TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
JOINT ENVIRONMENTAL RESOURCE PERMIT APPLICATION

PREPARED FOR:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Siting Coordination Office
3900 Commonwealth Boulevard, Rd M.S. 48
Tallahassee, Florida 32399-3000

PREPARED BY:

TECO
TAMPA ELECTRIC

P.O. Box 111
Tampa, Florida 33601

AND

ECT
Environmental Consulting & Technology, Inc.

1408 North Westshore Boulevard, Suite 115
Tampa, Florida 33607

100754-0300-1200
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1.0 INTRODUCTION

The Tampa Electric Company Big Bend Station consists of four coal-fired steam generators which use wet flue gas desulfurization (FGD) control technology (i.e., wet scrubbers) to reduce emissions of sulfur oxides. Gypsum (hydrated calcium sulfate) produced as a by-product of the wet FGD control systems is currently sold for use in the production of wallboard, or stored onsite at the Big Bend Station.

Since the existing onsite gypsum storage facility is near its storage capacity, Tampa Electric is planning the installation of a new gypsum handling and storage facility which will provide the ability to handle and store gypsum (the Project). Construction of the new gypsum handling and storage facility will be accomplished in two phases. Phase I of the project will consist of a stackout pile, gypsum management area, paved haul roads and a stormwater management system. Gypsum will be hauled from the FGD area within the plant by truck to the new storage area for the time being. Phase II could eventually be constructed to include a conveyor system to transfer gypsum directly from the plant to the new gypsum storage facility and other transloading and management facilities such as a radial stacker and storage dome. In the Phase II operational scenario, a full hood cover belt conveyor would transfer gypsum from the reclaim hopper in the plant to a diverter gate which would be used to transfer gypsum to either a truck/railcar loadout silo or to a stackout area for transfer to the gypsum management pile. A rotary plow will be used to transfer gypsum from the management pile or truck/railcar loadout silo to trucks/railcars which will then transfer the gypsum to offsite customers. The reclaimed gypsum may also be transferred by truck to the Big Bend Station dock for loading onto barges. This product gypsum will be barged to agricultural customers in South America.

The Project's major components include:

- Phase I
  - Truck transfer of gypsum to the new gypsum handling and storage facility.
  - Nominal 1.4 million ton capacity gypsum pile management area.
  - Mobile equipment to transfer gypsum from the stock out pile to the gypsum pile management area, reclaim hopper, or directly to truck.

  - Two access roads.
  - Stormwater management system.
- Phase II
  - Enclosed pipe conveyors, belt conveyors, and enclosed belt transfer stations to transfer gypsum from the existing Big Bend Station FGD gypsum processing area to a radial stacker.
  - Covered belt conveyors to transfer gypsum from the reclaim hopper to either the truck loadout silo or to the gypsum storage dome.
  - Nominal 100 ton capacity truck/railcar loadout silo.

Gypsum from the existing Big Bend Station FGD system will be conveyed into the adjacent North Stackout Area and stacked onto an impervious pad with secondary containment walls. It will then be loaded into trucks to be hauled to the East 40 storage area. Gypsum will be reclaimed from the storage pile using mobile equipment (e.g., front end loaders) and loaded into trucks or railcars for hauling to customers or to the waterfront dock for loading onto barges and shipment to offshore customers.

A final decision as to whether to build Phase II has not been reached by Tampa Electric at this time. However, if Phase II is implemented, gypsum from the existing Big Bend Station processing area will be transferred by covered belt and pipe belt conveyors to the radial stacker. The existing 150-foot (ft) covered conveyor would be modified to transfer gypsum from the existing gypsum transfer building in the plant to a new transfer station in the new East 40 storage area by means of a new pipe conveyor. The gypsum would then be distributed either into stockout piles for pickup by front end loader and transport to the main gypsum management pile or to a receiving hopper for loadout into trucks or transferred via a covered conveyor to a gypsum storage dome. In a pipe conveyor, the belt is wrapped into a cylindrical pipe form guided by six hexagonally arranged idlers along the conveyor route. This allows the conveyor to negotiate inclines of up to 30 degrees and to curve in both the vertical and the horizontal directions enabling the conveyor to negotiate obstacles that would obstruct a conventional straight conveyor. With the material being transferred completely enclosed within the belt pipe, fugitive dust emissions and spillage are eliminated along the conveyor run on both the pipe (outbound) and the

belt (return) conveyors. Pipe conveyors also allow for relatively long conveying distances without the need for transfer towers. The continuous pipe conveyor would be approximately 3,200 ft (0.61 mile) in length.

As mentioned previously, from the transfer station, a fully covered radial stacker conveyor would transfer gypsum to the stackout piles. Gypsum would be reclaimed from the stackout piles using mobile equipment (e.g., front end loaders) and either transferred to an above-grade reclaim hopper in the gypsum pile management area or loaded into trucks for transport. Mobile equipment will be also used to reclaim gypsum from the management area pile for transfer to the reclaim hopper or loadout directly into trucks. The radial stacker may also transfer gypsum directly to the reclaim hopper. From the reclaim hopper, a fully covered belt conveyor will transfer gypsum to a diverter gate which will be used to transfer gypsum via a covered conveyor to a truck/railcar loadout silo, a conical storage pile located inside the gypsum storage dome or the radial stacker, which will deposit gypsum into discrete stackout piles. A rotary plow will be used to transfer gypsum from the truck/railcar loadout silo to trucks/railcars which will then transfer the gypsum to offsite customers. Within the covered gypsum storage dome, gypsum will be transferred from the conical storage pile to trucks using mobile equipment for subsequent shipment to offsite customers. The reclaimed gypsum may also be transferred by truck to the Big Bend Station dock for loading onto barges.

Modifications planned for the existing gypsum handling system include: (a) addition of an backup stack-out conveyor and an impervious storage pad with containment walls to be located at the current FGD by-products storage pile to the west of the limestone storage building, The new backup stackout conveyor will transfer gypsum from the existing gypsum product handling building to the new storage pad. The backup stack-out belt conveyor will be 20 inches wide, have a length of 1,240 ft, and a gypsum transfer capacity of 200 tons per hour. The conical gypsum storage pile will be 45 ft high with a storage capacity of 3,350 tons.

Equipment associated with the transfer of gypsum from truck to barge includes a front-end loader and a new receiving hopper located at the dock. Gypsum trucks will unload to an existing impervious storage pad with containment walls located at the dock. A front-end loader will then transfer gypsum from the storage pad to the new receiving hopper. A clamshell located on the barge will then transfer gypsum from the receiving hopper to the barge.

The Project will result in the permanent filling of approximately 0.97 acres of highly disturbed natural or man-made surface water features (i.e., 0.04 acre of altered natural stream channel, 0.16 acre of freshwater marsh, 0.74 acre of upland-cut ditches, and 0.03 acre of an upland excavated depression). Project construction is currently scheduled to commence no later than November 2013 and will be completed by April 2014.

The Project site was formerly operated as an industrial wastewater sprayfield by Tampa Electric. This operation was terminated in 1999 when modifications to the plant Recycle Water System enabled Tampa Electric to recycle all of its industrial wastewater. Since the project area was not formerly licensed as a gypsum management area, development of the Project will require a modification to the SCA under Florida Department of Environmental Protection (FDEP) siting rules (Section 62-17.211, Florida Administrative Code [F.A.C.]). This Environmental Resource Permit (ERP) application is being submitted to the FDEP Siting Coordination Office in Tallahassee as an appendix to the Petition for Modification of the Big Bend Unit 4 Site Certification for the construction and operation of the proposed gypsum storage area and, if constructed in the future, the Phase II conveyor and storage area improvements. This ERP application is being submitted to the FDEP Siting Coordination Office in Tallahassee in order to: (1) Provide sufficient information for a complete petition for modification and (2) Receive confirmation that the proposed surface water impacts will not violate State 401 Surface Water Quality standards. A separate copy of this ERP application (i.e., Appendix B) is also being submitted to the U.S. Army Corps of Engineers (USACE) office in Tampa, Florida in order to receive a permit for impacts to waters of the United States.

