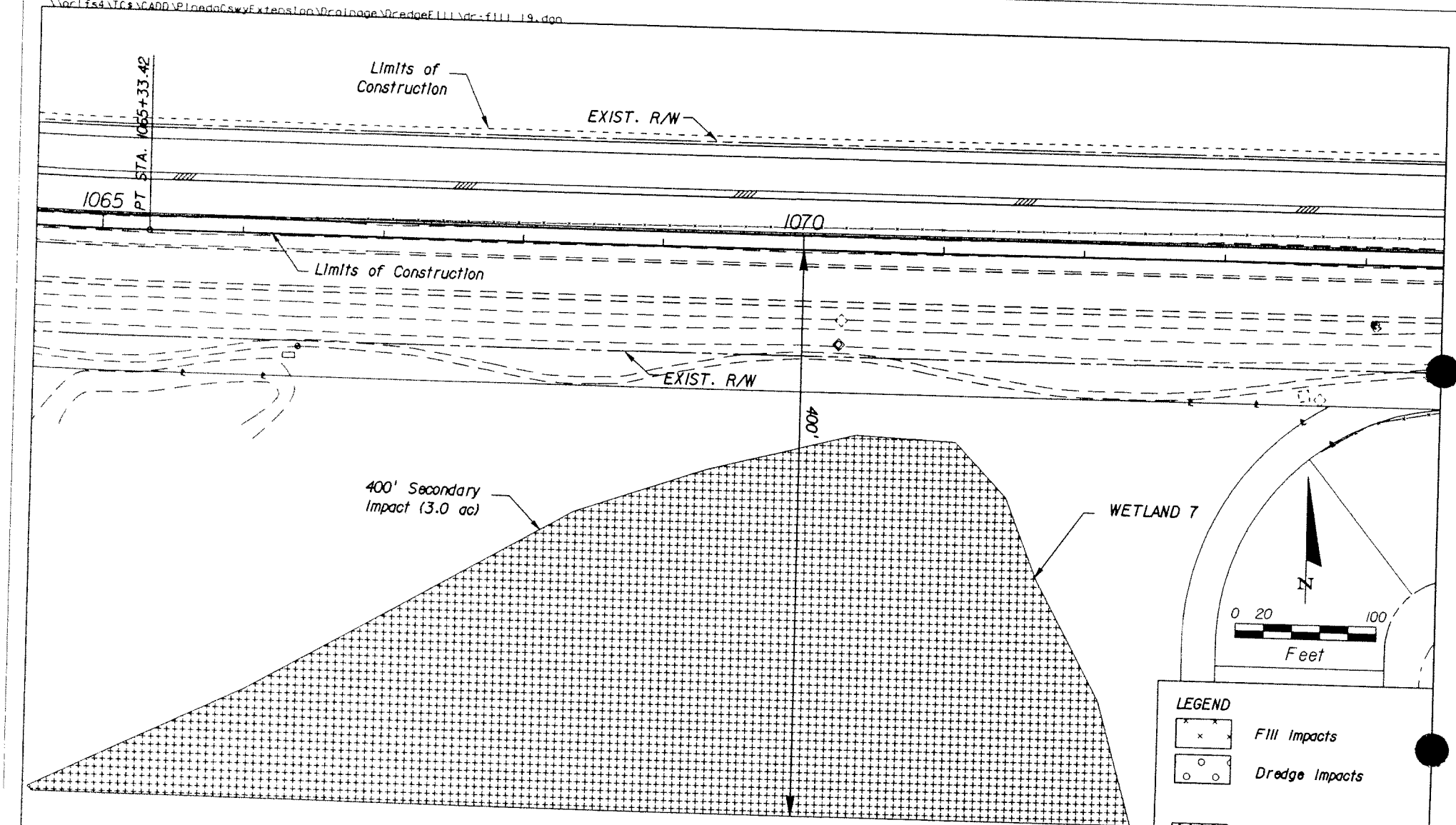

LEGEND

Fill Impacts

Dredge Impacts

Secondary Impacts

WETLAND 7 IMPACTS
Total Impacts = 3.00 ac
Fill = 0.0 ac
Dredge = 0.0 ac
Secondary = 3.00 ac

Rev 11/29/06

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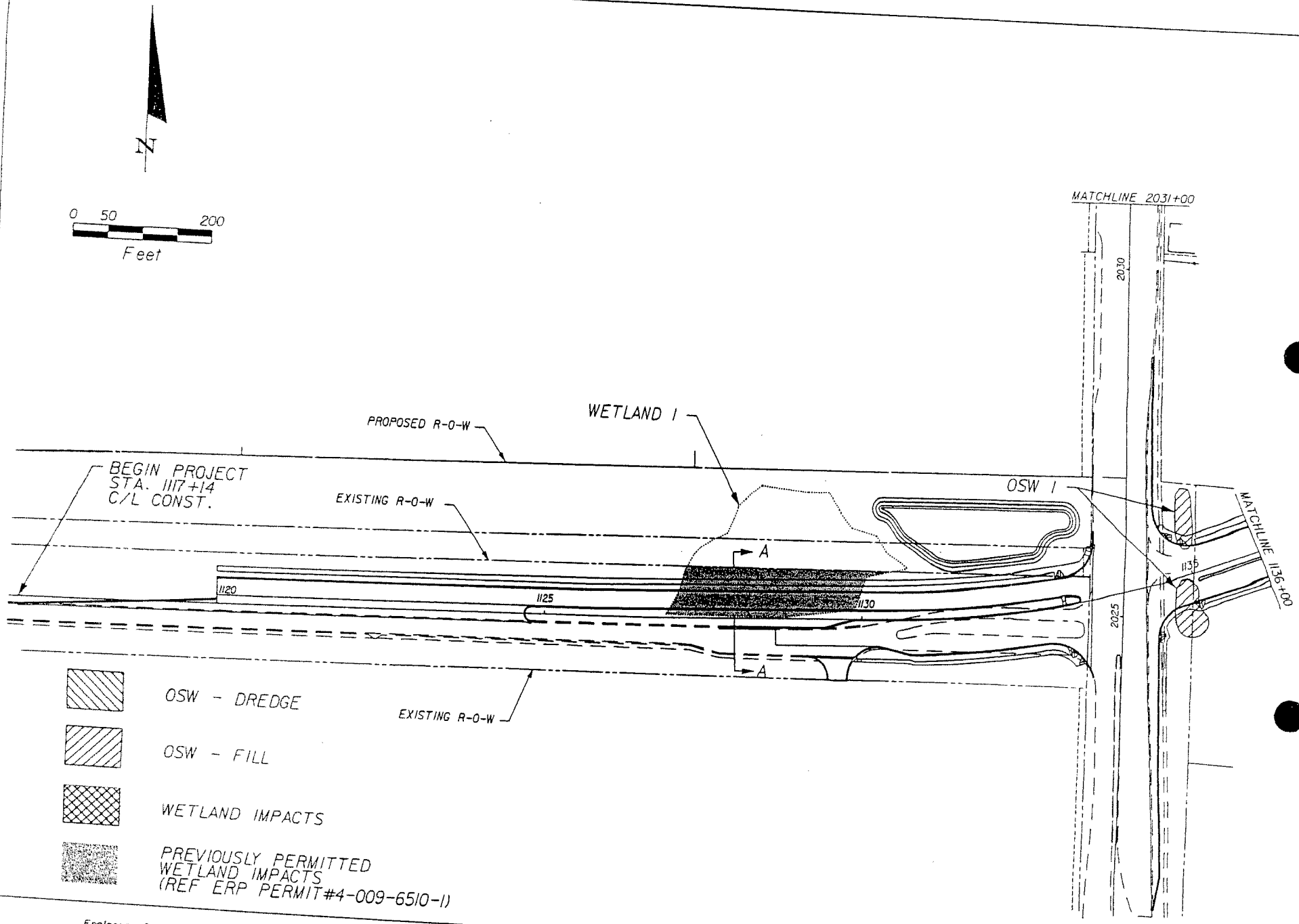

Engineer of Record:

PBSJ

CHESTER W. WENDRZYK
P.E. # 56992

7195 Murrell Road, Suite 101
Melbourne, FL 32926
(321) 242-4942
www.pbsj.com

PURPOSE: SJRWMD ERP PERMIT
DATUM: NGVD 1929
LOCATION: SEC. 19 & 30, TWP. 26S, RNG. 37E
SEC. 24 & 25, TWP. 26S, RNG. 36E
APPLICATION BY: BREVARD COUNTY

U.S. Army Corps of Engineers
Application # SAJ-2006-5721
Date: SEP 11 2006
Sheet 8 of 10

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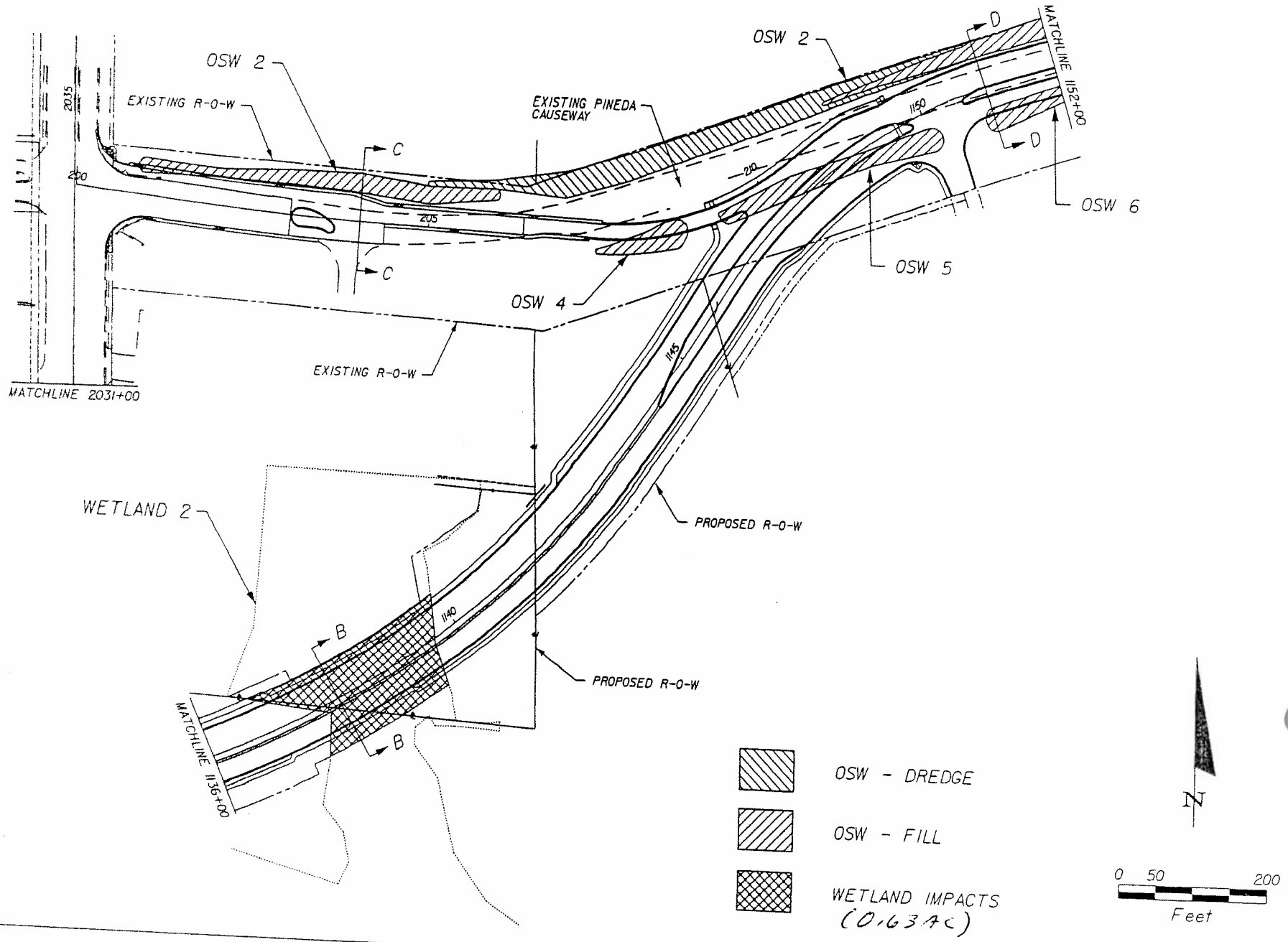

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PURPOSE: SJRWMD ERP PERMIT
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SEC. 24 & 25, TWP. 26S, RNG. 36E
APPLICATION BY: BREVARD COUNTY

U.S. Army Corps of Engineers
Application # SAJ-2006-5472
Date: SEP 11 2006
Sheet 7 of 10

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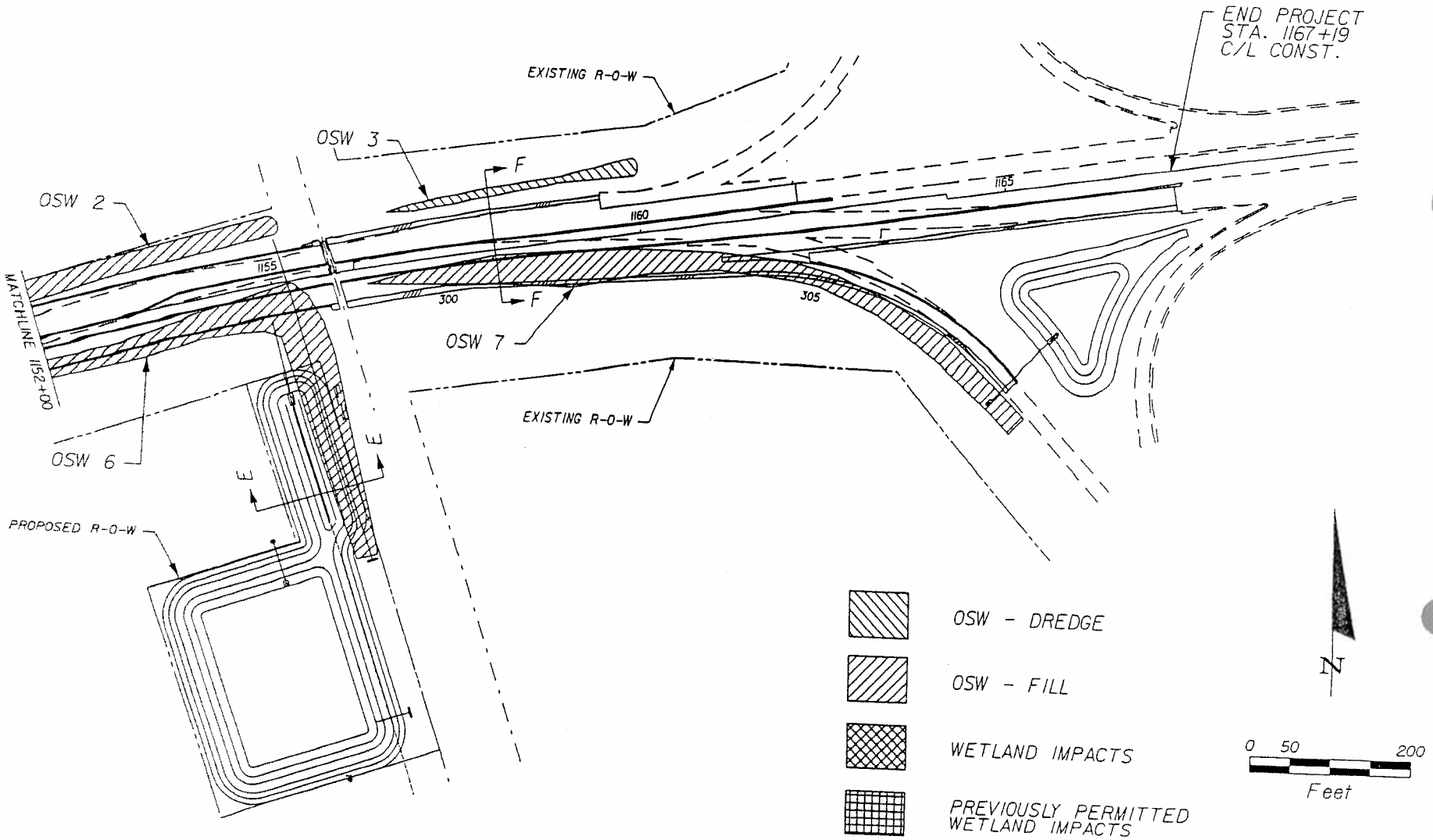

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APPLICATION BY: BREVARD COUNTY

U.S. Army Corps of Engineers
Application # SAJ-2006-5721
Date: SEP 11 2006
Sheet 10 of 10

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STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

1. An eastern indigo snake protection/education plan shall be developed by the applicant or requestor for all construction personnel to follow. The plan shall be provided to the Service for review and approval at least 30 days prior to any clearing activities. The educational materials for the plan may consist of a combination of posters, videos, pamphlets, and lectures (*e.g.*, an observer trained to identify eastern indigo snakes could use the protection/education plan to instruct construction personnel before any clearing activities occur). Informational signs should be posted throughout the construction site and along any proposed access road to contain the following information:

   a. a description of the eastern indigo snake, its habits, and protection under Federal Law;
   b. instructions not to injure, harm, harass or kill this species;
   c. directions to cease clearing activities and allow the eastern indigo snake sufficient time to move away from the site on its own before resuming clearing; and,
   d. telephone numbers of pertinent agencies to be contacted if a dead eastern indigo snake is encountered. The dead specimen should be thoroughly soaked in water and then frozen.