Tampa Electric contracted with Environmental Consulting & Technology, Inc. (ECT), George F. Young, Inc., and Sargent & Lundy LLC to provide environmental consulting (including drainage engineering), surveying, and design engineering services for the project, respectively. ECT is the designated Consultant for the Project.

1.1 PROJECT OBJECTIVE

The objective for submittal of this Joint Federal/State ERP Application package is to describe and obtain approvals for ditch crossings, as well as *de minimis* filling of some low quality wetlands in the vicinity of the Project. In addition to a completed permit application (Section 2.0), the package contains supplemental data that will serve as additional detail in response to information requested in the Joint Federal/State ERP application form (Sections 3.0 to 8.0). The placement of the proposed project was carefully considered in order to avoid/minimize potential impacts to wetlands and surface waters.

1.2 WETLAND IMPACT AVOIDANCE/MINIMIZATION

The project site was chosen by Tampa Electric after an extensive alternatives analysis utilizing environmental and operational criteria. The existing gypsum storage and conveyor facilities, located near the southern boundary of the site, are required to be either upgraded or replaced to achieve the goals of the Big Bend Remedial Action Plan (RAP) under the provisions of Consent Order 00-1275 entered into by Tampa Electric and FDEP in April 2001. In accordance with the RAP, the design of the new facilities will provide enhanced protection of groundwater, surface water, and air resources in the vicinity of the power station. Additionally, the new location for the gypsum facilities, in the northeast portion of the site, is adjacent to the property of Tampa Electric's largest customer for the product gypsum (i.e., National Gypsum). This will allow for direct transport of gypsum by truck between the Tampa Electric facility and the customer's storage area without the need to use public thoroughfares, greatly reducing related impacts on local transportation infrastructure. Furthermore, the project will be constructed in a former agricultural/spray field area, where no sensitive wetland or upland habitats are located. The footprints of temporary access and haul roads associated with this project have been reduced to the greatest extent practical and these facilities will be constructed of pervious material where feasible in order to minimize effects on local hydrologic functions and drainage.

The proposed permanent asphalt access road to the west of the project site was realigned early on in the project design to avoid the adjacent rail loop floodplain compensation area and to follow the proposed conveyor path if Phase II of the Project is constructed. The channelized stream and a portion of the north-south canal at the northeast corner of the project site were avoided in a re-design of the project footprint which resulted in a 0.08-acre reduction in jurisdictional impacts. Finally, 0.20 acre of permanent fill impacts to an altered natural drainage from an access road crossing (i.e., 0.04 acre) and a freshwater marsh from the addition of a railroad track to connect to the project site (i.e., 0.16 acre) will be ameliorated through the purchase of 0.07 mitigation credits within the service area of a permitted mitigation bank site and any potential alterations to existing drainage patterns associated with access road crossings of drainages at the project site will be eliminated through the installation of properly sized culverts. For all of the above reasons, the selected location and design features of this project incorporate an appropriate level of consideration for avoidance and minimization of environmental impacts.

Thus, due to the above-referenced design criteria and the implementation of best management practices (BMPs) before, during and after construction (e.g., use of hay bales/silt screens along the edges of surface waters), construction of the Project will avoid or minimize impacts to jurisdictional surface water features to the greatest extent practicable. Based upon the above-referenced project designs and conditions, Tampa Electric has adequately demonstrated avoidance and minimization of wetland impacts.

2.0 COMPLETED APPLICATION FORM

SECTION A

FOR AGENCY USE ONLY	
ACOE Application #	DEP/WMD Application #
Date Application Received	Date Application Received
Proposed Project Lat.	Fee Received $
Proposed Project Long.	Fee Receipt #

PART 1:
Are any of the activities described in this application proposed to occur in, on, or over wetlands or other surface waters? ☒ yes ☐ no
Is this application being filed by or on behalf of a government entity or drainage district? ☐yes ☒no

PART 2:
A. Type of Environmental Resource Permit Requested (check at least one). See Attachment 2 for thresholds and descriptions.). **Requesting an FDEP compliance verification with the Conditions of Certification of the SCA modification.**

- ☐ Noticed General - include information requested in Section B.
- ☐ Standard General (Single Family Dwelling) - include information requested in Sections C and D.
- ☐ Standard General (all other Standard General projects) - include information requested in Sections C and E.
- ☐ Individual (Single Family Dwelling) - include information requested in Sections C and D.
- ☐ Individual (all other Individual projects) - include information requested in Sections C and E.
- ☐ Conceptual - include information requested in Sections C and E.
- ☐ Mitigation Bank Permit (construction) - include information requested in Sections C and F. (If the proposed mitigation bank involves the construction of a surface water management system requiring another permit defined above, check the appropriate box and submit the information requested by the applicable section.)
- ☐ Mitigation Bank (conceptual) - include information requested in Sections C and F.

B. Type of activity for which you are applying (check at least one)

- ☒ Construction or operation of a new system, other than a solid waste facility, including dredging or filling in, on or over wetlands and other surface waters.
- ☐ Construction, expansion or modification of a solid waste facility.
- ☐ Alteration or operation of an existing system which was not previously permitted by a WMD or DEP.
- ☐ Modification of a system previously permitted by a WMD or DEP.

Provide previous permit numbers:_____

☐	Alteration of a system	☐	Extension of permit duration
☐	Abandonment of a system	☐	Construction of additional phases of a system
☐	Removal of a system		

C. Are you requesting authorization to use Sovereign Submerged Lands?
☐yes ☒no
(See Section G and Attachment 5 for more information before answering this question.)

D. For activities in, on, or over wetlands or other surface waters, check type of federal dredge and fill permit requested:
☒Individual ☐Programmatic General ☐General
☐Nationwide ☐Not Applicable

E. Are you claiming to qualify for an exemption? ☐yes ☒no
If yes, provide rule number if known. _____

PART 3: **A. OWNER(S) OF LAND**	**B. ENTITY TO RECEIVE PERMIT (IF OTHER THAN OWNER)**
Name Mr. Randy Melton	Name
Title and Company Administrator, Environmental Planning Environmental Health and Safety Tampa Electric Company	Title and Company
Address P.O. Box 111	Address
City, State, Zip Tampa, Florida 33601	City, State, Zip
Telephone and Fax Phone: (813) 228-4560 Fax: (813) 228-1308	Telephone and Fax
C. AGENT AUTHORIZED TO SECURE PERMIT	**D. CONSULTANT (IF DIFFERENT FROM AGENT)**
Name	Name Mr. Anthony N. Arcuri
Title and Company	Title and Company Department Manager of Ecology and Permitting Environmental Consulting & Technology, Inc. (ECT)
Address	Address 1408 North Westshore Boulevard, Suite 115
City, State, Zip	City, State, Zip Tampa, Florida 33607
Telephone and Fax	Telephone and Fax Phone: (813) 289-9338 Fax: (813) 289-9388

PART 4: (Please provide metric equivalent for federally funded projects):

A. Name of Project, including phase if applicable**: Big Bend Power Station Gypsum Storage Area/Conveyor Improvements Project**

B. Is this application for part of a multi-phase project?
☐yes ☒no

C. Total applicant-owned area contiguous to the project?
1,523.39 ac.; **616.49** ha.

D. Total area served by the system**:** **27.03** ac.; **10.94** ha**.**

E. Impervious area for which a permit is sought**:** **0.65** ac.; **0.26** ha. (FDEP)
0.65 ac.; **0.26** ha. (USACE**)**

F. Volume of water that the system is capable of impounding:
0 ac. ft.; **0** cu. m.

G. What is the total area of work in, on, or over wetlands or other surface waters?
0.97 ac.; **0,39** ha.; **42,253.2** sq. ft.; **3,925.45** sq. m. (FDEP)
0.97 ac.; **0.39** ha. ; **42,253.2** sq. ft.; **3,925.45** sq. m. (USACE)

H. Total volume of material to be dredged: **0** cu. yd; **0** cu. m.

I. Number of new boat slips proposed: **0** wet slips; **0** dry slips

PART 5:

Project location (use additional sheets if needed):
County(ies) **Hillsborough**

Section(s) **10**	Township **31 South**	Range **19 East**
Section(s)	Township	Range
Section(s)	Township	Range

Land Grant name, if applicable: N/A

Tax Parcel Identification Number: **see Appendix A**

Street Address Road or other location: **Wyandotte Road**

City, Zip Code, if applicable: **N/A**

PART 6: Describe in general terms the proposed project, system, or activity.
The Tampa Electric Company Big Bend Station consists of four coal-fired steam generators which use wet flue gas desulfurization (FGD) control technology (i.e., wet scrubbers) to reduce emissions of sulfur oxides. Gypsum (hydrated calcium sulfate) produced as a by-product of the wet FGD control systems is currently sold for use in the production of wallboard, or stored onsite at the Big Bend Station.

Since the existing onsite gypsum storage facility is near its storage capacity, Tampa Electric is planning the installation of a new gypsum handling and storage facility which will provide the ability to handle and store gypsum (the Project). Construction of the new gypsum handling and storage facility will be accomplished in two phases. Phase I of the project will consist of a stackout pile, gypsum management area, paved haul roads and a stormwater management system. Gypsum will be hauled from the FGD area within the plant by truck to the new storage area for the time being. Phase II could eventually be constructed to include a conveyor system to transfer gypsum directly from the plant to the new gypsum storage facility and other transloading and management facilities such as a radial stacker and storage dome. In the Phase II operational scenario, a full hood cover belt conveyor would transfer gypsum from the reclaim hopper in the plant to a diverter gate which would be used to transfer gypsum to either a truck/railcar loadout silo or to a stackout area for transfer to the gypsum management pile. A rotary plow will be used to transfer gypsum from the management pile or truck/railcar loadout silo to trucks/railcars which will then transfer the gypsum to offsite customers. The reclaimed gypsum may also be transferred by truck to the Big Bend Station dock for loading onto barges. This product gypsum will be barged to agricultural customers in South America.

The Project's major components include:

- Phase I
  - Truck transfer of gypsum to the new gypsum handling and storage facility.
  - Nominal 1.4 million ton capacity gypsum pile management area.
  - Mobile equipment to transfer gypsum from the stock out pile to the gypsum pile management area, reclaim hopper, or directly to truck.
  - Two access roads.
  - Stormwater management system.
- Phase II
  - Enclosed pipe conveyors, belt conveyors, and enclosed belt transfer stations to transfer gypsum from the existing Big Bend Station FGD gypsum processing area to a radial stacker.
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Gypsum from the existing Big Bend Station FGD system will be conveyed into the adjacent North Stackout Area and stacked onto an impervious pad with secondary containment walls. It will then be loaded into trucks to be hauled to the East 40 storage area. Gypsum will be reclaimed from the storage pile using mobile equipment (e.g., front end loaders) and loaded into trucks or railcars for hauling to customers or to the waterfront dock for loading onto barges and shipment to offshore customers.

A final decision as to whether to build Phase II has not been reached by Tampa Electric at this time. However, if Phase II is implemented, gypsum from the existing Big Bend Station processing area will be transferred by covered belt and pipe

belt conveyors to the radial stacker. The existing 150-foot (ft) covered conveyor would be modified to transfer gypsum from the existing gypsum transfer building in the plant to a new transfer station in the new East 40 storage area by means of a new pipe conveyor. The gypsum would then be distributed either into stockout piles for pickup by front end loader and transport to the main gypsum management pile or to a receiving hopper for loadout into trucks or transferred via a covered conveyor to a gypsum storage dome. In a pipe conveyor, the belt is wrapped into a cylindrical pipe form guided by six hexagonally arranged idlers along the conveyor route. This allows the conveyor to negotiate inclines of up to 30 degrees and to curve in both the vertical and the horizontal directions enabling the conveyor to negotiate obstacles that would obstruct a conventional straight conveyor. With the material being transferred completely enclosed within the belt pipe, fugitive dust emissions and spillage are eliminated along the conveyor run on both the pipe (outbound) and the belt (return) conveyors. Pipe conveyors also allow for relatively long conveying distances without the need for transfer towers. The continuous pipe conveyor would be approximately 3,200 ft (0.61 mile) in length.

As mentioned previously, from the transfer station, a fully covered radial stacker conveyor would transfer gypsum to the stackout piles. Gypsum would be reclaimed from the stackout piles using mobile equipment (e.g., front end loaders) and either transferred to an above-grade reclaim hopper in the gypsum pile management area or loaded into trucks for transport. Mobile equipment will be also used to reclaim gypsum from the management area pile for transfer to the reclaim hopper or loadout directly into trucks. The radial stacker may also transfer gypsum directly to the reclaim hopper. From the reclaim hopper, a fully covered belt conveyor will transfer gypsum to a diverter gate which will be used to transfer gypsum via a covered conveyor to a truck/railcar loadout silo, a conical storage pile located inside the gypsum storage dome or the radial stacker, which will deposit gypsum into discrete stackout piles. A rotary plow will be used to transfer gypsum from the truck/railcar loadout silo to trucks/railcars which will then transfer the gypsum to offsite customers. Within the covered gypsum storage dome, gypsum will be transferred from the conical storage pile to trucks using mobile equipment for subsequent shipment to offsite customers. The reclaimed gypsum may also be transferred by truck to the Big Bend Station dock for loading onto barges.

Modifications planned for the existing gypsum handling system include: (a) addition of an backup stack-out conveyor and an impervious storage pad with containment walls to be located at the current FGD by-products storage pile to the west of the limestone storage building, The new backup stackout conveyor will transfer gypsum from the existing gypsum product handling building to the new storage pad. The backup stack-out belt conveyor will be 20 inches wide, have a length of 1,240 ft, and a gypsum transfer capacity of 200 tons per hour. The conical gypsum storage pile will be 45 ft high with a storage capacity of 3,350 tons.

Equipment associated with the transfer of gypsum from truck to barge includes a front-end loader and a new receiving hopper located at the dock. Gypsum trucks will unload to an existing impervious storage pad with containment walls located at the dock. A front-end loader will then transfer gypsum from the storage pad to the new receiving hopper. A clamshell located on the barge will then transfer gypsum from the receiving hopper to the barge.

The Project will result in the permanent filling of approximately 0.97 acres of highly disturbed natural or man-made surface water features (i.e., 0.04 acre of altered natural stream channel, 0.16 acre of freshwater marsh, 0.74 acre of upland-cut ditches, and 0.03 acre of an upland excavated depression). Project construction is currently scheduled to commence no later than November 2013 and will be completed by April 2014.

PART 7:

A. If there have been any pre-application meetings, including onsite meetings, with regulatory staff, please list the date(s), location(s), and names of key staff and project representatives**.**
On November 16, 2011, 13 staff members of the Industrial Wastewater, Solid Waste, Siting, and ERP Divisions of FDEP and 7 members of the Project Team, which included Tampa Electric and ECT, met at the Tampa FDEP office to discuss the project at a pre-application meeting.
On February 1, 2012, Mark Langford with FDEP met with Adriano "Nate" Alcoz and Randy Melton with Tampa Electric and Tony Arcuri with ECT in the field at the project site to review the jurisdictional lines/ UMAM analyses.
On February 6, 2012, Darlene Dannels with USACE met with Adriano "Nate" Alcoz with Tampa Electric in the USACE office at a pre-application meeting.