2. If not currently authorized through an Incidental Take Statement in association with a Biological Opinion, only individuals who have been either authorized by a section 10(a)(1)(A) permit issued by the Service, or by the State of Florida through the Florida Fish Wildlife Conservation Commission (FWC) for such activities, are permitted to come in contact with an eastern indigo snake.

3. An eastern indigo snake monitoring report must be submitted to the appropriate Florida Field Office within 60 days of the conclusion of clearing phases. The report should be submitted whether or not eastern indigo snakes are observed. The report should contain the following information:

   a. any sightings of eastern indigo snakes and
   b. other obligations required by the Florida Fish and Wildlife Conservation Commission, as stipulated in the permit.

Revised February 12, 2004

U.S. Army Corps of Engineers
Permit # SAJ-2006-5472
Date: 3/20/08
Attachment: 2

United States Department of the Interior

FISH AND WILDLIFE SERVICE
6620 Southpoint Drive, South
Suite 310
Jacksonville, Florida 32216-0912

IN REPLY REFER TO:
FWS LOG NO. 41910-2007-F-0115

March 15, 2007

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MAR 19 2007
JACKSONVILLE DISTRICT
USACE

Colonel Paul L. Grosskruger, District Engineer
Jacksonville District
U.S. Army Corps of Engineers
Regulatory Division, North Permits Branch
Cocoa Regulatory Office
400 High Point Drive, Suite 600
Cocoa, Florida 32926
(Attn: Andrew W. Phillips)

Re: Biological Opinion for ACOE Permit Application No. SAJ-2006-5472 (IP-AWP) (FWS Log No. 41910-2007-F-0115), SR 404 Extension from US 1 to I-95, Brevard County, Florida

Dear Colonel Grosskruger:

This document transmits the U.S. Fish and Wildlife Service's biological opinion on the effects of the subject proposed project on the Florida scrub-jay (*Aphelocoma coerulescens*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act). On September 12, 2006, the U.S. Army Corps of Engineers (Corps) sent the Service a Public Notice requesting initiation of formal consultation pursuant to section 7 of the Act.

This biological opinion is based on information provided in the *Pineda Causeway Extension Federally Listed Threatened and Endangered Species Report* (July 2006), telephone conversations with Ms. Lisa Munch PBS&J, Andrew Phillips Corps, Sue Gosseiln Brevard County, Mike Knight Brevard County Environmentally Endangered Lands, John White Florida Fish and Wildlife Conservation Commission, Wendy Swindle BRA, and field investigations. A complete administrative record of this consultation is on file in this office.

Consultation History

The U.S. Fish and Wildlife Service's (Service) involvement with this project started with the receipt of the Department of the Army's Public Notice for the State Road 404 widening and extension project proposal for the site on September 12, 2006.

The Service requested additional information not included in the transmittal from the Corps. The Corps instructed the Service to contact the applicant's (Brevard County BCC) environmental

U.S. Army Corps of Engineers
Permit # SAJ-2006-5472
Date: 3/20/08
Attachment: 3

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consultant (Post Buckley Schuh & Jernigan, Inc) for this information. On November 11, 2006, the Service determined that enough information had been received to initiate formal consultation with the Corps.

The federally listed threatened or endangered species identified in the September 12, 2006, Department of Army Permit transmittal and discussed in the July 2006, *Pineda Causeway Extension Federally Listed Threatened and Endangered Species Report* are the Florida Scrub-jay (*Aphelocoma coerulescens),* Bald Eagle (*Haliaeetus leucocephalus*), Eastern Indigo Snake (*Drymarchon corais couperi*), and the Wood Stork (*Mycteria americana*). The Services' effects determination for each species is summarized in Table 1 followed by a brief narrative.

Table 1. Species and critical habit evaluated for the effects and those the Service has concurred with a "not likely to be adversely affected" determination.

SPECIES or CRITICAL HABITAT	PRESENT IN ACTION AREA	PRESENT IN ACTION AREA BUT "NOT LIKELY TO BE ADVERSELY AFFECTED"
Florida Scrub-jay (*Aphelocoma coerulescens*)	Yes	
Bald Eagle (*Haliaeetus leucocephalus*)	Yes	Yes
Eastern Indigo Snake (*Drymarchon corais couperi*)	Possible	Yes
Wood Stork (*Mycteria americana*)	Possible	Yes

Bald Eagle

A documented bald eagle nest (BE 17) is located approximately 550 feet north of the project area. The territory is considered to be the area within a 660-foot radius of the nest tree; although, some pairs may construct a new, alternate nest at farther distances. All eagle nests are protected unless declared "lost" or "abandoned" in accordance with provisions of the *Habitat Management Guidelines for the Bald Eagle in the Southeast Region* (Service 1987). Additionally, monitoring may cease if great horned owls (*Bubo virginianus*) are documented to have occupied the nest and there are no alternate nest sites available to the eagles within 660 feet of the project, and no evidence of eagles constructing a new nest within 660 feet of the project.

As stated in the *Pineda Causeway Extension Federally Listed Threatened and Endangered Species Report* (July 2006), the nest was last active in 2003 (per Florida Fish and Wildlife Conservation

Commission Bald Eagle Locator website) and a great horned owl was observed utilizing the nest in January of 2006. The Service contacted John White (FFWCC) regarding the recent history of the territory. Great horned owls successfully fledged chicks in early spring of 2006. Bald eagles were observed in the territory in April of 2006. The nest tree was recently visited by Service biologist during a field investigation on January 9, 2007. The nest structure was intact, no bald eagles or great horned owls were observed, and therefore the territory is considered inactive through the 2007 – 2008 breeding season. The nest was recently flown for activity on February 17, 2007 by the Florida Fish and Wildlife Conservation Commission. Great horned owls and their chicks were observed utilizing the nest during this flyover. If bald eagles are not observed on the nest during the 2007 – 2008 nesting season, the nest will be considered abandoned and the guidelines will no longer apply.

For all projects, we recommend that exterior construction activities and site work within 660-feet be conducted outside of nesting season (October 1 - May 15). "Site work" is defined as all infrastructure work, including roads, sewer, water, power lines, fill and excavation work for homes and buildings. We discourage heavy construction activity during the nesting period, particularly the use of dump trucks. In the event that site work and exterior building construction is unavoidable during the nesting season between 330-feet to 660-feet, the *Bald Eagle Monitoring Guidelines* (September 2006) should be initiated. These guidelines are posted on our website at http://www.fws.gov/northflorida . Following this guidance, the proposed project May Affect, but is Not Likely to Adversely Affect the bald eagle.

Eastern Indigo Snake and Wood Stork

The Service concurs with the Corps determination that the proposed project May Affect, but is Not Likely to Adversely Affect either species with inclusion of the *Eastern Indigo Snake Protection Measures* and wetland mitigation occurring within the Core Foraging Area (CFA) of the Lake Washington (Latitude 28 06.4, Longitude 80 46.9) wood stork rookery.

The above species not impacted by this action will not be discussed further in this biological opinion.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

The proposed project is the extension and expansion of State Road (SR) 404 (Pineda Causeway) west from U.S. Highway 1 (US 1) to the proposed Interstate-95 (I-95) interchange. The facility will be upgraded from the existing two-lane undivided roadway to a divided four-lane roadway. The construction involves widening the existing SR 404 from US 1 to Wickham Road. A new alignment will occur for the western 1500-feet of SR 404 to align with the existing intersection of Wickham Road and Grand Haven Subdivision (Pineda Causeway). Widening to four travel lanes will occur from Wickham Road through the Grand Haven Subdivision. A new alignment will be constructed from the Brisbane Boulevard/Estuary Boulevard/Pineda Causeway intersection to the proposed I-95 interchange. The proposed project is located in Sections 24, 25, and 26, Township 26 South, Range 36 East, Melbourne, Florida.

The *Pineda Causeway Extension Federally Listed Threatened and Endangered Species Report* documented areas of xeric oak scrub occupied by several Florida scrub-jay families within the proposed roadway widening and new alignment extension. The Service previously consulted on occupied scrub habitat in the immediate area that will be impacted by the proposed roadway construction. An incidental take statement was issued (FWS Log No: 99-303, Holy Trinity Academy) for this area east of Wickham Road and south of SR 404. This area is not included in this biological opinion since the conservation measures were previously completed. The consultation for the Holy Trinity Academy involved 17.46 acres of occupied Florida scrub-jay habitat, including 12.76 acres of occupied core habitat and 4.7 acres of non-core habitat, as designated by Brevard County. The conservation measures were in the form of land acquisition of 60 acres of occupied Florida scrub-jay habitat in Mims, Florida and funds for management of the parcel in perpetuity.

Currently three families of Florida scrub-jays are present in the study corridor. The proposed new action is anticipated to impact 4.92 acres of xeric oak scrub habitat occupied by two Florida scrub-jay families for the mainline construction of the roadway. The construction will impact 0.60 acres of Type I habitat occupied by one family east of Wickham Road adjacent to the Holy Trinity Academy site. This area is adjacent to 12.76 acres noted in the previous paragraph.

The second family resides in Type I habitat immediately west of Wickham Road and slightly north of Pineda Causeway. The mainline construction will not impact this area. Stormwater Pond B and a Floodplain Compensatory Area are proposed to be adjacent to this habitat but are not anticipated to impact any occupied xeric oak scrub habitat.

An additional 4.32 acres of impacts will occur to the third family residing in the woodland pasture/unimproved pasture (Type II) north of Pineda Causeway between Estuary Boulevard and Peninsula Circle. This is also the area where BE 17 territory is located. The total territory is approximately 31.5 acres. The undeveloped parcels are slated for development and dialogue regarding the listed species with the applicant has recently begun with the Jacksonville Ecological Service Office.

To minimize impacts to Florida scrub-jays, the applicant proposes as conservation measures to contribute money to the Florida Scrub-Jay Conservation Fund. The Fund supports a wide variety of Florida scrub-jay conservation efforts locally and statewide. The contribution towards The Nature Conservancy (TNC) Managed Funds for Public Lands may involve acquisition of lands, management of acquired TNC lands, and/or management of other occupied lands in public ownership. The contribution for the 4.92 acres of impacts to the occupied Florida scrub-jay habitat will be in the amount of $98,537.76. This is determined by the following formula: $8,400.00 per acre x 19.21% overhead fee x 4.92 acres @ 2:1 ratio. The funds generated from this consultation will be directed to the management of lands currently in public ownership in Brevard County.

ACTION AREA

Stith (1999) defined 21 metapopulations for the remaining Florida scrub-jays demographically isolated from each other. Metapopulations are defined as collections of relatively discrete demographic populations distributed over a landscape; these populations are connected within the

metapopulations through dispersal or migration (National Research Council 1995). Utilizing Stith's (1999) boundaries, this project falls within the Central Brevard metapopulation. Since the time of Stith's work, however, Breininger *et al.* (2001, 2003) have conducted additional studies within Brevard County. Dispersal data, improved habitat mapping, and new buffering results provide reasonable evidence that the South Brevard and Central Brevard metapopulations, as defined by Stith (1999), show greater connectivity, through observed Florida scrub-jay dispersals, than was previously evident. Therefore, South Brevard and Central Brevard can now be treated as one metapopulation, South Brevard. The action area, therefore, for this biological opinion is defined as the Florida scrub-jay metapopulation found in South Brevard County, Florida (includes Indian River and N. St. Lucie Counties). The proposed roadway improvements are located within the South Brevard metapopulation.

STATUS OF THE SPECIES/CRITICAL HABITAT

This section summarizes Florida scrub-jay biology and ecology as well as information regarding the status and trends of the Florida scrub-jay throughout its entire range. We use this information to assess whether a federal action is likely to jeopardize the continued existence of the above mentioned species. The "Environmental Baseline" section summarizes information on status and trends of the Florida scrub-jay specifically within the action area. These summaries provide the foundation for our assessment of the effects of the proposed action, as presented in the "Effects of the Action" section.

Species/Critical Habitat Description

Scrub-jays are about 10 to 12 inches long and weigh about three ounces. They are similar in size and shape to blue jays (*Cyanocitta cristata*), but differ significantly in coloration (Woolfenden and Fitzpatrick 1996a). Unlike the blue jay, the scrub-jay lacks a crest. It also lacks the conspicuous white-tipped wing and tail feathers, black barring, and bridle of the blue jay. The scrub-jay's head, nape, wings, and tail are pale blue, and its body is pale gray on its back and belly. Its throat and upper breast are lightly striped and bordered by a pale blue-gray "bib" (Woolfenden and Fitzpatrick 1996a). Scrub-jay sexes are not distinguishable by plumage (Woolfenden and Fitzpatrick 1984), and males, on the average are only slightly larger than females (Woolfenden 1978). The sexes may be identified by a distinct "hiccup" call made only by females (Woolfenden and Fitzpatrick 1984, 1986). Scrub-jays that are less than about five months of age are easily distinguishable from adults; their plumage is smoky gray on the head and back, and they lack the blue crown and nape of adults. Molting occurs between early June and late November and peaks between mid-July and late September (Bancroft and Woolfenden 1982). During late summer and early fall, when the first basic molt is nearly done, fledgling scrub-jays may be indistinguishable from adults in the field (Woolfenden and Fitzpatrick 1984). The wide variety of vocalizations of scrub-jays is described in Woolfenden and Fitzpatrick (1996b).