B. Please identify by number any MSSW/Wetland Resource/ERP/ACOE Permits pending, issued or denied for projects at the location, and any related enforcement actions. **N/A**

Agency	Date	No.\Type of Application	Action Taken
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

C. Note: The following information is required for projects proposed to occur in, on or over wetlands that need a federal dredge and fill permit or an authorization to use state owned submerged lands. Please provide the names, addresses and zip codes of property owners whose property directly adjoins the project (excluding application) and/or (for proprietary authorizations) is located within a 500 ft. radius of the applicant's land. Please attach a plan view showing the owner's names and adjoining property lines. Attach additional sheets if necessary.

1. 2.
See Appendix A.

3. 4.

5. 6.

7. 8.

PART 8:

A. By signing this application form, I am applying, or I am applying on behalf of the applicant, for the permit and any proprietary authorizations identified above, according to the supporting data and other incidental information filed with this application. I am familiar with the information contained in this application and represent that such information is true, complete and accurate. I understand this is an application and not a permit, and that work prior to approval is a violation. I understand that this application and any permit issued or proprietary authorization issued pursuant thereto, does not relive me of any obligation for obtaining any other required federal, state, water management district or local permit prior to commencement of construction. I agree, or I agree on behalf of the applicant, to operate and maintain the permitted system unless the permitting agency authorizes transfer of the permit to a responsible operation entity. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S. and 18 U.S.C. Section 1001.

Mr. Stanley M. Kroh
Typed/Printed Name of Applicant (If no Agent is used) or Agent (If one is so authorized below)

Stanley M. Kroh — October 9, 2012
Signature of Applicant/Agent — Date

Manager, Land & Water Programs, Tampa Electric Company
(Corporate Title if applicable)

AN AGENT MAY SIGN ABOVE ONLY IF THE APPLICANT COMPLETES THE FOLLOWING:

B. I hereby designate and authorize the agent listed above to act on my behalf, or on behalf of my corporation, as the agent in the processing of this application for the permit and/or proprietary authorization indicated above; and to furnish, on request, supplemental information in support of the application. In addition, I authorize the above-listed agent to bind me, or my corporation, to perform any requirements which may be necessary to procure the permit or authorization indicated above. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S. and 18 U.S.C. Section 1001.

Typed/Printed Name of Applicant	Signature of Applicant	Date

(Corporate Title if applicable)

Please note: The applicant's original signature (not a copy) is required above.

PERSON AUTHORIZING ACCESS TO THE PROPERTY MUST COMPLETE THE FOLLOWING:

C. I either own the property described in this application or I have legal authority to allow access to the property, and I consent, after receiving prior notification, to any site visit on the property by agents or personnel from the Department of Environmental Protection, the Water Management District and the U.S. Army Corps of Engineers necessary for the review and inspection of the proposed project specified in this application. I authorize these agents or personnel to enter the property as many times as may be necessary to make such review and inspection. Further, I agree to provide entry to the project site for such agents or personnel to monitor permitted work if a permit is granted.

Mr. Stanley M. Kroh	Stanley M. Kroh	October 9, 2012
Typed/Printed Name of Applicant	Signature of Applicant	Date

Manager, Land & Water Programs, Tampa Electric Company
(Corporate Title if applicable)

SECTION C

Environmental Resource Permit Notice of Receipt of Application

Note: this form does not need to be submitted for noticed general permits.
This information is required in addition to that required in other sections of the application. Please submit five copies of this notice of receipt of application and all attachments with the other required information. Please submit all information on 8 1/2" x 11" paper.

Project Name	**Big Bend Power Station Gypsum Storage Area/Conveyor Improvements Project**
County	**Hillsborough**
Owner	**Tampa Electric Company**
Applicant:	**Same**
Applicant's Address:	**P.O. Box 111, Tampa, Florida 33601**

1. Indicate the project boundaries on a USGS quadrangle map. Attach a location map showing the boundary of the proposed activity. The map should also contain a north arrow and a graphic scale; show Section(s), Township(s), and Range(s); and must be of sufficient detail to allow a person unfamiliar with the site to find it. **See Figures 1 and 2**.

2. Provide the names of all wetlands, or other surface waters that would be dredged, filled, impounded, diverted, drained, or would receive discharge (either directly or indirectly), or would otherwise be impacted by the proposed activity, and specify if they are in an Outstanding Florida Water or Aquatic Preserve: **The existing gypsum pile will be relocated to the proposed location at the Tampa Electric Company Big Bend Power Station facility. Thus, no named wetlands or surface water features will directly or indirectly affected by the proposed action. There are no Outstanding Florida Waters or Aquatic Preserves in the immediate area.**

3. Attach a depiction (plan and section views), which clearly shows the works or other facilities proposed to be constructed. Use multiple sheets, if necessary. Use a scale sufficient to show the location and type of works. **See Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 15.**

4. Briefly describe the proposed project (such as "construct dock with boat shelter", "replace two existing culverts", "construct surface water management system to serve 150 acre residential development"): **Tampa Electric Company proposes to construct a gypsum storage facility, conveyor, access roads, and a railroad track at the existing Big Bend Power Station in Apollo Beach, Florida.**

5. Specify the acreage of wetlands or other surface waters, if any, that are proposed to be filled, excavated, or otherwise disturbed or impacted by the proposed activity:

filled **0.97** ac.; **0** excavated ac.;

other impacts **0** ac.

6. Provide a brief statement describing any proposed mitigation for impacts to wetlands and other surface waters (attach additional sheets if necessary): **Approximately 0.20 acre of an altered unnamed stream and a highly disturbed freshwater marsh will be filled to accommodate a culvert for an access road crossing and the addition of a railroad track, respectively. To mitigate for this 0.20 acre of fill, Tampa Electric will purchase 0.07 mitigation credits from the Tampa Bay Mitigation Bank.**

FOR AGENCY USE ONLY

Application Name:
Application Number:
Office where the application can be inspected:

Note to Notice recipient: The information in this notice has been submitted by the applicant, and has not been verified by the agency. It may be incorrect, incomplete or may be subject to change.

SECTION E

INFORMATION REQUESTED FOR STANDARD GENERAL, INDIVIDUAL AND CONCEPTUAL ENVIRONMENTAL RESOURCE PERMIT APPLICATIONS NOT RELATED TO A SINGLE FAMILY DWELLING UNIT

Please provide the information requested below if the proposed project requires either a standard general, individual, or conceptual approval environmental resource permit and is not related to an individual, single family dwelling unit, duplex or quadruplex. The information listed below represents the level of information that is usually required to evaluate an application. The level of information required for a specific project will vary depending on the nature and location of the site and the activity proposed. Conceptual approvals generally do not require the same level of detail as a construction permit. However, providing a greater level of detail will reduce the need to submit additional information at a later date. If an item does not apply to your project, proceed to the next item. Please submit all information that is required by the Department on either 8 1/2 in. X 11 in. paper or 11 in. X 17 in. paper. Larger drawings may be submitted to supplement but not replace these smaller drawings.

I. Site Information

A. Provide a map(s) of the project area and vicinity delineating USDA/SCS soil types. **See Figure 3**.

B. Provide recent aerials, legible for photo interpretation with a scale of 1" = 400 ft, or more detailed, with project boundaries delineated on the aerial. **See Figure 6.**

C. Identify the seasonal high water or mean high tide elevation and normal pool or mean low tide elevation for each on site wetland or surface water, including receiving waters into which runoff will be discharged. Include dates, datum, and methods used to determine these elevations. **Tampa Electric estimated the seasonal high water level for the project site by averaging the elevations established at three stations (i.e., 1.82, 1.88 and 1.93 ft NAVD88) located within the unnamed stream system (i.e., 1.88 ft NAVD88). The SHWL stations were established along the bank slope of the channel using the growth limits of wetlands vegetation.**

D. Identify the wet season high water tables at the locations representative of the entire project site. Include dates, datum, and methods used to determine these elevations.