Scrub-jays are in the order Passeriformes and the family Corvidae. They have been called a "superspecies complex" and described in four groups that differ in geographic distribution within the United States and Mexico: *A. californica*, from southwestern Washington through Baja California; *A. insularis*, on Santa Cruz in the Channel Islands, California; *A. woodhousii*, from southeastern Oregon and the Rocky Mountains and Great Plains to Oaxaca, Mexico; and *A. coerulescens* in peninsular Florida (American Ornithological Union [AOU] 1983). Other jays of

the same genus include the Mexican jay or gray-breasted jay (*A. ultramarina*) and the unicolored jay (*A. unicolor*) of Central America and southwest North America (Woolfenden and Fitzpatrick 1996b).

The Florida scrub-jay, which was originally named *Corvus coerulescens* by Bosc in 1795, was transferred to the genus *Aphelocoma* in 1851 by Cabanis. In 1858, Baird made *coerulescens* the type species for the genus, and it has been considered a subspecies (*A. c. coerulescens*) for the past several decades (AOU 1957). It recently regained recognition as a full species (Florida scrub-jay, *Aphelocoma coerulescens*) from the AOU (AOU 1995) because of genetic, morphological, and behavioral differences from other members of this group: the western scrub-jay (*A. californica)* and the island scrub-jay *(A. insularis)*. The group name is retained for species in this complex; however, it is now hyphenated to "scrub-jay" (AOU 1995). From here on in the document, Florida scrub-jays will be referred to as scrub-jays.

This species account references the full species name, *A. coerulescens*, as listed in the most recent Service Federal Register notice of Endangered and Threatened Wildlife and Plants (50 Code of Federal Regulations [CFR] §§ [sections] 17.11 and 17.12).

No critical habitat has been designated for this species; therefore, none will be affected.

Life History/Population Dynamics

The scrub-jay has specific habitat needs. It is endemic to peninsular Florida's ancient dune ecosystems or scrubs, which occur on well-drained to excessively well-drained sandy soils (Laessle 1958, 1968; Myers 1990; Fitzpatrick *et al.* unpubl. data). This relict oak-dominated scrub, or xeric oak scrub, is essential habitat to the scrub-jay. This community type is adapted to nutrient-poor soils, periodic drought, and frequent fires (Abrahamson 1984). Xeric oak scrub on the Lake Wales Ridge is predominantly made up of four species of stunted, low-growing oaks: sand live oak (*Quercus geminata*), Chapman oak (*Q. chapmanii*), myrtle oak (*Q. myrtifolia*), and scrub oak (*Q. inopina*) (Myers 1990). In optimal habitat for scrub-jays on the Lake Wales Ridge, these oaks are 3 to 10 feet high, interspersed with 10 to 50 percent unvegetated, sandy openings, and a sand pine (*Pinus clausa*) canopy of less than 20 percent (Woolfenden and Fitzpatrick 1991). Trees and dense herbaceous vegetation is rare. Other vegetation noted along with the oaks includes saw palmetto (*Serenoa repens)* and scrub palmetto *(Sabal etonia*), as well as woody shrubs such as Florida rosemary (*Ceratiola ericoides*) and rusty lyonia (*Lyonia ferruginea*).

Scrub-jays occupy areas with less scrub oak cover and fewer openings on the Merritt Island/Cape Canaveral Complex and in southwest Florida than typical of xeric oak scrub habitat on the Lake Wales Ridge (Schmalzer and Hinkle 1992b; Breininger *et al.* 1995; Thaxton and Hingtgen 1996). The predominant communities here are oak scrub and scrubby flatwoods. Scrubby flatwoods differ from scrub by having a sparse canopy of slash pine (*P. elliotii*); sand pines are rare. Shrub species mentioned above are common, except for scrub oak and scrub palmetto, which are restricted to the Lake Wales Ridge. Runner oak (*Q. minima*), turkey oak (*Q. laevis*), bluejack oak (*Q. incana*), and longleaf pine (*P. palustris*) also have been reported. Kennedy Space Center, in Brevard County, supports one of the largest contiguous populations of scrub-jays. Studies conducted there give good descriptions of this habitat type (Schmalzer and Hinkle 1992b).

Human interference with natural fire regimes continues to play a major part in the decline of the scrub-jay, and today may exceed habitat loss as the single most important limiting factor (Woolfenden and Fitzpatrick 1991, 1996a; Fitzpatrick *et al.* 1994). Lightning strikes cause virtually all naturally-occurring fires in south Florida scrub habitat (Abrahamson 1984; Hofstetter 1984; Woolfenden and Fitzpatrick 1990). Fire has been noted to be important in maintenance of scrub habitat for decades (Nash 1895; Harper 1927; Webber 1935; Davis 1943; Laessle 1968; Abrahamson *et al.* 1984). Human efforts to prevent and/or control natural fires have allowed the scrub to become too dense and tall to support populations of scrub-jays, resulting in the decline of local populations of scrub-jays throughout the state (Fernald 1989; Fitzpatrick *et al.* 1994, unpubl. data; Percival *et al.* 1995; Stith *et al.* 1996; Thaxton and Hingtgen 1996; Woolfenden and Fitzpatrick 1990, 1996a; Toland 1999).

Optimal scrub-jay habitat occurs as patches with the following attributes: (1) 10 to 50 percent of the oak scrub made up of bare sand or sparse herbaceous vegetation; (2) greater than 50 percent of the shrub layer made up of scrub oaks; (3) a mosaic of oak scrubs that occur in optimal height (4 to 6 feet) and shorter; (4) less than 15 percent canopy cover; and (5) greater than 984 feet from a forest (Breininger *et al.* 1998). Much potential scrub-jay habitat occurs as patches of oak scrub within a matrix of little-used habitat of saw palmetto and herbaceous swale marshes (Breininger *et al.* 1991, 1995). These native matrix habitats supply prey for scrub-jays and habitat for other species of conservation concern. The flammability of native matrix habitats is important for spreading fires into oak scrub (Breininger *et al.* 1995, 2002). Degradation or replacement of native matrix habitats with habitat fragments and industrial areas attract predators of scrub-jays, such as fish crows, that are rare in most regularly burned native matrix habitats (Breininger and Schmalzer 1990; Woolfenden and Fitzpatrick 1991). Matrix habitats often develop into woodlands and forests when there is a disruption of fire regimes. These woodlands and forests are not suitable for scrub-jays, decrease the habitat suitability of nearby scrub, attract predators, and further disrupt fire patterns.

Scrub-jays have a social structure that involves cooperative breeding, a trait that the other North American species of scrub-jays do not show (Woolfenden and Fitzpatrick 1984, 1990). Scrub-jays live in families ranging from two birds (a single mated pair) to extended families of eight adults (Woolfenden and Fitzpatrick 1984) and one to four juveniles. Fledgling scrub-jays stay with the breeding pair in their natal territory as "helpers," forming a closely-knit, cooperative family group. Pre-breeding numbers are generally reduced to either a pair with no helpers or families of three or four individuals (a pair plus one or two helpers) (Woolfenden and Fitzpatrick 1996a).

Scrub-jays have a well-developed intra-familial dominance hierarchy with breeder males most dominant, followed by helper males, breeder females, and, finally, female helpers (Woolfenden and Fitzpatrick 1977, 1984). Helpers take part in sentinel duties (Woolfenden and Fitzpatrick 1984; McGowan and Woolfenden 1989), territorial defense (Woolfenden and Fitzpatrick 1984), predator-mobbing, and the feeding of both nestlings (Stallcup and Woolfenden 1978) and fledglings (Woolfenden and Fitzpatrick 1984; McGowan and Woolfenden 1990). The well-developed sentinel system involves having one individual occupying an exposed perch watching for predators or territory intruders. When a predator is seen, the sentinel scrub-jay gives a distinctive warning call (McGowan and Woolfenden 1989, 1990), and all family members seek cover in dense shrub vegetation (Fitzpatrick *et al.* 1991).

Scrub-jay pairs occupy year-round, multi-purpose territories (Woolfenden and Fitzpatrick 1978, 1984; Fitzpatrick *et al.* 1991). Territory size averages 22 to 25 acres (Woolfenden and Fitzpatrick 1990; Fitzpatrick *et al.* 1991), with a minimum size of about 12 acres (Woolfenden and Fitzpatrick 1984; Fitzpatrick *et al.* 1991). The availability of territories is a limiting factor for scrub-jay populations (Woolfenden and Fitzpatrick 1984). Because of this limitation, non-breeding adult males may stay at the natal territory as helpers for up to six years, waiting for either a mate or territory to become available (Woolfenden and Fitzpatrick 1984). Scrub-jays may become breeders in several ways: (1) by replacing a lost breeder on a non-natal territory (Woolfenden and Fitzpatrick 1984); (2) through "territorial budding," where a helper male becomes a breeder in a segment of its natal territory (Woolfenden and Fitzpatrick 1978); (3) by inheriting a natal territory following the death of a breeder; (4) by establishing a new territory between existing territories (Woolfenden and Fitzpatrick 1984); or (5) through "adoption" of an unrelated helper by a neighboring family followed by resident mate replacement (Woolfenden and Fitzpatrick 1984). Territories also can be created by restoring habitat through effective habitat management efforts in areas that are overgrown (Thaxton and Hingtgen 1994).

To become a breeder, a scrub-jay must find a territory and a mate. Evidence presented by Woolfenden and Fitzpatrick (1984) suggests that scrub-jays are monogamous. The pair retains ownership and sole breeding privileges in its particular territory year after year. Courtship to form the pair is lengthy and ritualized and involves posturing and vocalizations made by the male to the female (Woolfenden and Fitzpatrick 1996b). Copulation between the pair is generally out of sight of other scrub-jays (Woolfenden and Fitzpatrick 1984). These authors also reported never observing copulation between unpaired scrub-jays or courtship behavior between a female and a scrub-jay other than her mate. Age at first breeding in the scrub-jay varies from 1 to 7 years, although most individuals become breeders between 2 and 4 years of age (Fitzpatrick and Woolfenden 1988). Persistent breeding populations of scrub-jays exist only where there are scrub oaks in sufficient quantity and form to provide an ample winter acorn supply, cover from predators, and nest sites during the spring (Woolfenden and Fitzpatrick 1996b).

Scrub-jay nests are typically constructed in shrubby oaks, at a height of 1.6 to 8.2 feet (Woolfenden 1974). Sand live oak and scrub oak are the preferred shrub on the Lake Wales Ridge (Woolfenden and Fitzpatrick 1996b), and myrtle oak is favored on the Atlantic Coastal Ridge (Toland 1991) and southern Gulf coast (J. Thaxton, Uplands, Inc., pers. comm. 1998). In suburban areas, scrub-jays nest in the same evergreen oak species as well as in introduced or exotic trees; however, they build their nests in a significantly higher position in these oaks than when in natural scrub habitat (Bowman *et al.* 1996). Scrub-jay nests are an open cup, about 7 to 8 inches outside diameter and 3 to 4 inches inside diameter. The outer basket is bulky and built of course twigs from oaks and other vegetation, and the inside is lined with tightly wound palmetto or cabbage palm fibers. There is no foreign material as may be present in a blue jay nest (Woolfenden and Fitzpatrick 1996b).

Nesting is synchronous, normally occurring from 1 March through 30 June (Woolfenden and Fitzpatrick 1984). On the Atlantic Coastal Ridge and southern Gulf coast, nesting may be protracted through the end of July (B. Toland, Service, pers. comm. 1996; J. Thaxton, Uplands, Inc., pers. comm. 1998). In suburban habitats, nesting is consistently started earlier (March) than in natural scrub habitat (Fleischer 1996), although the reason for this is unknown.

Clutch size ranges from one to five eggs, but is typically three or four eggs (Woolfenden and Fitzpatrick 1990). Clutch size is generally larger in suburban habitats, and the birds try to rear more broods per year (Fleischer 1996). Double brooding by as much as 20 percent has been documented on the Atlantic Coastal Ridge and in suburban habitat within the southern Gulf coast, compared to about 2 percent on the Lake Wales Ridge (B. Toland, Service, pers. comm. 1996; J. Thaxton, Uplands, Inc., pers. comm. 1998). Scrub-jay eggs measure 1.1 inches x 0.8 inches (length x breadth) (Woolfenden and Fitzpatrick 1996b), and coloration "varies from pea green to pale glaucous green... blotched and spotted with irregularly shaped markings of cinnamon rufous and vinaceous cinnamon, these being generally heaviest about the larger end" (Bendire *in* Bent 1946). Eggs are incubated for 17 to 19 days (Woolfenden 1974), and fledging occurs 15 to 21 days after hatching (Woolfenden 1978; Fitzpatrick *et al.* unpubl. data). Only the breeding female incubates and broods eggs and nestlings (Woolfenden and Fitzpatrick 1984). Average production of young is two fledglings per pair, per year (Woolfenden and Fitzpatrick 1990; Fitzpatrick *et al.* 1991), and the presence of helpers improves fledging success (Woolfenden and Fitzpatrick 1990; Mumme 1992). Annual productivity must average at least two young fledged per pair for a population of scrub-jays to support long-term stability (Fitzpatrick *et al.* 1991).

Fledglings depend upon adults for food for about ten weeks, during which time they are fed by both breeders and helpers (Woolfenden 1975; McGowan and Woolfenden 1990). Survival of scrub-jay fledglings to yearling age class averages about 35 percent in optimal scrub, while annual survival of both adult males and females averages around 80 percent (Fitzpatrick *et al.* unpubl. data). Data from Archbold Biological Station, however, suggest that survival and reproductive success of scrub-jays in sub-optimal habitat is lower (Woolfenden and Fitzpatrick 1991). These data help explain why local populations inhabiting unburned, late successional habitats become extirpated. Similarly, data from Indian River County show that mean annual productivity declines significantly in suburban areas where Toland (1991) reported that productivity averaged 2.2 young fledged per pair in contiguous optimal scrub, 1.8 young fledged per pair in fragmented moderately-developed scrub, and 1.2 young per pair fledged in very fragmented suboptimal scrub. The longest observed lifespan of a scrub-jay is 15.5 years at Archbold Biological Station in Highlands County (Woolfenden and Fitzpatrick 1996b).

Scrub-jays are nonmigratory and permanently territorial. Juveniles stay in their natal territory for up to six years before dispersing to become breeders (Woolfenden and Fitzpatrick 1984, 1986). Once a scrub-jay pair becomes breeders, generally within two territories of their natal area, they stay on their breeding territory until death. In suitable habitat, fewer than 5 percent of scrub-jays disperse more than 5 miles (Fitzpatrick *et al.* unpubl. data). All documented long-distance dispersals have been in unsuitable habitat such as woodland, pasture, or suburban plantations. Scrub-jay dispersal behavior is affected by the intervening land uses. Protected scrub habitats will most effectively sustain scrub-jay populations if they are located within surrounding habitat types that can be used and traversed by scrub-jays. Brushy pastures, scrubby corridors along railway and road rights-of-way, and open burned flatwoods offer links for colonization among scrub-jay populations. Stith *et al.* (1996) believe that a dispersal distance of five miles is close to the biological maximum for scrub-jays.

Scrub-jays forage mostly on or near the ground, often along the edges of natural or man-made openings. They visually search for food by hopping or running along the ground beneath the scrub or by jumping from shrub to shrub. Insects, particularly orthopterans (e.g., locusts, crickets,

grasshoppers, beetles) and lepidopteran (e.g., butterfly and moth) larvae, form most of the animal diet throughout most of the year (Woolfenden and Fitzpatrick 1984). Small vertebrates are eaten when encountered, including frogs and toads (*Hyla femoralis*, *H. squirella,* rarely *Bufo quercicus,* and unidentified tadpoles, lizards (*Anolis carolinensis*, *Chemidophorus sexlineatus*, *Sceloporus woodi*, *Eumeces inexpectatus*, *Neoseps reynoldsi*, *Ophisaurus compressus*, *O. ventralis*), small snakes (*Thamnophus sauritus*, *Opheodrys aestivus*, *Diadophis punctatus*), small rodents (*Sigmodon hispidus*, *Peromyscus polionotus*, *Rattus rattus* young), downy chicks of the bobwhite (*Colinus virginianus*), and fledgling common yellowthroat (*Geothlypis trichas*). In suburban areas, scrub-jays will accept supplemental foods once the scrub-jays have learned about them (Woolfenden and Fitzpatrick 1984).

Acorns are the principal plant food (Woolfenden and Fitzpatrick 1984; Fitzpatrick *et al.* 1991). From August to November each year, scrub-jays may harvest and cache 6,500 to 8,000 oak (*Quercus* spp.) acorns throughout their territory. Acorns are typically buried beneath the surface of bare sand patches in the scrub during fall, and retrieved and consumed year-round, though most are consumed in fall and winter (DeGange *et al.* 1989). On the Atlantic Coastal Ridge, acorns are often cached in pine trees, either in forks of branches, in distal pine boughs, under bark, or on epiphytic plants, between one to 30 feet in height (B. Toland, Service, pers. comm. 1996). Other small nuts, fruits, and seeds also are eaten (Woolfenden and Fitzpatrick 1984).

Many scrub-jays occur in habitat conditions where their long-term persistence is doubtful, although their persistence in these areas can occur for many years (Swain *et al.* 1995; Stith *et al.* 1996; Root 1998; Breininger *et al.* 2001). A primary cause for scrub-jay decline is poor demographic success associated with reductions in fire frequency (Woolfenden and Fitzpatrick 1984, 1991; Schaub *et al.* 1992; Stith *et al.* 1996; Breininger *et al.* 1999). The reduction in fire frequency is associated with increases in shrub height, decreases in open space, increases in tree densities, and the replacement of scrub and marshes by forests (Duncan and Breininger 1998; Schmalzer and Boyle 1998; Duncan *et al.* 1999). These habitat trajectories result in declines in habitat use and demographic success (Woolfenden and Fitzpatrick 1984, 1991). As a result, mean family size declines, and eventually the number of breeding pairs can decline by 50 percent every 5 to 10 years (Woolfenden and Fitzpatrick 1991; Breininger *et al.* 1999, 2001).

Status and Distribution

The scrub-jay was federally listed as threatened in 1987 primarily because of habitat fragmentation, degradation, and loss (52 FR 20719).

Historically, oak scrub occurred as numerous isolated patches in peninsular Florida. These patches were concentrated along both the Atlantic and Gulf coasts and on the central ridges of the peninsula (Davis 1967). Probably until as recently as the 1950s, scrub-jay populations occurred in the scrub habitats of 39 of the 40 counties south of, and including Levy, Gilchrist, Alachua, Clay, and Duval Counties. Historically, most of these counties would have contained hundreds or even thousands of breeding pairs (Fitzpatrick *et al.* 1994). Only the southernmost county, Monroe, lacked scrub-jays (Woolfenden and Fitzpatrick 1996a). Although scrub-jay numbers probably began to decline when European settlement began in Florida (Cox 1987), the decline was first noted in the literature by Byrd (1928). After 40 years of personal observation of the Etonia scrub (now known as Ocala

National Forest), Webber (1935) observed many changes to the previously-undisturbed scrub habitat found there, noting that "The advent of man has created a new environmental complex."

A state-wide scrub-jay census was last conducted in 1992-1993, at which time there were an estimated 4,000 pairs of scrub-jays left in Florida (Fitzpatrick *et al.* 1994). At that time, the scrub-jay was considered extirpated in ten counties (Alachua, Broward, Clay, Duval, Gilchrist, Hernando, Hendry, Pinellas, and St. Johns), and were considered functionally extinct in an additional five counties (Flagler, Hardee, Levy, Orange, and Putnam), where ten or fewer pair remained. Recent information indicates that there are at least 12 to 14 breeding pairs of scrub-jays located within Levy County, higher than previously thought (K. Miller, FWC, in litt.), and there is at least one breeding pair of scrub-jays remaining in Clay County (K. Miller, FWC, in litt.). A scrub-jay has been documented in St. Johns County as recently as 2003 (J.B. Miller, FDEP, in litt.). Populations are close to becoming extirpated in Gulf coast counties (from Levy south to Collier) (Woolfenden and Fitzpatrick 1996a). In 1992-1993, population numbers in 21 of the counties were below 30 or fewer breeding pairs (Fitzpatrick *et al.* 1994). Based on the amount of destroyed scrub habitat, scrub-jay population loss along the Lake Wales Ridge is 80 percent or more since pre-European settlement (Fitzpatrick *et al.* 1991). Since the early 1980s, Fitzpatrick *et al.* (1994) estimated that in the northern third of the species' range, the scrub-jay has declined somewhere between 25 and 50 percent. The species may have declined by as much as 25 to 50 percent in the last decade alone (Stith *et al.* 1996).

On protected lands, scrub-jays have continued to decline due to inadequate habitat management (Stith 1999). However, over the last several years, steps to reverse this decline have occurred, and management of scrub habitat is continuing in many areas of Florida (Hastie and Eckl 1999; Stith 1999; TNC 2001; A. Birch, Brevard County Endangered Lands Program (EELs), pers. comm.; M. Camardese, U.S. Air Force, pers. comm.).

Stith (1999) utilized a spatially explicit individual-based population model developed specifically for the scrub-jay to complete a metapopulation viability analysis of the species. The species' range was divided into 21 metapopulations demographically isolated from each other. Metapopulations are defined as collections of relatively discrete demographic populations distributed over the landscape; these populations are connected within the metapopulations through dispersal or migration (National Research Council 1995). A series of simulations were run for each of the 21 metapopulations based on different scenarios of reserve design ranging from the minimal configuration consisting of only currently protected patches of scrub (no acquisition option) to the maximum configuration, where all remaining significant scrub patches were acquired for protection (complete acquisition option) (Stith 1999). The assumption was made that all areas that were protected were also restored and properly managed.

Results from Stith's (1999) simulation model included estimates of extinction, quasi-extinction (the probability of a scrub-jay metapopulation falling below 10 pairs), and percent population decline. These were then used to rank the different state-wide metapopulations by vulnerability. The model predicted that five metapopulations (NE Lake, Martin, Merritt Island, Ocala National Forest, and Lake Wales Ridge) have low risk of quasi-extinction. Two of the five (Martin and NE Lake), however, experienced significant population declines under the "no acquisition" option; the probability for survival of both of these metapopulations could be improved with more acquisitions.

Eleven of the remaining 21 metapopulations were shown to be highly vulnerable to quasi-extinction if more habitat was not acquired (Central Brevard, N Brevard, Central Charlotte, NW Charlotte, Citrus, Lee, Levy, Manatee, Pasco, St. Lucie, and W Volusia). The model predicted that the risk of quasi-extinction would be greatly reduced for 7 of the 11 metapopulations (Central Brevard, N Brevard, Central Charlotte, NW Charlotte, Levy, St. Lucie, and W Volusia) by acquiring all or most of the remaining scrub habitat. The model predicted that the remaining four metapopulations (Citrus, Lee, Manatee, and Pasco) would moderately benefit if more acquisitions were made.

Stith (1999) classified two metapopulations (S Brevard and Sarasota) as moderately vulnerable with a moderate potential for improvement; they both had one or more fairly stable subpopulations of scrub-jays under protection, but the model predicted population declines. The rest of the metapopulations could collapse without further acquisitions, making the protected subpopulations there vulnerable to epidemics or other catastrophes.

Three of the metapopulations evaluated by Stith (1999) (Flagler, Central Lake, and S Palm Beach) were classified as highly vulnerable to quasi-extinction and had low potential for improvement, since little or no habitat is available to acquire or restore.

Current Threats

Research and monitoring of scrub-jays has revealed more information about threats to this species since the time the first scrub-jay recovery plan was approved in 1990. The following discussion is intended to give an up-to-date analysis:

<u>The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range</u>: Scrub habitats have continued to decline throughout peninsular Florida since listing occurred, and habitat destruction continues to be one of the main threats to the scrub-jay. Cox (1987) noted local extirpations and major decreases in numbers of scrub-jays and attributed them to the clearing of scrub for housing and citrus groves. Eighty percent or more of the scrub habitats have been destroyed along the Lake Wales Ridge since pre-European settlement (Fitzpatrick *et al.* 1991). Fernald (1989), Fitzpatrick *et al.* (1991), and Woolfenden and Fitzpatrick (1996a) noted that habitat losses due to agriculture, silviculture, and commercial and residential development have continued to play a role in the decline in numbers of scrub-jays throughout the state. State-wide, estimates of scrub habitat loss range from 70 to 90 percent (Woolfenden and Fitzpatrick 1996a; Fitzpatrick *et al.* unpubl. data). Various populations of scrub-jays within the species' range have been monitored closely, and more precise estimates of habitat loss in these locations are available.

Toland (1999) estimated that about 70 to 78 percent of pre-European settlement scrub habitats had been converted to other uses in Brevard County. This is due mainly to development activity and citrus conversion, which were the most important factors that contributed to the scrub-jay decline between 1940 and 1990. A total of only 4,312 ha (10,656 ac) of scrub and scrubby flatwoods remain in Brevard County (excluding federal ownership), of which only 648 ha (1,600 ac) (15 percent) is in public ownership for the purposes of conservation. Less than 800 ha (1,977 ac) of an estimated pre-settlement of 6,000 ha (14,826 ac) of scrubby flatwoods habitat remain in Sarasota County, mostly occurring in patches averaging less than 1 ha (2.5 ac) in size (Thaxton and Hingtgen 1996). Only 4,319 ha (10,673 ac) of viable coastal scrub and scrubby flatwoods remained in the Treasure Coast region of Florida (Indian River, Saint Lucie, Martin, and Palm Beach counties)

according to Fernald (1989). He estimated that 95 percent of scrub had already been destroyed for development purposes in Palm Beach County.

Habitat destruction not only reduces the amount of area scrub-jays can occupy, but also increases fragmentation of habitat. As more scrub habitat is altered, the habitat is cut into smaller and smaller pieces, separated from other patches by larger distances; such fragmentation increases the probability of inbreeding and genetic isolation, which is likely to increase extinction probability (Fitzpatrick *et al.* 1991; Woolfenden and Fitzpatrick 1991; Stith *et al.* 1996; Thaxton and Hingtgen 1996). Dispersal distances of scrub-jays in fragmented habitat are further than in optimal unfragmented habitats, and demographic success is poor (Thaxton and Hingtgen 1996; Breininger 1999).

Overutilization for Commercial, Recreational, Scientific, or Educational Purposes: The USFWS knows of only a few cases where scrub-jays have been shot. One was in Volusia County, which was investigated and prosecuted under MBTA (J. Oliveros, USFWS, pers. comm.). The Florida Fish and Wildlife Conservation Commission (FWC) investigated a case, in which three scrub-jays were shot in Highlands County (N. Douglass, FWC, pers. comm.). It does not seem that the small number and infrequent occurrence of scrub-jays taken in this manner has had an impact on the species.

Disease or Predation: Most scrub-jay mortality probably is from predation (Woolfenden and Fitzpatrick 1996b). The second most frequent cause may be disease, or predation on disease-weakened scrub-jays (Woolfenden and Fitzpatrick 1996b). Known predators of scrub-jays are listed by Woolfenden and Fitzpatrick (1990), Fitzpatrick *et al.* (1991), Schaub *et al.* (1992), Woolfenden and Fitzpatrick (1996a, b), Breininger (1999), and K. Miller (FWC, in litt. 2004); the list includes eastern coachwhip (*Masticophis flagellum*, known to eat adults, nestlings, and fledglings), eastern indigo snake (*Drymarchon corais couperi*, known to eat adults and fledglings), black racer (*Coluber constrictor*, known to eat eggs), pine snake (*Pituophus melanoleuous*), and corn snake (*E. guttata*). Mammalian predators include bobcats (*Lynx rufus*), raccoons (*Procyon lotor*), sometimes cotton rats (*Sigmodon hispidus*, known to eat eggs), black rat (*Rattus rattus*), and domestic cats (*Felis catus*, known to eat adults). Franzreb and Puschock (2004) also have documented spotted skunks (*Spilogale putorius*) and grey fox (*Urocyon cinereoargenteus*) as mammalian predators of scrub-jay nests. Fitzpatrick *et al.* (1991) suspect that populations of domestic cats are able to eliminate small populations of scrub-jays. Avian nest predators include the great horned owl (*Bubo virginianus*), eastern screech-owl (*Otus asio*), red-tailed hawk (*Buteo jamaicensis*), northern harrier (*Circus cyaneus*), fish crow (*Corvus ossifragus*), boat-tailed grackle (*Quiscalus major*), common grackle (*Q. quiscula*), American crow (*C. brachyrhynchos*), blue jay (*Cyanocitta cristata*), and swallow-tailed kites (*Elanoides forficatus*). Fitzpatrick *et al.* (1991) reported that overgrown scrub habitats are often occupied by the blue jay, which may be one factor limiting scrub-jay populations in such areas. Raptors which seem to be important predators of adult scrub-jays are merlin (*Falco columbarius*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*A. cooperii*), and northern harrier. During migration and winter, these four raptor species are present in areas which contain scrub habitat, and scrub-jays may experience frequent confrontations (as many as one pursuit a day) with them (Woolfenden and Fitzpatrick 1990). In coastal scrub, Woolfenden and Fitzpatrick (1996b) report that scrub-jays are vulnerable to predation by raptors in October, March, and April, when high densities of migrating accipiters and falcons are present. Woolfenden and Fitzpatrick (1996b) and Toland (1999) suggest that in overgrown scrub habitats,

hunting efficiency for scrub-jay predators is increased. Bowman and Averill (1993) noted that scrub-jays occupying fragments of scrub found in or near housing developments were more prone to predation by house cats and competition from blue jays and mockingbirds. Woolfenden and Fitzpatrick (1996a, 1996b) stated that proximity to housing developments (and increased exposure to domestic cats) needs to be taken into consideration when designing scrub preserves. Young scrub-jays are especially vulnerable to ground predators (e.g., snakes and mammals) before they are fully capable of sustained flight.

The scrub-jay hosts two protozoan blood parasites (*Plasmodium cathemerium* and *Haemoproteus danilewskyi*), but incidence is low (M. Garvin pers. comm.., cited in Woolfenden and Fitzpatrick 1996b). Several scrub-jays sick from these two agents in March 1992 survived to become breeders. The scrub-jay carries at least three types of mosquito-borne encephalitis (St. Louis, eastern equine, and "Highlands jay"; M. Garvin and J. Day pers. comm., cited in Woolfenden and Fitzpatrick 1996b). Of particular concern is the arrival of West Nile virus (the agent of another type of encephalitis) in Florida during 2001 (G. Wallace, FWC, in litt. 8/3/01; Stark and Kazanis 2001); since corvids have been particularly susceptible to the disease in states north of Florida, it is expected that scrub-jays will be affected (Breininger *et al.* 2003).