The soil types shown on Figure 3 are reported by the Natural Resource Conservation Service to have the following high water table depths in relation to the land surface:

Soil Map Code	Soil Type	Depth in Feet
5	**Basinger, Holopaw and Samsula soils, depressional**	**+2-1.0**
57	**Wabasso fine sand**	**0-1.0**
58	**Wabasso-Urban Land**	**0-1.0**

II. Environmental Considerations

A. Provide results of any wildlife surveys that have been conducted on the site, and provide any comments pertaining to the project from the Florida Game and Fresh Water Fish Commission and the U.S. Fish and Wildlife Service. **On September 8, 9, 12, and 15 and December 13, 2011, wildlife surveys were conducted along the proposed facilities by two ecologists with ECT. Snowy egret (*Egretta thula*), is a State listed Special of Special Concern. The snowy egret was the only listed species observed at the site. This is not unexpected, as very little habitat that most listed species require occurs within the project environs. Most of the land within the power plant facility consists of developed property and highly disturbed land dominated by exotic vegetation. Other wading birds would be expected to forage in the ditches and along the shallow edges of ponds near the project. However, no nesting areas are available for wading birds along**

the proposed project area. No adverse effects to threatened or endangered species are anticipated from the proposed action. See Section 3.0.

B. Provide a description of how water quantity, quality, hydroperiod, and habitat will be maintained in onsite wetlands and other surface waters that will be preserved or will remain undisturbed. **See Sections 4.0 to 6.0.**

C. Provide a narrative description of any proposed mitigation plans, including purpose, maintenance, monitoring, and construction sequence and techniques, and estimated costs. **N/A**

D. Describe how boundaries of wetlands or other surface waters were determined. If there has ever been a jurisdictional declaratory statement, a formal wetland determination, a formal determination, a validated informal determination, or a revalidated jurisdictional determination, provide the identifying number. **See Section 3.0-In addition, on 2/1/12 the FDEP reviewed the jurisdictional lines for the project site and access road crossings in the field and informally verified the limits to be accurately delineated. However, the jurisdictional lines for the railroad track addition were not reviewed in the field by FDEP.**

E. Impact Summary Tables:

1. For all projects, complete Tables 1, 2 and 3 as applicable. **Completed**

2. For docking facilities or other structures constructed over wetlands or other surface waters, provide the information requested in Table 4. **N/A**

3. For shoreline stabilization projects, provide the information requested in Table 5. **N/A**

III. Plans

Provide clear, detailed plans for the system including specifications, plan (overhead) views, cross sections (with the locations of the cross sections shown on the corresponding plan view), and profile (longitudinal) views of the proposed project. The plans must be signed and sealed by an appropriate registered professional as required by law. Plans must include a scale and a north arrow. These plans should show the following: **See Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 15.**

A. Project area boundary and total land area, including distances and orientation from roads or other land marks; **See Figure 7**.

B. Existing land use and land cover (acreage and percentages), and onsite natural communities, including wetlands and other surface waters, aquatic communities, and uplands. Use the Florida Land Use Cover & Classification System (FLUCCS)(Level 3) for projects proposed in the South Florida Water Management District, the St. Johns River Water Management District, and the Suwannee River Water Management District and use the National Wetlands Inventory (NWI) for projects proposed in the Southwest Florida Water Management District. Also identify each community with a unique identification number which must be consistent in all exhibits. **The proposed facilities are to be located on undeveloped industrial land that mostly consists of abandoned wastewater spray field/agricultural uplands with associated man-made upland cut drainage ditches and a canal, a segment of an unnamed stream which has been channelized, a small, isolated depression, and a highly disturbed freshwater marsh. The land uses/covers were identified using the Florida Land Use, Cover and Forms Classification System (FLUCFCS)-Level III (FDOT, 1999). The FLUCFCS map is on Figure 7. The National Wetlands Inventory mapping for the project site is depicted on Figure 5. The acreages and percentages of the existing land use and cover types for the project site and access roads are provided below:**

FLUCFCS CODE AND DESCRIPTION	ACREAGE	PERCENTAGE
422/740-Brazilian Peppers/Disturbed Lands	**26.03**	**96.30**
511-Natural Streams	**0.06**	**0.22**
512-Upland Cut Ditches	**0.75**	**2.78**
534-Reservoirs less than 10 acres	**0.03**	**0.11**
641/619-Freshwater Marsh/Exotic Wetland Hardwoods	**0.16**	**0.59**
TOTAL	**27.03**	**100.0**

C. The existing topography extending at least 100 ft off the project area, and including adjacent wetlands and other surface waters. All topography shall include the location and a description of known benchmarks, referenced to NGVD. For systems waterward of the mean high water (MHW) or seasonal high water lines, show water depths, referenced to mean low water (MLW) in tidal areas or seasonal low water in non-tidal areas, and list the range between MHW and MLW. For docking facilities, indicate the distance to, location of, and depths of the nearest navigational channel and access routes to the channel. **See Figure 2 and Sheets 5, and 5-1 through 5-9.**

D. If the project is in the known flood plain of a stream or other water course, identify the following: 1) the flood plain boundary and approximate flooding elevations; and 2) the 100-year flood elevation and floodplain boundary of any lake, stream or other watercourse located on or adjacent to the site; **The project is not located within the flood plain of a lake, stream or other non-tidal water course; however, the site is situated within Flood Zone AE (See Figure 4). Flood Zone AE is subject to flooding by the base or 1 percent chance flood and considered to be a high risk area for flooding. However, the flood zone area is coastal and not riverine. The coastal flood area is landward of the shoreline, but may be associated with tidal inundation during storms. Floodplain compensation is based upon riverine flooding events only. In addition, according to the modeling, the flood stages in the 100-year event do not inundate the area. Thus, floodplain compensation is not required for this project.**

E. The boundaries of wetlands and other surface waters within the project area. Distinguish those wetlands and other surface waters that have been delineated by any binding jurisdictional determination; **See Figure 7.**

F. Proposed land use, land cover and natural communities (acreage and percentages), including wetlands and other surface waters, undisturbed uplands, aquatic communities, impervious surfaces, and water management areas. Use the same classification system and community identification number used in III (B) above. **See Figure 7.**

G. Proposed impacts to wetlands and other surface waters, and any proposed connections/outfalls to other surface waters or wetlands; **See Section 3.0 and Table 1.**

H. Proposed buffer zones; **N/A**

I. Pre- and post-development drainage patterns and basin boundaries showing the direction of flows, including any off-site runoff being routed through or around the system; and connections between wetlands and other surface waters; **N/A.**

J. Location of all water management areas with details of size, side slopes, and designed water depths; **See the drainage report in Appendix B-Figures 1 and 2.**

K. Location and details of all water control structures, control elevations, any seasonal water level regulation schedules; and the location and description of benchmarks (minimum of one benchmark per structure); **See Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 15.**

L. Location, dimensions and elevations of all proposed structures, including docks, seawalls, utility lines, roads, and buildings; **See Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 15.**

M. Location, size, and design capacity of the internal water management facilities; **See Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 15.**

N. Rights-of-way and easements for the system, including all onsite and off-site areas to be reserved for water management purposes, and rights-of-way and easements for the existing drainage system, if any; **See Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 15.**

O. Receiving waters or surface water management systems into which runoff from the developed site will be discharged; **See Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 15.**

P. Location and details of the erosion, sediment and turbidity control measures to be implemented during each phase of construction and all permanent control measures to be implemented in post-development conditions; **See Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 15.**