Woolfenden and Fitzpatrick (1996b) noted three episodes of elevated mortality (especially among juveniles) in 26 years at Archbold Biological Station. Each of these incidents occurred in conjunction with elevated water levels following unusually heavy rains in the fall, although high mortality does not occur in all such years. During the most severe of these presumed epidemics (August 1979 through March 1980), all but one of the juvenile cohorts and almost half of the breeding adults died (Woolfenden and Fitzpatrick 1984, 1990). The 1979-1980 incident coincided with a known outbreak of eastern equine encephalitis among domestic birds in central Florida (J. Day pers. comm., cited in Woolfenden and Fitzpatrick 1996b). From the fall of 1997 through the spring of 1998, the continuing population decline of scrub-jays along the Atlantic coast and in central Florida may have been augmented by an epidemic of unknown origin (Breininger 1999).

At Cape Canaveral Air Force Station, Stevens and Hardesty (1999) noted a decline in juvenile survival from 60 to 70 percent in the preceding years to only 22 percent in 1997-98. It stayed low (only 25 percent) in 1998-99 before again climbing into the mid-60 percent range. Also, adult survival dropped from 70 to 80 percent survival in the preceding years to 50 to 60 percent in 1997-98. Overall, their annual surveys documented the largest one-year drop (pairs decreased by 17 percent and birds by 20 percent) in this population at the same time as the presumed state-wide epidemic.

In winter-summer of 1973, 15 species of intestinal parasitic fauna (including 8 nematodes, 5 trematodes, 1 cestode, and 1 acanthocephalan) were found in 45 scrub-jays collected in south-central Florida; the parasite load was attributed to a varied arthropod diet (Kinsella 1974). These naturally-occurring parasites are not believed to have a negative impact on scrub-jay population levels.

Larvae of a fly, *Philornis* (= *Neomusca*) *porteri*, occur irregularly on scrub-jay nestlings. The species pupates in the base of the nest; larvae locate in nares (nasal openings), mouth flanges, bases of remiges, and toes; apparently no serious effect on the scrub-jay host occurs (Woolfenden and Fitzpatrick 1996b). Additionally, one undescribed chewing louse (*Myrsidea* sp., R. Price pers.

comm.., cited in Woolfenden and Fitzpatrick 1996b), one wing-feather mite (*Pterodectes* sp.), two chiggers (*Eutrombicula lipovskyana*), and a flea (*Echidnophaga gallinacea*; J. Kinsella pers. comm., cited in Woolfenden and Fitzpatrick 1996b) occur on some individuals, usually at low densities. Nymphs and larvae of four ticks (*Amblyomma americanum*, *A. tuberculatum*, *Haemaphysalis leporispalustris*, and *Ixodes scapularis*) are known to occur on scrub-jays, as well as the larvae of the tick *Amblyomma maculatum* (L. Durden and J. Keirans pers. comm., cited in Woolfenden and Fitzpatrick 1996b). These naturally-occurring parasites are not believed to have a negative impact on scrub-jay population levels.

The Inadequacy of Existing Regulatory Mechanisms: Woolfenden and Fitzpatrick (1996a) state the importance of enforcing existing federal laws regarding the management of federal lands as natural ecosystems for the long-term survival of the scrub-jay. The USFWS consults regularly on activities on federal lands which may affect scrub-jays and also works with private landowners through the section 10(a)(1)(B) incidental take permitting process of the ESA when take is likely to occur and no federal nexus is present. Florida's State Comprehensive Plan and Growth Management Act of 1985 is administered mostly by regional and local governments. Regional Planning Councils administer the law through Development of Regional Impact Reviews; at the local level, although comprehensive plans contain policy statements and natural resource protection objectives, they are only effective if counties and/or municipalities enact and enforce ordinances. As a general rule, counties have not enacted and/or enforced ordinances that are effective in protecting scrub-jays (Fernald 1989).

The Wildlife Code of the State of Florida (Chapter 68A, Florida Administrative Code) prohibits taking of individuals of threatened species, or parts thereof, or their nests or eggs, except as authorized. The statute does not prohibit clearing of habitat occupied by protected species, which limits the ability of the FWC to protect the scrub-jay and its habitat.

Other Natural or Manmade Factors Affecting its Continued Existence: Human interference with natural fire regimes has continued to play a major part in the decline of the scrub-jay and today may exceed habitat loss as the single most important limiting factor (Woolfenden and Fitzpatrick 1991, 1996a; Fitzpatrick *et al.* 1994). Lightning strikes cause virtually all naturally-occurring fires in south Florida scrub habitat (Abrahamson 1984; Hofstetter 1984; Woolfenden and Fitzpatrick 1990). Fire has been noted to be important in maintenance of scrub habitat for decades (Nash 1895; Harper 1927; Webber 1935; Davis 1943; Laessle 1968; Abrahamson *et al.* 1984). Human efforts to prevent and/or control natural fires have allowed the scrub to become too dense and tall to support populations of scrub-jays, resulting in the decline of local populations of scrub-jays throughout the state (Fernald 1989; Fitzpatrick *et al.* 1994, unpubl. data; Percival *et al.* 1995; Stith *et al.* 1996; Thaxton and Hingtgen 1996; Woolfenden and Fitzpatrick 1990, 1996a; Toland 1999). Woolfenden and Fitzpatrick (1996a) cautioned, however, that fire applied too often to scrub habitat also can result in local extirpations. Experimental data at Archbold Biological Station (Fitzpatrick and Woolfenden, unpubl. data) show that fire-return intervals varying between 5 and 15 years are optimal for long-term maintenance of productive scrub-jay populations in central Florida. These intervals also correspond with those yielding healthy populations of listed scrub plants (Menges and Kohfeldt 1995; Menges and Hawkes 1998). Optimal fire-return intervals may, however, be shorter in coastal habitats (Schmalzer and Hinkle 1992a, b).

Stith *et al.* (1996) estimated that at least 2,100 breeding pairs of scrub-jays were living in overgrown habitat state-wide. Toland (1999) reported that most of Brevard County's remaining scrub (estimated to be only 15 percent of the original acreage) is overgrown due to fire suppression. He further suggests that the overgrowth of scrub habitats reduces the number and size of sand openings which are crucial not only to scrub-jays, but also many other scrub plants and animals. Reduction in the number of potential scrub-jay nesting sites, acorn cache sites, and foraging sites presents a problem for scrub-jays. Fernald (1989) reported that overgrowth of scrub results not only in the decline of species diversity and abundance but also a reduction in the percentage of open sandy patches (Fernald 1989; Woolfenden and Fitzpatrick 1996b). Fitzpatrick *et al.* (1994) believed that fire suppression was just as responsible as habitat loss in the decline of the scrub-jay, especially in the northern third of its range. Likewise, the continued population decline of scrub-jays within Brevard County between 1991 and 1999 has been attributed mainly to the overgrowth of remaining habitat patches (Breininger *et al.* 2001). Breininger *et al.* (1999) concluded that optimal habitat management is essential in fragmented ecosystems maintained by periodic fire, especially to lessen risks of decline and extinction resulting from epidemics and hurricanes.

Fitzpatrick *et al.* (1991, 1994) and Woolfenden and Fitzpatrick (1996a) expressed concern for the management practices taking place on federal lands at Ocala National Forest, MINWR/Kennedy Space Center, and Cape Canaveral Air Force Station, all supporting large contiguous populations of scrub-jays. They predicted that fire suppression and/or too frequent fires (on the latter two) and silvicultural activities involving the cultivation of sand pine on Ocala National Forest would be responsible for declines of scrub-jays in these large contiguous areas of scrub. These areas should be those where populations are most secure because of federal agencies' responsibilities under section 7(a)(1) of the ESA. Monitoring of scrub-jay populations, demography, and nesting success is ongoing on all of these properties to assess the effectiveness of management practices in meeting scrub-jay recovery objectives.

Housing and commercial developments within scrub habitats are accompanied by the development of roads. Since scrub-jays often forage along roadsides and other openings in the scrub, they are often killed by passing cars. Research by Mumme *et al.* (2000) along a two-lane paved road indicated that clusters of scrub-jay territories found next to the roadside represented population sinks (breeder mortality exceeds production of breeding-aged recruits), which could be supported only by immigration. Since this species may be attracted to roadsides because of their open habitat characteristics, road mortality presents a significant and growing management problem throughout the remaining range of the scrub-jay (Dreschel *et al.* 1990; Mumme *et al.* 2000), and proximity to high-speed paved roads needs to be considered when designing scrub preserves (Woolfenden and Fitzpatrick 1996a).

Another potential problem in suburban areas supporting scrub-jays is supplemental feeding by humans (Bowman and Averill 1993; R. Bowman unpubl. data, cited in Woolfenden and Fitzpatrick 1996a; Bowman 1998). The presence of additional food may allow scrub-jays to persist in fragmented habitats, but recruitment in these populations is lower than in native habitats. However, even though human-feeding may postpone local extirpations, long-term survival cannot be ensured in the absence of protecting native oak scrub habitat necessary for nesting.

Scrub-jays in suburban settings often nest high in tall shrubbery. During March winds, these nests tend to be susceptible to destruction (R. Bowman and G.E. Woolfenden unpubl data, cited in Woolfenden and Fitzpatrick 1996b; Bowman 1998).

Hurricanes pose a potential risk for scrub-jays, although the exact impact of such catastrophic events is unknown. Breininger *et al.* (1999) modeled the effects of epidemics and hurricanes on scrub-jay populations in varying levels of habitat quality. Small populations of scrub-jays are more vulnerable to extirpation where epidemics and hurricanes are common. Storm surge from a category 3 to 5 hurricane could inundate entire small populations of scrub-jays, and existing habitat fragmentation could prevent repopulation of affected areas. However, this model also predicted that long-term habitat degradation had greater influence on extinction risk than hurricanes or epidemics.

Fernald (1989) reported that many of the relatively few remaining patches of scrub within the Treasure Coast region of Florida had been degraded by trails created by off-road vehicles, illegal dumping of construction debris, abandoned cars and appliances, or household waste. The invasion of these areas by exotic species, including Brazilian pepper (*Schinus terebinthifolius*), cypress pine (*Callitris* sp.), and Australian pine (*Casuarina equisetifolia*) also was a problem. Other human-induced impacts identified by Fernald (1989) include the introduction of domestic dogs (*Canis familiaris*) and cats, black rats (*Rattus rattus*), greenhouse frogs (*Eleutherodactylus planirostris*), giant toads (*Bufo marinus*), Cuban tree frogs (*Osteopilus septentrionalis*), brown anoles (*Anolis sagrei*), and other exotic animal species. These exotic species may compete with scrub-jays for both space and food, although scrub-jays sometimes feed on them.

Analysis of the Species/Critical Habitat Likely to be Affected

The scrub-jay's status since its listing in 1987 has not improved. The status and trends that we discussed above, clearly shows what two items are essential for recovery of this species: (1) additional purchase of scrub lands for preservation in some key areas; and (2) restoration and management of publicly-owned scrub lands already under preservation. Without both, it is unlikely that recovery can be achieved.

ENVIRONMENTAL BASELINE

Status of the Species in the Action Area

Quality of the Site's Scrub

The habitat impacts associated with the roadway improvements consist of medium density residential, commercial services, community recreational facilities, undeveloped lands, improved pasture, unimproved pasture, woodlands, pine flatwoods, xeric oak, wax myrtle/willow, shrub and brushland, freshwater marshes, roads, and railroads. The xeric oak scrub is currently Type I scrub-jay habitat, as defined by Fitzpatrick *et al.* (1991). The pine flatwoods, unimproved pasture, and shrub/brushland contain some Type I habitat but is mainly Type II scrub-jay habitat. These Type II habitats are suitable for scrub-jays occupation; however the habitat size, fragmentation, and lack of management are becoming limiting factors for long term survival of the families. No active management is planned or has taken place on the proposed project site to maintain the scrub.

Scrub-Jay Utilization of the Site

The applicant's ecological consultant, Post, Buckley Schuh & Jernigan, Inc., conducted surveys for five consecutive days beginning on July 18, 2005, to determine the presence and approximate territory boundaries of scrub-jays within the project corridor. During those surveys, three families of scrub-jays were observed within the project corridor. One family occupies the xeric oak Type I habitat east of Wickham Road adjacent to the Holy Trinity Academy site. Four individual scrub-jays were observed during the 2005 survey events. The four individuals were banded. Additional surveys were performed by a Service Biologist in this habitat on January 9, 2007 (Lat 28 12.162 Long 80 40.180, Lat 28 12.147 Long 80 40.194). Two adult and two juvenile scrub-jays responded to the tape calls. No banding was observed during these surveys.

The second family resides in Type I habitat immediately west of Wickham Road and slightly north of Pineda Causeway. Only one scrub-jay responded to the tape calls on July 21, 2005 in three different locations. On July 22, 2005, one scrub-jay responded in two locations per the survey results submitted to the Service. The mainline construction will not impact this area. Stormwater Pond B and a Floodplain Compensatory Area are proposed to be adjacent to this habitat but are not anticipated to impact any occupied xeric oak scrub habitat.

An additional 4.32 acres of impacts will occur to the third family residing in the woodland pasture/unimproved pasture (Type II) north of Pineda Causeway between Estuary Boulevard and Peninsula Circle. This is also the area where the inactive bald eagle territory (BE 17) is located. The total undeveloped area is approximately 31.5 acres. Scrub-jays responded to the tape calls on July 18, 19, 20, and 22 of the 2005 survey events. The numbers ranged form one scrub-jay in many locations to two individual scrub-jays in several other locations within the undeveloped area. The undeveloped parcels are slated for development and dialogue regarding the listed species with the applicant has recently begun with the Jacksonville Ecological Service Office.

Relationship of the Site to the Action Area

Breininger *et al.* (2001) has defined patches of potential habitat for scrub-jays that are large enough to support at least one of their territories as Potential Reserve Units (PRUs). PRUs can be compared to critical habitat polygons used by Stith (1999) by excluding habitat fragments categorized as "suburban territories." Breininger *et al.* (2001) used major roads to separate PRUs, land ownerships, and major land use patterns. Within the PRUs are "territory clusters" or polygons that have been used to describe scrub-jay populations, which are areas of contiguous suitable habitat in areas occupied by scrub-jays and not areas contiguously occupied (Breininger *et al.* 2001). Suitable habitat was not restricted to oak and palmetto-oak and could include palmetto-lyonia, ruderal, and marshes that would have been included within their territories (Breininger *et al.* 1995, 1998).

The proposed action is included in the Wickham Park PRU. The scrub patches in the Wickham Park PRU have been protected as public land but are not actively managed, while many of the scrub parcels in the south-central Melbourne PRU are either unprotected or not occupied by scrub-jays because the habitat has become overgrown from fire suppression. The areas unoccupied by scrub-jays cannot be regulated under the Act and may be developed with no coordination from the Service; therefore they may ultimately be developed rather than preserved.

At least 219 breeding pairs of scrub-jays are estimated to be within the action area (Table 2) (Breininger *et al.* 2003). The 2001 scrub-jay survey conducted within Brevard County found that the number may be underestimated within central Brevard and along the Ten Mile Ridge south of the town of Fellsmere, because there was limited access to some of the private lands (Breininger *et al.* 2001). In Table 2, Breininger *et al.* (2003) compares the state-wide 1992-1993 scrub-jay surveys with the 2002 surveys. Overall, the 2002 surveys found that most of the populations in this area have declined except in central Brevard. According to Fitzpatrick *et al.* 1994, a metapopulation consisting of more than 100 pairs has less than 10 percent probability of extinction within 100 years. The proposed action will result in the incidental take of two families of scrub-jays in the South Brevard metapopulation. The compensatory long-term conservation of offsite lands purchased and managed will minimize the impacts to the scrub-jays within the project area. The action, as proposed, will be an important step towards the regional goal of acquiring, restoring, and managing enough scrub habitat to sustain the maximum number of scrub-jay breeding pairs to ensure long-term survival of the South Brevard Metapopulation.