Q. Location, grading, design water levels, and planting details of all mitigation areas; **N/A**

R. Site grading details, including perimeter site grading; **See Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 15.**

S. Disposal site for any excavated material, including temporary and permanent disposal sites; **N/A**

T. Dewatering plan details; **N/A**

U. For marina facilities, locations of any sewage pumpout facilities, fueling facilities, boat repair and maintenance facilities, and fish cleaning stations; **N/A**

V. Location and description of any nearby existing offsite features which might be affected by the proposed construction or development such as stormwater management ponds, buildings or other structures, wetlands or other surface waters. **N/A**

W. For phased projects, provide a master development plan. **N/A**

IV. Construction Schedule and Techniques

Provide a construction schedule, and a description of construction techniques, sequencing and equipment. This information should specifically include the following:

A. Method for installing any pilings or seawall slabs; **N/A**

B. Schedule of implementation of temporary or permanent erosion and turbidity control measures; **See Section 6.0**

C. For projects that involve dredging or excavation in wetlands or other surface waters, describe the method of excavation, and the type of material to be excavated; **N/A.**

D. For projects that involve fill in wetlands or other surface waters, describe the source and type of fill material to be used. For shoreline stabilization projects that involve the installation of riprap, state how these materials are to be placed, (i.e., individually or with heavy equipment) and whether the rocks will be underlain with filter cloth; **See Sections 4.0 to 6.0.**

E. If dewatering is required, detail the dewatering proposal including the methods that are proposed to contain the discharge, methods of isolating dewatering areas, and indicate the period dewatering structures will be in place (Note: a consumptive use or water use permit may by required); **At this time, dewatering should not be required. If dewatering is determined to be required, Tampa Electric will submit the necessary information to FDEP for a permit prior to any dewatering activities.**

F. Methods for transporting equipment and materials to and from the work site. If barges are required for access, provide the low water depths and draft of the fully loaded barge; **Equipment and materials will be transported to the project site from Wyandotte Road. On Tampa Electric property, the equipment and materials will be transported along a series of interior access roads.**

G. Demolition plan for any existing structures to be removed **N/A**; and

H. Identify the schedule and party responsible for completing monitoring, record drawings, and as-built certifications for the project when completed. **Tampa Electric is the party responsible.**

V. Drainage Information

A. Provide pre-development and post-development drainage calculations, signed and sealed by an appropriate registered professional, as follows**: See Appendix B of Appendix B.**

1. Runoff characteristics, including area, runoff curve number or runoff coefficient, and time of concentration for each drainage basin; **See Appendices B and C of Appendix B.**

2. Water table elevations (normal and seasonal high) including aerial extent and magnitude of any proposed water table draw down; **The SHW level was established for the immediate area of the project site at 1.88 ft NAVD. No water table draw downs are proposed.**

3. Receiving water elevations (normal, wet season, design storm); **N/A**

4. Design storms used including rainfall depth, duration, frequency, and distribution; **See Section 3.0 of Appendix B.**

5. Runoff hydrograph(s) for each drainage basin, for all required design storm event(s); **See Appendices B and C of Appendix B.**

6. Stage-storage computations for any area such as a reservoir, close basin, detention area, or channel, used in storage routing; **N/A**

7. Stage-discharge computations for any storage areas at a selected control point, such as control structure or natural restriction; **N/A**

8. Flood routings through onsite conveyance and storage areas; **See *.smx files in Appendix B of Appendix B.**

9. Water surface profiles in the primary drainage system for each required design storm event(s); **See Appendices B and C of Appendix B.**

10. Runoff peak rates and volumes discharged from the system for each required design storm event(s); **See Appendices B and C of Appendix B.**

11. Tail water history and justification (time and elevation); **See Appendices B and C of Appendix B.**

and

12. Pump specifications and operating curves for range of possible operating conditions (if used in system view). **See Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 14.**

B. Provide the results of any percolation tests, where appropriate, and soil borings that are representative of the actual site conditions; **N/A**

C. Provide the acreage, and percentages of the total project, of the following:

1. Impervious surfaces, excluding wetlands; **pre-development (0 acres or 0 percent); post-development (25.07 acres or 92.75 percent and an additional 0.65 acre or 2.41 percent in surface waters).**

2. Pervious surfaces (green areas, not including wetlands); **pre-development (26.03 acres or 96.30 percent); post-development** (**0.96 acre or 3.55 percent, an additional 0.16 acre or 0.59 percent in surface waters, and 0.16 acre or 0.59 percent in wetlands).**

3. Lakes, canals, retention areas, other open water areas; **pre-development (0.84 acre or 3.11 percent); post-development (0.03 acre or 0.11 percent)** and

4. Wetlands; **pre-development (0.16 acre and 0.59 percent); post-development (0 acre and 0 percent).**

D. Provide an engineering analysis of floodplain storage and conveyance (if applicable), including:

1. Hydraulic calculations for all proposed traversing works; **See Appendix E of Appendix B.**

2. Backwater water surface profiles showing upstream impact of traversing works; **N/A**

3. Location and volume of encroachment within regulated floodplain(s); **N/A** and

4. Plan for compensating floodplain storage, if necessary, and calculations required for determining minimum building and road flood elevations. **N/A**

E. Provide an analysis of the water quality treatment system including: **N/A**

1. A description of the proposed stormwater treatment methodology that addresses the type of treatment, pollution abatement volumes, and recovery analysis; and

2. Construction plans and calculations that address stage-storage and design elevations, which demonstrate compliance with the appropriate water quality treatment criteria.

F. Provide a description of the engineering methodology, assumptions and references for the parameters listed above, and a copy of all such computations, engineering plans, and specifications used to analyze the system. If a computer program is used for the analysis, provide the name of the program, a description of the program, input and output data, two diskette copies, if available, and justification for model selection**. See Appendix B.**

VI. Operation and Maintenance and Legal Documentation

A. Describe the overall maintenance and operation schedule for the proposed system. **See Section 2.4 of Appendix B.**

B. Identify the entity that will be responsible for operating and maintaining the system in perpetuity if different than the permittee, a draft document enumerating the enforceable affirmative obligations on the entity to properly operate and maintain the system for its expected life, and documentation of the entity's financial responsibility for long-term maintenance. If the proposed operation and maintenance entity is not a property owner's association, provide proof of the existence of an entity, or the future acceptance of the system by an entity which will operate and maintain the system. If a property owner's association is the proposed operation and maintenance entity, provide copies of the articles of incorporation for the association and copies of the declaration, restrictive covenants, deed restrictions, or other operational documents that assign responsibility for the operation and maintenance of the system. Provide information ensuring the continued adequate access to the system for maintenance purposes. Before transfer of the system to the operating entity will be approved, the permittee must document that the transferee will be bound by all terms and conditions of the permit. **Tampa Electric is the entity responsible for operating and maintaining the system in perpetuity.**

C. Provide copies of all proposed conservation easements, storm water management system easements, property owner's association documents, and plats for the property containing the proposed system. **N/A**

D. Provide indication of how water and wastewater service will be supplied. Letters of commitment from off-site suppliers must be included. **Portable toilets will be utilized during construction. Tampa Electric will construct a permanent restroom at the proposed project facility which will be hooked up to a County potable water line and utilize the onsite Tampa Electric PPS wastewater treatment system through the installation and use of a holding tank.**

E. Provide a copy of the boundary survey and/or legal description and acreage of the total land area of contiguous property owned/controlled by the applicant. **See Appendix A.**

VII. Water Use N/A

A. Will the surface water system be used for water supply, including landscape irrigation, or recreation.

B. If a Consumptive Use or Water Use permit has been issued for the project, state the permit number.

C. If no Consumptive Use or Water Use permit has been issued for the project, indicate if such a permit will be required and when the application for a permit will be submitted.

D. Indicate how any existing wells located within the project site will be utilized or abandoned.

TABLE 1
Project Impact Summary (FDEP/USACE)

WL & SW ID*	WL & SW TYPE	WL & SW SIZE (ac.) ON SITE	WL & SW ACRES NOT IMPACTED	PERMANENT IMPACTS TO WL & SW		TEMPORARY IMPACTS TO WL & SW		MITIGATION ID
				IMPACT SIZE (acres)	IMPACT CODE	IMPACT SIZE (acres)	IMPACT CODE	
V2	511	0.054	0.018	0.036	F	N/A	N/A	TBMB**
D1	512	0.010	0.009	0.001	F	N/A	N/A	N/A***
D2	512	0.014	0	0.014	F	N/A	N/A	N/A***
S1	512	0.124	0	0.124	F	N/A	N/A	N/A***
S2	512	0.020	0	0.020	F	N/A	N/A	N/A***
S4	512	0.037	0	0.037	F	N/A	N/A	N/A***
S5	512	0.003	0	0.003	F	N/A	N/A	N/A***
S6	512	0.190	0	0.190	F	N/A	N/A	N/A***
S11	512	0.260	0	0.260	F	N/A	N/A	N/A***
S12	512	0.002	0	0.002	F	N/A	N/A	N/A***
V3	512	0.018	0	0.018	F	N/A	N/A	N/A***
V4	512	0.071	0	0.071	F	N/A	N/A	N/A***
S9	534	0.029	0	0.029	F	N/A	N/A	N/A***
W!	641/619	0.162	0	0.162	F	N/A	N/A	TBMB**
TOTALS		0.994	0.027	0.967				

WL = Wetland; **SW** = Surface water; **ID** = Identification number, letter, etc.
Wetland Type: Use an established wetland classification system and, in the comments section below, indicate which classification system is being used.
Impact Code (Type): D = dredge; F = fill; H = change hydrology; S = shading; C = clearing; O = other. Indicate the final impact if more than one impact type is proposed in a given area. For example, show F only for an area that will first be de-mucked and then backfilled.

Note: Multiple entries per cell are not allowed, except in the "Mitigation ID" column. Any given acreage of wetland should be listed in one row only, such that the total of all rows equals the project total for a given category (column). For example, if Wetland No. 1 includes multiple wetland types and multiple impact codes are proposed in each type, then each proposed impact in each wetland type should be shown on a separate row, while the size of each wetland type found in Wetland No. 1 should be listed in only one row.

Comments:
*V2 is a FLUCFCS-511-Natural Streams; D1 and D2: S1, 2, 4, 5, 6, 11, and 12; and V3 and V4 are FLUCFCS 512-Upland Cut Ditches, S9 is a FLUCFCS 534-Reservoirs Less Than 10 Acres, and W1 is a FLUCFCS 641/619-Freshwater Marsh/Exotic Wetland Hardwoods.
**The impacts to the natural stream and freshwater marsh will be mitigated through the installation of properly sized culverts and purchase of mitigation credits from the Tampa Bay Mitigation Bank.-See Table 3.
*** Mitigation is not proposed for the impacts to the man-made, upland-cut ditches and hydrologically-isolated depression. Drainage patterns/flows will be maintained using properly sized culverts for flow through conveyances and Best Management Practices will be employed during construction.

TABLE 2
ONSITE MITIGATION SUMMARY **N/A**

MITIGATION ID	CREATION		RESTORATION		ENHANCEMENT		WETLAND PRESERVE		UPLAND PRESERVE		OTHER	
	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE
PROJECT TOTALS:												

CODES (multiple entries per cell not allowed): Target Type or Type = target or existing habitat type from an established wetland classification system or land use classification for non-wetland mitigation

COMMENTS:

TABLE 3
OFF-SITE MITIGATION SUMMARY

MITIGATION ID	CREATION		RESTORATION		ENHANCEMENT		WETLAND PRESERVE		UPLAND PRESERVE		OTHER-MITIGATION BANK*	
	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE	AREA	TARGET TYPE
V2											0.04/0.01	Brackish
W1											0.16/0.06	Fresh
PROJECT TOTALS:											0.20/0.07	

CODES (multiple entries per cell not allowed):

Target Type=target or existing habitat type from an established wetland classification system or land use classification for non-wetland mitigation

* Purchase 0.07 oligohaline/freshwater wetland mitigation credits from Tampa Bay Mitigation Bank for 0.20 acre of FDEP/USACE wetland impacts.

TABLE 4
DOCKING FACILITY SUMMARY **N/A**

Error! Bookmark not defined. Type of Structure*	Type of Work**	Number of Identical Docks	Length (ft)	Width (ft)	Height (ft)	Total square feet over water	Number of slips

	TOTALS:	Existing	Proposed
*Dock, Pier, Finger Pier, or other structure (please specify what type)	Number of Slips		
**New, Replaced, Existing (unaltered), Removed, or Altered/Modified	Square Feet over the water		

Use of Structure:

Will the docking facility provide:

Live-aboard Slips? If yes, Number:
Fueling Facilities: If yes, Number
Sewage Pump-out Facilities? If yes, Number:
Other Supplies or Services Required for Boating (excluding refreshments, bait and tackle)
☐ Yes ☐ No

Type of Materials for Decking and Pilings (i.e., CCA, pressure treated wood, plastic, or concrete)

Pilings
Decking
Proposed Dock-Plank Spacing (if applicable)

Proposed Size (length and draft), Type, and Number of Boats Expected to Use or Proposed to be Mooring at the facility)

TABLE 5: SHORELINE STABILIZATION **N/A**
IF YOU ARE CONSTRUCTING A SHORELINE STABILIZATION PROJECT, PLEASE PROVIDE THE FOLLOWING:

Type of Stabilization Being Done	Length (in feet) of New	Length (in feet) of Replaced	Length (in feet) of Repaired	Length (in feet) of Removed	Slope: H: V:	Width of the Toe (in feet)
Vertical Seawall						
Seawall plus Rip-Rap						
Rip-Rap						
Rip-Rap plus Vegetation						
Other Type of Stabilization Being Done:						

Size of the Rip Rap:

Type of Rip Rap:

COMMENTS:

3.0 SITE/CORRIDOR INFORMATION

3.1 PROJECT LOCATION AND DESCRIPTION

As previously described, Tampa Electric proposes to relocate a gypsum pile and construct access roads at the existing Big Bend Power Station in Apollo Beach, Florida (i.e., Township 31 South, Range 19 East, and Section 10, Hillsborough County, Florida). The main project site is wholly located on Tampa Electric-owned property 0.45 mile south of Pembroke Road, 0.30 mile east of Wyandotte Road, 0.25-mile north of Big Bend Road (State Road 672) and 0.25-mile west of South Tamiami Trail (U.S. Highway 41). The site is bordered by agricultural land on the east and south, vacant land on the north and industrial facilities associated with the power plant to the west. All of the proposed surface water crossings occur within the existing Big Bend Power Station. The project area mostly consists of open, upland grassy fields, man-made ditches, remnant forest, an altered natural stream, monocultures of exotic shrubs and trees such as Brazilian pepper (*Schinus terebinthifolius)* and river sheoak (*Casuarina cunninghamiana),* abandoned wastewater spray fields, abandoned buildings, railroad tracks, access roads, electrical facilities, small ponds, highly disturbed wetlands, and other ruderal areas.

The Florida Natural Areas Inventory (FNAI) Species Tracking List provided information on animal and plant species listed as endangered, threatened, or species of special concern by the Florida Fish and Wildlife Conservation Commission (FFWCC), Florida Department of Agriculture and Consumer Services and/or U.S. Fish and Wildlife Service (USFWS) that have been recorded as present in Hillsborough County, Florida. Additionally, the FFWCC website was searched for known bald eagle (*Haliaeetus leucocephalus*) nests and wading bird rookeries for the Sections of land on which the proposed facilities are to be located, as well as all adjacent Sections.