Table 2. Summary of Metapopulation Sizes (Breininger *et al.* 2003)

Metapopulation	Breeding Pairs		
	1992	2002	Potential [a]
Central Brevard	50	59	104
South Brevard-Indian River-St. Lucie	255[b]	160	410
Combined	305	219	514

[a] Includes unoccupied PRUs that could be restored to enhance connectivity.
[b] Assumes that 1992 population sizes for Fox Lake, Carson Platt, and Coracii were at least as great as in 2002. None of these areas were surveyed in 1992.

Factors Affecting Species Environment Within the Action Area

Scrub-jays evolved in a landscape matrix of nearly contiguous habitat patches that shifted in size and distribution in response to natural fire events. Habitat quality and the location of suitable habitat patches were dependent on periodic fires that retarded vegetative succession. Natural fire events created temporal, optimal, early-seral stage xeric vegetative communities that were exploited by scrub-jays.

Over the last 100 years, human occupation of Florida resulted in direct habitat loss through land clearing, habitat fragmentation, and habitat degradation through fire suppression. The distribution and numbers of scrub-jays likely declined in response to these increasing urban pressures. These same factors continue to act together against scrub-jays in Florida. However, as scrub-jay populations become smaller and more isolated, the adverse demographic effects of urbanization influences may be magnified; small populations are more susceptible to extinction than larger populations.

Numerous federal actions have taken place within the action area that has impacted scrub-jays. These projects resulted in incidental take through sections 7 and 10 of the Act. The impacts associated with these projects resulted in the loss of occupied scrub-jay habitat within the action area, and further fragmented the scrub habitat. However, the adverse effects of all these projects were offset through onsite preservation and/or offsite purchase and management of occupied scrub habitat, resulting in a net increase in scrub habitat under active management. A summary of impacts and minimization or mitigation actions is provided in Table 2.

Through projects evaluated under section 7 and section 10 of the Act, the acquisition of 1211.24 acres has occurred in Brevard County. This land has been acquired to minimize or mitigate for impacts to scrub-jays throughout Brevard County. Most of these properties have been turned over to the Brevard County EELs program, who has assumed management responsibilities. By acquiring these properties, we have provided more potential scrub habitat to support scrub-jays long-term throughout Brevard County. The Service supports acquisition to help provide a corridor between the mainland metapopulations. There are management endowments associated with all acquisitions to provide for the restoration and management of these properties in perpetuity. Since many of these sites have been acquired, management has taken place and the sites are occupied by scrub-jays. Most of these sites are located adjacent to or within large tracts of conservation land already under public ownership. An additional 1,620 acres of scrub habitat have already been purchased (outside federal ownership) for preservation by Brevard County EEL, St. Johns Water Management District (SJWMD), and Florida Department of Environmental Protection (FDEP) (Toland 1999).

Table 3. List of Section 7 Projects in Brevard County from 1993 to 2006

Project Number (FWS Log No.)	Occupied scrub-jay habitat impacted (acres)	Occupied scrub-jay habitat acquired and managed (acres)
93-343	4	9
93-416	none (avoided scrub habitat)	2.34 (on-site)
93-497	2.12	8.48
94-202	none (avoided scrub habitat)	6 (on-site)
94-414	none (avoided scrub habitat)	14.64 (on-site)
95-222	27.8	69.2
95-275	25.0	50.0
95-398	205.0	411.0 (on-site)
96-053	1.91	8.28
96-539	4.26	10.9
97-540	14.72	58.58
97-551	5.2	21.4
98-522	4.11	4.55 (on-site) and 9 (off-site)
98-689	0.25	0.55

Project Number (FWS Log No.)	Occupied scrub-jay habitat impacted (acres)	Occupied scrub-jay habitat acquired and managed (acres)
98-818	17.06	54.41
99-303	17.46	60.0
00-350	2.72	4.5
00-370	37.58	101.66
00-664	2.16	4.32
01-379	1.5	3.0
01-513	none (avoided scrub habitat)	7.0
01-335	5.25	21.07
01-337	16.30	32.48
01-379	1.5	3.0
02-473	28	56
03-1204	2.3	9.97
03-375	2.3	5.0
04-1706.01	1.0	2.0
05-802.01	12.35	57.2
06-265	24.72	99.71
06-399	7.48	15.0
Total	**474.05**	**1211.24**

EFFECTS OF THE ACTION

This section includes an analysis of the direct and indirect effects of the proposed action on the species and critical habitat and its interrelated and interdependent activities. To determine whether the proposed action is likely to jeopardize the continued existence of threatened or endangered species in the action area, we focus on consequences of the proposed action that affect rates of birth, death, immigration, and emigration because the probability of extinction in plant and animal populations is most sensitive to changes in these rates.

Factors to be Considered

The effects of the SR 404 improvements on the scrub-jay may occur as direct and indirect effects.

Direct Effects - The development of the referenced project may result in the direct "take", through harm and/or harassment, of two scrub-jay families (resulting from the destruction of 4.92 acres of occupied habitat) as a result of habitat loss on the project site. The family occupying the area east

of Wickham Road is estimated at four individuals. The western most family's exact number of individuals has not been determined. The number of scrub-jays responding during the events varied from one individual to two individuals at each location surveyed within the habitat. The probability of direct incidental take is dependent upon the number of scrub-jays in the region, their dispersal abilities, and the amount and distribution of available, suitable habitat.

The proposed construction activity will result in the direct, permanent loss of 4.92 acres of onsite habitat occupied by scrub-jays. Another significant threat to scrub-jay recovery is fire suppression and/or lack of management in scrub habitat (Woolfenden and Fitzpatrick 1984, 1991; Schaub *et al.* 1992; Stith *et al.* 1996; Breininger *et al.* 1999). The project site is currently not managed for scrub-jays, and no such management is likely to occur in the future with or without the proposed project.

Impacts to the species will be minimized by the conservation measures proposed by the applicant to contribute money to the Florida Scrub-Jay Conservation Fund. The funds will be directed to the management of occupied scrub-jay habitat in public ownership within Brevard County. The contribution for the 4.92 acres of impacts to the occupied Florida scrub-jay habitat will be in the amount of $98,537.76. This is determined by the following formula: $8,400.00 per acre x 19.21% overhead fee x 4.92 acres @ 2:1 ratio.

Indirect Effects - Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. Indirect effects may occur outside of the area directly affected by the action, and may include other Federal actions that have not undergone section 7 consultations, but will result from the action under consideration. The indirect effects will occur in three ways: 1) additional traffic and increased travel speeds from the proposed roadway improvements resulting from more residential development in the immediate area, may result in scrub-jays being struck by vehicles, 2) linking the existing roadway network with a new I-95 interchange creating a linkage to the interstate system in the immediate area, may result in scrub-jay mortality from vehicles, 3) loss of scrub habitat on the project site may interrupt dispersal corridors between areas occupied by scrub-jays within the metapopulation with the new alignment through occupied habitat, increased roadway footprint (increase from two lane undivided to four-lane divided), and stormwater management facilities.

Dreschel *et al.* (1990), Fitzpatrick *et al.* (1991), and Mumme *et al.* (2000) provide the best scientific and commercial data on the likelihood of incidental take as the result of scrub-jays being killed by the vehicles. The only scientific documentation of road-kill mortality in scrub-jays are from jays living in a territory immediately adjacent to a road, not from dispersing some unknown distance across a road to a new territory. The proposed project will increase the amount of traffic on SR 404 and Pineda Causeway, which could result in scrub-jays being killed by vehicles.

The proposed project will result in habitat destruction, which reduces the amount of area scrub-jays can occupy, but also increases fragmentation of habitat. As more scrub habitat is altered, the habitat is cut into smaller and smaller pieces, separated from other patches by larger distances; such fragmentation increases the probability of genetic isolation, which is likely to increase extinction probability (Fitzpatrick *et al.* 1991; Woolfenden and Fitzpatrick 1991; Snodgrass *et al.* 1993; Stith *et al.* 1996; Thaxton and Hingten 1996). Dispersal distances of scrub-jays in fragmented habitat are further than in optimal unfragmented habitats (Thaxton and Hingten 1996; Breininger 1999).

CUMULATIVE EFFECTS

Cumulative effects include effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

All development projects that may affect occupied scrub-jay habitat in the action area require federal review pursuant to either section 7 or section 10 of the Act. However, we have no jurisdiction over activities that result in the loss of unoccupied, but potentially suitable, habitat. Additionally, we cannot mandate the continued management of occupied habitat on private lands that have not come under our purview through section 7 or section 10. Without continual management, occupied habitat will continue to become overgrown to the point that it no longer supports scrub-jays, and potentially suitable unoccupied habitat will be converted to other uses, precluding future management and occupation by scrub-jays. The extent to which this has historically occurred in Brevard County and throughout the range of the scrub-jay has been discussed previously in this Biological Opinion. The extent to which it is likely to occur in the future is unknown. For the purposes of this discussion we have assumed a worst-case scenario that all current potentially suitable unoccupied habitat will be converted to other land uses, and that all occupied habitat on private lands not under active management will become unsuitable and unoccupied. We note that these assumptions for our worst-case scenario are very likely false because several agencies are actively pursuing opportunities to acquire and manage additional scrub-jay habitat. Nonetheless, under this scenario we would eventually see scrub-jay distribution limited to lands currently under active management. It is likely that under such a scenario that scrub-jay populations would decline from current numbers; however, it is also likely that scrub-jays would continue to persist in several viable metapopulations. Further, it must be noted that the proposed project, with its offsite habitat acquisition, preservation, restoration, and management components, works to counteract the forces contributing to the manifestation of the above worst case scenario. As such, this project will not contribute to the on-going cumulative loss of scrub habitat, but will in fact provide a net increase in managed scrub. As such, we do not believe there are any cumulative effects associated with this project.

CONCLUSION

This proposed project will result in the permanent loss of the 4.92 acres of scrub habitat occupied by scrub-jays.

From the information presented above, the following salient facts are apparent: 1) scrub-jays are dependent on continuous human management of scrub habitat; 2) scrub-jay recovery depends on additional purchase of scrub lands in key areas and effective restoration and management of protected lands; 3) succession of unmanaged scrub habitat is as important a factor in the decline of scrub-jay populations as is loss of habitat to competing land uses; and 4) with respect to the action area for this project, acquisition and management of important areas in North and South Brevard County would enhance the potential for interchange between these metapopulations; improving chances for their long-term persistence. When comparing the proposed project to these facts, we find: 1) the 4.92 acres of habitat currently occupied by scrub-jays on the project site are unmanaged and unlikely to sustain scrub-jays long-term; and 2) the project will result in the preservation,

restoration, and perpetual management of habitat offsite that will be occupied by scrub-jays, thus enhancing the long-term viability of this scrub-jay metapopulation.

After reviewing the current status of the scrub-jay, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the proposed project is not likely to jeopardize the continued existence of the Florida scrub-jay. No critical habitat has been designated for this species; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or to attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" and "harass" are further defined in Service regulations (50 CFR 17.3). "Harm" is defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. "Harass" is defined as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding or sheltering. Under the terms of sections 7(b)(4) and 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the agency so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The Federal agency has a continuing responsibility to regulate the activity that is covered by this incidental take statement. If the agency (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, or (2) fail to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Section 7(b)(4) and 7(o)(2) of the Act do not apply to the incidental take of listed plant species. However, protection of listed plants is provided to the extent that the Act requires a Federal permit for removal or reduction to possession of endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species on any State or in the course of any violation of a State criminal trespass law.

AMOUNT OR EXTENT OF TAKE ANTICIPATED

The Service has reviewed the biological information for the scrub-jay, information presented by the applicant's consultant (PBS&J), and other available information relevant to this action. Based on our review, incidental take is anticipated to include 4.92 acres of scrub habitat occupied by up to two scrub-jay family (six or more individuals).

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

When providing an incidental take statement, the Service is required to give non-discretionary reasonable and prudent measures it considers necessary or appropriate to minimize the take along with terms and conditions that must be complied with, to implement the reasonable and prudent measures. Furthermore, the Service must also specify procedures to be used to handle or dispose of any individuals taken. The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take:

1. Avoid construction during the scrub-jay nesting season from March 1 through June 30 to the maximum extent practicable.

2. Notify the Service of any unauthorized take of scrub-jays.

TERMS AND CONDITIONS

To implement the above reasonable and prudent measures, the Service has outlined the following terms and conditions for incidental take. In accordance with the Interagency Cooperation Regulation (50 CFR 402), these terms and conditions must be complied with to implement the reasonable and prudent measures for incidental take:

1. If clearing of habitat occupied by Florida scrub-jays is to occur within the species' nesting season (typically March 1 through June 30), that area should be surveyed prior to clearing to determine if there are any active scrub-jay nests located within the vegetation. If an active scrub-jay nest is located, to the maximum extent practicable, clearing activities cannot take place within 150 feet of the nest site until nestlings have fledged or until it has been determined that the nest has failed.

Unauthorized take of scrub-jays associated with the proposed activity should be reported immediately by calling the Jacksonville Field Office of the U.S. Fish and Wildlife Service in Jacksonville at 904-232-2580. If a dead Florida scrub-jay is found on the project site, the specimen should be thoroughly soaked in water and frozen for later analysis of cause of death or injury.

CONSERVATION RECOMMENDATIONS

As a conservation measure in the proposed action, the applicant has agreed to contribute money to the Florida Scrub-Jay Conservation Fund. The Fund supports a wide variety of Florida scrub-jay conservation efforts locally and statewide. The contribution towards The Nature Conservancy (TNC) Managed Funds for Public Lands may involve acquisition of lands, management of acquired TNC lands, and/or management of other occupied lands in public ownership. The funds will be directed to the management of occupied scrub-jay habitat in public ownership. The contribution for the 4.92 acres of impacts to the occupied Florida scrub-jay habitat will be in the amount of $98,537.76. This is determined by the following formula: $8,400.00 per acre x 19.21% overhead fee x 4.92 acres @ 2:1 ratio.

Section 7(a) (1) of the Act directs Federal agencies to use their authority to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species.

Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help carry out recovery plans, or to develop information.

The Service recommends that the following conservation recommendations be provided to any person attending public meetings associated with the project, as well as any personnel involved with the construction of the proposed project:

1. Prepare and distribute an informational brochure to all entities within the project corridor that explains the basic habitat requirements of the Florida scrub-jay, the threats to their continued existence, and the adverse effects of human-related disturbances such as vehicular traffic, domestic pets (particularly cats) and invasive exotic/ornamental vegetation.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or providing a benefit to listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations carried out.

REINITIATION OF SECTION 7 CONSULTATION

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required when discretionary Federal agency involvement or control over the action has been retained and if: (1) information reveals effects of the agency action that may effect listed species or critical habitat in a manner or to an extent not considered in this biological opinion; (2) the Corps' action is subsequently modified in a manner that causes and effect to the listed species or critical habitat not considered in this biological opinion; or (3) a new species is listed or critical habitat designated that may be effected by the action. Should you have any questions regarding this Biological Opinion, please contact Todd Mecklenborg of my staff at (727) 570-5400, extension 233.

Sincerely,

David L. Hankla
Field Supervisor

cc: Mike Jennings, ES, Jacksonville
Candace Martino, ES Jacksonville

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ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
Post Office Box 1429
Palatka, Florida 32178-1429

PERMIT NO. 4-009-97349-2 **DATE ISSUED:** March 11, 2008
PROJECT NAME: Pineda Causeway Extension

A PERMIT AUTHORIZING:

Construction of a surface water management system with stormwater treatment by swales and wet-detention for Pineda Causeway Extension, a 11.97-acre project to be constructed as per plans received by the District on August 2, 2006

LOCATION:

Section(s):	24, 25, 26	Township(s):	26S	Range(s):	36E
	19		26S		37E

Brevard County

ISSUED TO:

Brevard County Board Of County Commissioners
2725 Judge Fran Jamieson Way
Viera, FL 32940

Permittee agrees to hold and save the St. Johns River Water Management District and its successors harmless from any and all damages, claims, or liabilities which may arise from permit issuance. Said application, including all plans and specifications attached thereto, is by reference made a part hereof.

This permit does not convey to permittee any property rights nor any rights of privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation or requirement affecting the rights of other bodies or agencies. All structures and works installed by permittee hereunder shall remain the property of the permittee.

This permit may be revoked, modified or transferred at any time pursuant to the appropriate provisions of Chapter 373, Florida Statutes:

PERMIT IS CONDITIONED UPON:

See conditions on attached "Exhibit A", dated March 11, 2008

AUTHORIZED BY: St. Johns River Water Management District

Department of Water Resources	Governing Board
By: Jeff Elledge	By: Kirby B. Green III
(Director)	(Assistant Secretary)

"EXHIBIT A"
CONDITIONS FOR ISSUANCE OF PERMIT NUMBER 4-009-97349-2
BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS
DATED MARCH 11, 2008

1. All activities 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.

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 District 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 do not cause violations of state water quality standards.

4. Prior to and during construction, the permittee shall implement and maintain all erosion and sediment control measures (best management practices) required to retain sediment on-site and to prevent violations of state water quality standards. All practices must be in accordance with the guidelines and specifications in chapter 6 of the Florida Land Development Manual: A Guide to Sound Land and Water Management (Florida Department of Environmental Regulation 1988), which are incorporated by reference, unless a project specific erosion and sediment control plan is approved as part of the permit, in which case the practices must be in accordance with the plan. If site specific conditions require additional measures during any phase of construction or operation to prevent erosion or control sediment, beyond those specified in the erosion and sediment control plan, the permittee shall implement additional best management practices as necessary, in accordance with the specifications in chapter 6 of the Florida Land Development Manual: A Guide to Sound Land and Water Management (Florida Department of Environmental Regulation 1988). The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.

5. Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.

6. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a Construction Commencement Notice Form No. 40C-4.900(3) indicating the actual start date and the expected completion date.

7. When the duration of construction will exceed one year, the permittee shall submit construction status reports to the District on an annual basis utilizing an Annual Status Report Form No. 40C-4.900(4). These forms shall be submitted during June of each year.

8. For those systems which will be operated or maintained by an entity which will require an easement or deed restriction in order to provide that entity with the authority necessary to operate or maintain the system, such easement or deed restriction, together with any other final operation or maintenance documents as are required by subsections 7.1.1 through 7.1.4 of the Applicant's Handbook: Management and Storage of Surface Waters, must be submitted to the District for approval. Documents meeting the requirements set forth in these subsections of the Applicant's Handbook will be approved. Deed restrictions, easements and other operation and maintenance documents which require recordation either with the Secretary of State or the Clerk of the Circuit Court must be so recorded prior

to lot or unit sales within the project served by the system, or upon completion of construction of the system, whichever occurs first. For those systems which are proposed to be maintained by county or municipal entities, final operation and maintenance documents must be received by the District when maintenance and operation of the system is accepted by the local governmental entity. Failure to submit the appropriate final documents referenced in this paragraph will result in the permittee remaining liable for carrying out maintenance and operation of the permitted system.

9. 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 the 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 that phase or portion of the system to local government or other responsible entity.

10. Within 30 days after completion of construction of the permitted system, or independent portion of the system, 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 As Built Certification Form 40C-1.181(13) or 40C-1.181(14) supplied with this permit. When the completed system differs substantially from the permitted plans, any substantial deviations shall be noted and explained and two copies of as-built drawings submitted to the District. Submittal of the completed from shall serve to notify the District that the system is ready for inspection. The statement of completion and certification shall be based on on-site observation of construction (conducted by the registered professional engineer, or other appropriate individual as authorized by law, or under his or her direct supervision) or review of as-built drawings for the purpose of determining if the work was completed in compliance with approved plans and specifications. As-built drawings shall be the permitted drawings revised to reflect any changes made during construction. Both the original and any 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. The following information, at a minimum, shall be verified on the as-built drawings:

1. Dimensions and elevations of all discharge structures including all weirs, slots, gates, pumps, pipes, and oil and grease skimmers;

2. Locations, dimensions, and elevations of all filter, exfiltration, or underdrain systems including cleanouts, pipes, connections to control structures, and points of discharge to the receiving waters;

3. Dimensions, elevations, contours, or cross-sections of all treatment storage areas sufficient to determine state-storage relationships of the storage area and the permanent pool depth and volume below the control elevation for normally wet systems, when appropriate;

4. Dimensions, elevations, contours, final grades, or cross-sections of the system to determine flow directions and conveyance of runoff to the treatment system;

5. Dimensions, elevations, contours, final grades, or cross-sections of all conveyance systems utilized to convey off-site runoff around the system;

6. Existing water elevation(s) and the date determined; and Elevation and location of benchmark(s) for the survey.

11. The operation phase of this permit shall not become effective until the permittee has complied with the requirements of general condition 9 above, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District in accordance with subsections 7.1.1 through 7.1.4 of the Applicant's Handbook: Management and Storage of Surface Waters, accepts responsibility for operation and maintenance of the system. The permit may not be transferred to such an approved operation and maintenance entity until the operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the District, the permittee shall request transfer of the permit to the responsible approved operation and maintenance entity, if different from the permittee. Until the permit is transferred pursuant to section 7.1 of the Applicant's Handbook: Management and Storage of Surface Waters, the permittee shall be liable for compliance with the terms of the permit.

12. Should any other regulatory agency require changes to the permitted system, the permittee shall provide written notification to the District of the changes prior implementation so that a determination can be made whether a permit modification is required.

13. 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 40C-4 or chapter 40C-40, F.A.C.

14. The permittee shall hold and save the District harmless from any and all damages, claims, or liabilities which may arise by reason of the activities authorized by the permit or any use of the permitted system.

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 specifically approved unless a specific condition of this permit or a formal determination under rule 40C-1.1006, F.A.C., provides otherwise.

16. The permittee shall notify the District in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of rule 40C-1.612, F.A.C. The permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to such sale, conveyance or other transfer.

17. Upon reasonable notice to the permittee, District 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. The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

19. This permit for construction will expire five years from the date of issuance.

20. At a minimum, all retention and detention storage areas must be excavated to rough grade prior to building construction or placement of impervious surface within the area to be served by those facilities. To prevent reduction in storage volume and percolation rates, all accumulated sediment must be removed from the storage area prior to final grading and stabilization.

21. All wetland areas or water bodies that are outside the specific limits of construction authorized by this permit must be protected from erosion, siltation, scouring or excess turbidity, and dewatering.

22. Prior to construction, the permittee must clearly designate the limits of construction on-site. The permittee must advise the contractor that any work outside the limits of construction, including clearing, may be a violation of this permit.

23. The surface water management system shall be constructed and operated in accordance with the plans received by the District on August 2, 2006.

24. The stormwater management system must be inspected by the operation and maintenance entity once within two years after the completion of construction and every two years thereafter to insure that the system is functioning as designed and permitted. If a required inspection reveals that the system is not functioning as designed and permitted, then within 14 days of that inspection the entity shall submit an Exceptions Report on form number 40C-42.900(6), Exceptions Report for Stormwater Management System Out of Compliance. The operation and maintenance entity must maintain a record of each required inspection, including the date of inspection, the name, address, and telephone number of the inspector, and whether the system was functioning as designed and permitted, and make such record available for inspection upon request by the District during normal business hours.

25. Mitigation must be accomplished as described in the RAI response received on December 26, 2007 and clarified by an email received on January 29, 2008.

26. Prior to initiating any construction at the project site, the District must receive letters of verification from the Mary A Ranch Mitigation Bank and the TM-Econ Mitigation Bank stating that a transaction regarding the transfer of 21.20 and 9.10 mitigation credits, respectively, has been completed.

27. In the event that the permittee does not successfully complete the transaction to obtain 21.20 and 9.10 mitigation credits from the Mary A Ranch Mitigation Bank and the TM-Econ Mitigation Bank, respectively, the permittee must obtain a permit modification to provide alternative mitigation for the wetland impacts.

28. The onsite measures to reduce secondary impacts must be constructed as per the RAI response received by the District on December 26, 2007.

29. All construction activities must be in accordance with the Biological Opinion rendered by the U.S. Fish and Wildlife Service, regarding this nest, on March 15, 2007.

30. If historical or archaeological artifacts are discovered at any time on the project site, the Permittee shall cease all activities in the immediate vicinity of such discoveries and shall immediately notify the District and the Florida Department of State, Division of Historical Resources, Review and Compliance Section at (850) 245-6333 or (800) 847-7278.

31. This permit requires the recording of a conservation easement over four parcels at the Cape Atlantic Estates Mitigation Area (CAEMA). The parcel identification numbers for these lots are 47-18-34-02-13-1950, 47-18-34-02-13-1730, 47-18-34-02-13-1740 and 47-18-34-02-13-1770.

    Description of Conservation Easement Area

    The permittee shall provide to the District for review and written approval a copy of a surveyor's sketch and legal description of the area to be placed under the conservation

easement, per the approved mitigation plan, at least 45 days prior to the commencement of construction of the project.

If the impacts to an upland within a Riparian Habitat Protection Zone or to a wetland or surface water for which mitigation is required will occur in discrete phases, the areas to be preserved to offset such impacts may be placed under conservation easement in phases such that impacts are offset during each phase. Such phasing of preservation shall only occur if it has been proposed in the mitigation plan and approved by the permit, or if it is approved in writing by the District. A surveyor's sketch and legal description of the area to be placed under conservation easement during each phase must be submitted in accordance with the previous paragraph.

Recording of Conservation Easement

Prior to commencement of construction of the project, the permittee shall record a conservation easement which shall include restrictions on the real property pursuant to section 704.06, Florida Statutes, and be consistent with section 12.3.8, Applicant's Handbook, Management and Storage of Surface Waters (July 1, 2007). The conservation easement shall be in the form approved in writing by the District and, if no plat has been submitted, the easement shall include the approved legal description and surveyor's sketch. If the District does not provide written comments on the preliminary plat or surveyor's sketch and legal description within 45 days of receipt, then the permittee may record the conservation easement with the legal description and surveyor's sketch or plat reference previously submitted. If the District provides written disapproval of the preliminary plat or surveyor's sketch and legal description, the permittee shall, within ten (10) days of receipt of the disapproval, correct all errors with the conservation easement, including the preliminary plat or legal description and surveyor's sketch, and record the conservation easement.

Pursuant to section 704.06, Florida Statutes, the conservation easement shall prohibit all construction, including clearing, dredging, or filling, except that which is specifically authorized by this permit, within the mitigation areas delineated on the final plans and/or mitigation proposal approved by the District. The easement must contain the provisions set forth in paragraphs 1(a)-(h) of section 704.06, Florida Statutes, as well as provisions indicating that the easement may be enforced by the District, and may not be amended without written District approval.

Additional Documents Required

The permittee shall ensure that the conservation easement identifies, and is executed by, the correct grantor, who must hold sufficient record title to the land encumbered by the easement. If the easement's grantor is a partnership, the partnership shall provide to the District a partnership affidavit stating that the person executing the conservation easement has the legal authority to convey an interest in the partnership land. If there exist any mortgages on the land, the permittee shall also have each mortgagee execute a consent and joinder of mortgagee subordinating the mortgage to the conservation easement. The consent and joinder of the mortgagee shall be recorded simultaneously with the conservation easement in the public records of the county where the land is located.

Within 30 days of recording, the permittee shall provide the District with: (a) the original recorded easement (including exhibits) showing the date it was recorded and the official records book and page number, (b) a copy of the recorded plat (if applicable), (c) a surveyor's sketch of the easement area plotted on the appropriate USGS topographic map, and (d) the original recorded consent and joinder(s) of mortgagee (if applicable).

Demarcation of Conservation Easement Area

Prior to lot or parcel sales, all changes in direction of the easement area boundaries must be permanently monumented above ground on the project site.

32. In the event that the permittee does not successfully record the Conservation Easements over the four Cape Atlantic Estates parcels, the permittee must obtain a permit modification to provide alternative mitigation for the wetland impacts.

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

Submit this form and one set of as-built engineered drawings to the U.S. Army Corps of Engineers, Enforcement Branch, Post Office Box 4970, Jacksonville, Florida 32232-0019. If you have questions regarding this requirement, please contact the Enforcement Branch at 904-232-2907.

1. Department of the Army Permit Number: _____

2. Permittee Information:

Name _____

Address _____

_____

3. Project Site Identification:

Physical location/address _____

_____

4. As-Built Certification:

I hereby certify that the authorized work has been accomplished in accordance with the Department of the Army permit with any deviations noted below. This determination is based upon on-site observation, scheduled and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

Signature of Engineer	Name (Please type)
Florida Reg. Number	Company Name
	Address
	City State ZIP
(Affix Seal)	
Date	Telephone Number

Deviations from the approved plans and specifications: (attach additional pages if necessary)

_____

_____

U.S. Army Corps of Engineers
Permit # SAJ-2006-5472
Date: 3/20/08
Attachment: 4

Statement of Findings

Statement of Findings

Number: _____

Conversion services provided by:

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CESAJ-RD-P (1145b)
SAJ-2006-5472(IP-AWP)

APR 2 7 2007

MEMORANDUM FOR RECORD

SUBJECT: Department of the Army Environmental Assessment and Statement of Findings for the Above-numbered Permit Application

1. Applicant: Brevard County BCC
2725 Judge Fran Jamieson Way
Viera, Florida 32940

2. Location, Project Description, Existing Conditions: The proposed project is the extension of State Road (SR) 404 west from U.S. Highway 1 to Interstate 95 (I-95). The proposed project is located in Sections 24, 25, & 26, Township 26 South, Range 36 East, Melbourne, Florida. The project as proposed will impacts waters of the United States (wetlands), which are hydrologically connected to the Indian River via drainage ditches.

The applicant proposes to impact 11.97 acres of jurisdictional wetlands for the construction of a new road way and expand portions of the existing roadway within its current alignment.

There are a total of seven wetland areas located within the project limits, six of which are proposed to be impacted by the construction of this new roadway.

Wetland 1 is a previously impacted herbaceous wetland area that has been hydrologically and vegetatively affected by surrounding development. The vegetation consists mostly of grassy species and includes some cattail (Typha sp.), willow (Salix sp.), broom sedge (Andropogon sp.), smartweed (Polygonum sp.), and roadgrass (Eleocharis sp.). The edges of the wetland are fringed by saw palmetto and some gallberry. This wetland is considered hydrologically isolated and not within the U.S. Army Corps of Engineers (Corps) jurisdiction.

Wetland W-2 is classified as a sawgrass marsh. It is dominated by sawgrass (*Caladium jamaicense*) and Carolina willow (*S. caroliniana*) with occurrences of torpedo grass, and cord grass. This wetland is considered hydrologically isolated and not within the Corps jurisdiction.

Wetland W-4 is classified as a freshwater marsh. It is dominated by sawgrass with some open water areas. Some of the other vegetation observed within this system was maidencane (*Panicum*

hemitomon), pickerelweed (*Pontederia sp.*), Carolina willow (*Salix caroliniana*), elderberry (*Sambucus canadensis*), softrush (*Juncus effusus*), wax myrtle (*Myrica cerifera*), and royal fern (*Osmunda regalis*). There is a minimal amount of nuisance or undesirable species along the fringe of this system. These species include water primrose (*Ludwigia sp.*), Brazilian pepper (*Schinus terebinthifolius*), torpedograss (*Panicum repens*), cattails (*Typha sp.*), and Cuban bulrush (*Scirpus cubensis*). This system is considered waters of the United States and jurisdictional to the Corps.

Wetland W-10 is classified as a freshwater herbaceous marsh. The north half of this system is dominated by maidencane (*P. hemitomon*). The southern end is dominated (> 80%) by torpedograss (*P. repens*). Other vegetation observed was sand cord grass (*Spartina bakeri*), pickerelweed (*Pontederia sp.*), duck potato (*Sagittaria sp.*), and a few saw palmetto (*Serenoa repens*) islands. There is a minimal amount of other nuisance or undesirable species along the fringe of this system. These species include water primrose (*Ludwigia sp.*), Brazilian pepper (*S. terebinthifolius*), and cattails (*Typha sp.*). The majority of the impacts associated with this system will occur in the nuisance dominated southern end. This system is considered waters of the United States and jurisdictional to the Corps.

Wetland area W-11 is classified as a freshwater marsh that has a dominant vegetation of sawgrass (*C. jamicense*). Other vegetation observed in this system was maidencane (*P. hemitomon*), pickerelweed (*Pontederia sp.*), Carolina willow, elderberry (*S. canadensis*), softrush (*J. effusus*), wax myrtle (*M. cerifera*), and royal fern (*O. regalis*). There is a minimal amount of nuisance or undesirable species along the fringe of this system. These species include water primrose (*Ludwigia sp.*), Brazilian pepper (*S. terebinthifolius*), torpedograss (*P. repens*), cattails (*Typha sp.*), and Cuban bulrush (*S. cubensis*). This system is considered waters of the United States and jurisdictional to the Corps.

Wetland W-11A is a small vegetated non-forested wetland. The vegetation observed within this system is maidencane (*P. hemitomon*), sand cord grass (*S. bakeri*), pickerelweed (*Pontederia sp.*), duck potato (*Sagittaria sp.*), water hyssop (*Bacopa sp.*), dayflower (*Commelina diffusa*), softrush (*J. effusus*) and wax-myrtle (*M. cerifera*). There was a minimal amount of nuisance and undesirable species within this wetland. Some of the species

observed was cattails (*Typha sp.*) and torpedograss (*P. repens*). This wetland system does not appear to be a natural system. It appears this system has been created by altered site conditions due to the construction of subdivisions to the north and south of the wetland and hydrologically isolated. This wetland is considered hydrologically isolated and not within the Corps jurisdiction.

Wetland area W-12 is classified as a freshwater marsh that is maintaining hydrology. It has a dominant vegetation of sawgrass (*C. jamaicense)* and Carolina willow (*S. caroliniana*). Other vegetation observed in this area was maidencane (*P. hemitomon*), sand cord grass (*S. bakeri*), pickerelweed (*Pontederia sp.*), duck potato (*Sagittaria sp.*), red-maple (*A. rubrum*), saw palmetto (*S. repens*), softrush (*J. effusus*) and wax-myrtle (*M. cerifera*). There is a minimal amount of other nuisance or undesirable species along the fringe of this system. These species include water primrose (*Ludwigia sp.*), Brazilian pepper (*S. terebinthifolius*), and cattails (*Typha sp.*). This system is located at the west end of this project. This system is considered waters of the United States and jurisdictional to the Corps. Impacts to this system are not anticipated during this phase of construction of the Pineda Causeway Extension; however impacts are anticipated upon completion of the interchange.

I completed a field inspection on 13 April 2007. During my inspection I generally evaluated the wetland boundaries provided by the applicant and completed an assessment of the functional values of each wetland. I concur with functional values provided by the applicant. Their assessment accurately reflects existing conditions. The Corps also noted that wetland 10 is entirely surrounded by development with limited buffers. A review of the aerial photographs provided with the application do not show the latest development adjacent to the project site.

3. Project Purpose: Basic: The expansion of an existing roadway and the construction of a new roadway.

Overall: The construction of SR 404 from US Highway 1 to Wickham Road, the expansion of SR 404 through Grand Haven subdivision, and the construction of a new road from Grand Haven to I-95.

4. Statutory Authority: Section 404 of the Clean Water Act (33 U.S.C. 1344).

5. Other Federal, State, and Local Authorizations Obtained or Required and Pending:

a. State Permit/Certification: The St. Johns River Water Management District (SJRWMD) permit number 11 March 2008.

b. Coastal Zone Management (CZM) consistency/permit: There is no evidence or indication from the State of Florida that the project is inconsistent with the Florida Coastal Zone Management Plan. Issuance of a SJRWMD permit certifies that the project is consistent with the CZM plan.

c. Other Authorizations: No information has been received regarding any other authorizations that may be required.

6. Date of Public Notice and Summary of Comments

a. The application was received on 17 February 2005. The application was considered complete on 28 August 2006. A public notice was issued on 20 September 2006, and sent to all interested parties including appropriate State and Federal agencies. Due to the large volume of adjacent property owners the applicant was requested to advertise the public notice in the local paper with the largest circulation. The applicant provided proof of publication 19 October 2006. All comments received on this application have been reviewed and are summarized below:

(1) Environmental Protection Agency (EPA): Did not respond to the public notice.

(2) U.S. Fish and Wildlife Service (FWS): The USFWS did not respond to the public notice, however, the Corps initiated formal consultation with the FWS via separate letter. The FWS provided a biological opinion dated 15 March 2007. Please see paragraph 9(e) for additional detail.

(3) National Marine Fisheries Service (NMFS): Did not respond to the public notice.

(4) State Historic Preservation Officer (SHPO): By letter dated 8 December 2006, SHPO indicated that the proposed project would have no effect on any sites listed, or eligible for listing, in the National Register of Historic Places, or otherwise of national, state, or local significance.

(5) No comments were received from State or Local agencies, organizations, individuals or any other interested party.

b. Applicant's response to the comments: The comments were not coordinated with the applicant since no adverse comments were received.

7. Alternatives:

a. Avoidance (No action, uplands, availability of other sites): The applicant has submitted a Preliminary Engineering Report (PER) to support justification of the propose project.

The PER evaluated alternative corridors before selecting the preferred alternative submitted. The corridors were broken into two segments, east corridor and west corridor. The easterly corridor is located between US Highway 1 and ½ mile west of Wickham Road. Three alternatives were evaluated in this section. None of the alternatives would have impacts to waters of the US.

The westerly corridor is located between I-95 and ½ mile west of Wickham Road. Only one alternative was evaluated in this corridor. Department of the Army (DA) permit number SAJ-1999-755-Grand Haven Subdivision included a secondary project purpose which stated: "The access road selected is the same right-of-way as the proposed Pineda Extension. For this reason a second project purpose is the selection of the Pineda Causeway Extension route (between Wickham Road and I-95), siting of the Pineda Causeway/I-95 Interchange, and the construction of 7,400 linear feet of that causeway extension. The road segment proposed for construction will provide access to the proposed residential development." Therefore DA permit SAJ-1999-755, issued 11 April 2000, authorized the current westerly alignment of the roadway.

The no action alternative would not allow for project completion.

b. Minimization (modified project designs, etc.): The project has been minimized to the maximum extent possible that would allow the applicant to achieve the project purpose. The proposed roadway has been designed to meet Brevard County and FDOT design standards which require minimum lane, median, and shoulder width. Wetland impact reductions since initiation of the project include steeping side slopes from the standard 4:1 to 2:1 and 3:1, moving sidewalks closer to travel lanes, and

addition of vertical retaining walls where constructible. Wildlife crossings have been incorporated into the design to reduce impacts to wildlife. Cross drains will be installed to insure normal hydrology remains within the adjacent wetlands.

c. Compensatory Mitigation (Wetland enhancement, creations, etc.): Three of the six wetlands proposed for impact are jurisdictional waters of the United States and would require compensatory mitigation if impacted. The applicant has completed a functional assessment of the jurisdictional wetlands utilizing the Uniform Mitigation Assessment Method Review (UMAM). The Corps generally concurs with the applicants finding. The UMAM has determined the proposed project would cause 8.3 functional units of loss. The applicant proposes the acquisition of 8.3 federal mitigation bank credits at the federally approved TM-Econ Mitigation Bank. The approved bank provides a service area which encompasses the project site. The mitigation offered by the applicant is sufficient to offset impacts. The mitigation bank credits purchased equate to a one-for-one basis with the functional units of loss proposed.

8. Evaluation of the 404(b)(1) Guidelines: The proposed project has been reviewed in accordance with the 404 (b)(1) Guidelines. The review shows that all the alternatives have been reviewed and it has been adequately demonstrated that the proposed alternative is the least environmentally damaging and only practicable alternative considering cost, existing technology and logistics. It would not cause or contribute to violations of State Water quality standards, jeopardize the existence of any endangered species or impact a marine sanctuary. No significant degradation would be expected and all appropriate and practicable steps have been taken to minimize impacts.

9. Public Interest Review:

a. Corps analysis of comments and responses: All comments received in response to the public notice have been considered in the following public interest review.

b. All public interest factors have been reviewed, including but not limited to the effects the work might have on conservation, economics, esthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, land use, navigation, shore erosion and accretion, recreation, water quality, safety, and consideration of property

ownership. It has been determined that the proposed work will not adversely impact any of the public interest factors.

c. Describe the relative extent of the public and private need for the proposed structure or work: Public benefits include increased travel safety, less traffic congestion, improved evacuation route, and less traffic capacity deficiencies within the central Brevard County region. Private benefits would be limited to those developers who would be granted right-of-way access to the proposed roadway.

d. Describe the practicability of using reasonable alternative locations and methods to accomplish the objective of the purposed work where there are unresolved conflicts as to resource use: There are no unresolved conflicts regarding resource use.

e. Describe the extent and permanence of the beneficial and/or detrimental effects which the proposed work is likely to have on the public and private uses to which the area is suited: The beneficial effects for public transportation may include an increase in public safety, increased carrying capacity of the roadway and the more effective movement of vehicular traffic. The increased carrying capacity may also facilitate intrastate/interstate commerce.

f. Threatened or Endangered Species: The Corps determined the proposed project "may affect" the Florida scrub-jay and "may affect, not likely to adversely affect" the eastern indigo snake with the inclusion of the Eastern Indigo Snake Protection Measures. The Corps requested initiation of formal consultation with FWS via letter dated 12 September 2006. The USFWS provided a Biological Opinion (BO) dated 15 March 2007, which concluded that the proposed project is not likely to jeopardize the continued existence of the Florida scrub-jay. No critical habitat has been designated for these species; therefore, none will be affected. The BO stated that incidental take is anticipated to include 4.92 acres of scrub habitat occupied by up to two scrub-jay families (six or more individuals). The USFWS was not reasonably certain that take will occur to the eastern indigo snake with the incorporation of the standard protective measures into the project.

Additionally the FWS concluded in the BO that the proposed project may affect but is not likely to adversely affect the

eastern indigo snake and the wood stork with the inclusion of the Eastern Indigo Snake Protection Measures and wetland mitigation occurring within the Core Foraging Area of the Lake Washington wood stork rookery (Latitude 28.06.4, Longitude 80.46.9).

The BO included reasonable and prudent measures and terms and conditions which will be included in any Department of the Army permit issued.

The applicant has proposed the utilization of two 5-foot x 5-foot box culverts and 2 culverts to facilitate wildlife movement through wetland 4. Cross-drains at other wetland crossings will also help ensure safe wildlife movement beneath the roadway.

g. Essential Fisheries Habitat (EFH): The public notice included an initial determination that the project would not have an adverse impact on EFH or Federally managed fisheries. The NMFS did not provide any EFH conservation recommendations in response to the public notice. Therefore, the Corps is satisfied that the consultation procedures outlined in 50 CFR Section 600.920 of the regulation to implement the EFH provisions of the Magnuson-Stevens Act have been met.

h. Corps Wetland Policy: The proposed wetland alteration is necessary to realize the project purpose and should result in minimal adverse environmental impacts. The benefits of the project would outweigh the minimal detrimental impacts. The project would result in a no-net loss of wetland functions and values. Therefore the project is in accordance with the Corps wetland policy.

i. Cumulative and Secondary Impacts: No adverse cumulative impacts are anticipated. The applicant proposes to realign an existing road, widen an existing road, and extend an existing road to a future interstate interchange being reviewed by the Corps. The interchange is secondarily related to the Viera - Development of Regional Impact (DRI) currently being reviewed by the East Central Florida Regional Planning Council and federal resource agencies. The Regional Planning Council is a planning and public policy agency which works with public and private leadership in the Central Florida Region to achieve a healthy and sustainable future. All lands adjacent to this roadway extension are either developed or preserved. Brevard County Planning and Zoning department and the Planning Council would be required to review and approve any additional developments west of Interstate 95.

Any additional impacts to waters of the United States will also require DA authorization.

The Corps acknowledges that the project might produce minor secondary impacts, such as increased noise and/or light pollution or minor increases in the level of surface pollutants. However, in consideration of the overall limited amount of new roadway and the use of stormwater management systems, the Corps does not believe that any secondary impacts associated with the project would be significant. The Corps evaluated a 250-foot average buffer area adjacent to wetlands proposed for impact and required compensatory mitigation to offset anticipated impacts. The applicant will utilize Best Management Practices to further reduce any potential secondary impacts. Additionally, the Corps will special condition any permits issued to control nuisance/exotic vegetation within jurisdictional waters of the United States.

j. Corps Comments and Responses: Full consideration was given to all comments received during the public notice. No adverse comments were received.

10. Determinations:

a. Finding of No Significant Impact (FONSI). Having reviewed the information provided by the applicant and all interested parties and an assessment of the environmental impacts, I find that this permit action will not have a significant impact on the quality of the human environment. Therefore, an Environmental Impact Statement will not be required.

b. Compliance with 404(b)(1) guidelines. Having completed the evaluation in paragraph 7 above, I have determined that the proposed discharge complies with the 404(b)(1) guidelines.

c. Public interest determination: I find that issuance of a Department of the Army permit is not contrary to the public interest.

d. Section 176(c) of the Clean Air Act General Conformity Rule Review: The proposed permit action has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the activities proposed under this permit will not exceed *de minimis* levels of direct emissions of a criteria pollutant or its

precursors and are exempted by 40 CFR Part 93.153. Any later indirect emissions are generally not within the Corps' continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons a conformity determination is not required for this permit action.

PREPARED BY:

ANDREW PHILLIPS
Project Manager

REVIEWED BY:

LOREN M. MASON
Chief, Special Projects and
Enforcement Branch

APPROVED BY:

PAUL L. GROSSKRUGER
Colonel, Corps
of Engineers Commanding

CF:
CESAJ-RD-PE