The FNAI identified 14 listed plants and 36 listed animals (1 amphibian, 11 reptiles, 21 birds, and 3 mammals) as occurring within Hillsborough County, Florida. According to the FFWCC Eagle Nest Locator, the closest documented active eagle nest is about 1.2 miles east of the project activities (i.e., Eagle Locator identification code HL041; Last Active 2007; located in T31S, R19E, and S11). The closest wading bird colonies were

recorded approximately 3 miles to the northwest of the project site on Sunken Island key (i.e., Wading Bird Locator identification code 615007; >3,000 nests; Last Active in 1990's and Wading Bird Locator identification code 615336; 250-500 nests; Last Active in 1990's). Thus, no eagle's nests or wading bird rookeries were recorded on or within one mile of the project site.

Out of the 50 listed plant and animal species recorded for Hillsborough County, Florida, no listed plants and only 10 listed animal species (1 reptile, 8 birds, and 1 mammal) were considered to have a potential likelihood for occurrence based upon the availability of habitat. The American alligator (*Alligator mississippiensis*), a state-listed species of special concern, could be present within the ditches onsite. Wading birds such as little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), and white ibis (*Eudocimus albus*) are all state-listed as species of special concern that could also potentially be found along the ditches onsite. Wood stork (*Mycteria americana*), a state/federally-listed endangered species, might also be found feeding in the ditches onsite. The Southeastern American kestrel (*Falco sparverius paulus*), a state-listed threatened species, could potentially nest in available wooded habitat located just outside the project site limits to the north. The Florida burrowing owl (*Athene cunicularia floridana*), a state-listed species of special concern, could potentially nest in upland grassy areas. The sandhill crane (*Grus canadensis pratensis*), a state-listed threatened species, might also feed along the open wet grassy areas. Finally, Sherman's fox squirrel (*Sciurus niger shermani*), a state-listed species of special concern, could also utilize the wooded habitats located just outside of the project limits.

During the wetland jurisdictional delineations, two Environmental Consulting & Technology, Inc. (ECT), ecologists conducted wildlife surveys of the project area. During the surveys, snowy egrets were seen in the ditches. In addition to wading birds, other birds were observed directly or indirectly through signs thereof, including Northern cardinal, American crow, black vulture, and turkey vulture. Leopard frogs, a mud turtle, and a black racer were present in the ditches. Finally, signs of armadillo, raccoon, Eastern cottontail, and white-tailed deer were observed.

The snowy egret was the only listed species observed at the site. This is not unexpected, as very little habitat that most listed species require occurs within the project environs. Most of the land within the power plant facility consists of developed property and highly disturbed land dominated by exotic vegetation. Other wading birds would be expected to forage in the ditches and along the shallow edges of ponds near the project. However, no nesting areas are available for wading birds along the proposed project area. No adverse effects to threatened or endangered species are anticipated from the proposed action.

Finally, as previously referenced, Tampa Electric owns the Big Bend Power Station site. The property owners adjacent to the Big Bend Power Station, together with folio numbers and mailing addresses, are listed in Appendix A. The applicant-owned property information is also provided in Appendix A.

3.2 JURISDICTIONAL WETLANDS AND SURFACE WATERS

On September 8, 9, 12, and 15; December 13; and August 20, 2012, ECT wetland ecologists conducted wetland/surface water jurisdictional determinations along the area of the proposed gypsum relocation site and access roads. Wetlands and surface waters were delineated in the field using accepted, standard state and federal wetland delineation methodologies (e.g., the FDEP regulations, Section 62-301 and 62-340 and the Routine Onsite Determination Methods as described in the *USACE 1987 Wetlands Delineation Manual,* the most current regional supplements, and the most current vegetative index, respectively).

Standard USACE Routine Wetland Delineation Forms were not completed for this project because all jurisdictional boundaries occurred along the edges of the tops of banks of adjacent berms. Pink surveyor's flags labeled with the words "wetlands delineation" were tied at strategic locations along the identified jurisdictional boundaries on existing vegetation. No true wetlands were found onsite (i.e., only surface waters). Each flag was labeled with a code to identify the surface water. After the wetland ecologist flagged the surface waters, a certified land surveyor surveyed each flag's location. The surveyed ju-

risdictional lines were overlaid on a site plan and are provided on an 8 ½ by 11-inch drawing in this permit application (see Figure 7). Ground photographs of representative surface waters associated with the project are also provided in Appendix C.

As stated previously, there are no true wetlands located within the project area. All jurisdictional areas identified within the project area consist of man-made drainage ditches and a canal, a channelized natural stream, and a hydrologically isolated depression. Although the term "wetland" is being used to identify the jurisdictional areas, none of the surface water features appear to exhibit natural wetland conditions (i.e., all are highly altered/disturbed or artificial/man-made). Completed USACE-approved Jurisdictional Determination Forms have also been provided for the USACE jurisdictional surface waters on the site (see Appendix D).

The following narrative provides a description of the ecology on the project. Uplands and surface waters were classified using Level III of the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999). The most current FLUCFCS does not differentiate among the various types of linear water bodies (i.e., linear water bodies are classified as 510-Streams and Waterways). For the purposes of this project, natural and artificially created linear water bodies will be separately described and classified using a modified Level III FLUCFCS (i.e., FLUCFCS 511-Natural Streams and FLUCFCS 512-Upland Cut Ditches, respectively). Figure 7 is a land use/cover map of the proposed project facilities with surface water features overlaid and an aerial photographic background provided.

The proposed 27.03-acre Project area consists of existing unpaved access roads/berms with roadside ditches and an abandoned wastewater spray field/agricultural upland area with associated man-made upland cut drainage ditches and a canal, a segment of an unnamed stream which has been channelized, a small, isolated depression, and a highly disturbed freshwater marsh. The greatest amount of project area consists of a mixture of disturbed uplands: open grassy fields and Brazilian peppers (i.e., FLUCFCS 740-Disturbed Lands and 422-Brazilian Pepper). Approximately 26.03 acres of the project site is cov-

ered by disturbed uplands dominated by the growth of dense exotic shrubs such as Brazilian peppers and scattered open areas dominated by invasive grasses such as cogon grass (*Imperata cylindrica*). The shrub cover also contains scattered young cabbage palms (*Sabal palmetto*). The open, grassy areas also support other grasses such as smutgrass (*Sporobolus indicus*) with occasional yerba de jicotea (*Ludwigia erecta*) and common wireweed (*Sida ulmifolia*).

Upland-cut ditches and canals are linear channels created by man to carry surface water, usually rainfall, off of and away from areas of human activity. Approximately 0.75 acre of these man-made drainages is within project limits. The majority of upland-cut ditches are located along roadsides/berms and are routinely maintained by mowing and/or cleanout efforts (i.e., designated by the following mapping codes: D1 and 2; S1, 2, 4-8, and 10-12; and V1, 3, and 4 on Figure 7). The man-made, upland cut drainage ditches located on the project site are oriented north to south or east to west and average approximately 10-ft wide and 3-ft deep. Most of the ditches are shaded by dense over hanging trees and shrubs including Brazilian pepper, cabbage palm, white lead tree (*Leucaena leucophyllum*), and occasionally live oak (*Quercus virginiana*), sugarberry (*Celtis laevigata*), and river sheoak. Wetland vegetation in these ditches is sparse and typically consists of scattered giant leather fern (*Acrostichum danaeifolium*). The man-made, upland cut ditches located to the southwest of the project site vary from 10- to 30- ft wide and 3- to 6-ft deep and are either oriented north to south or east to west. They vary from being open and dominated by Peruvian primrosewillow (*Ludwigia peruviana*), Southern cattail (*Typha domingensis*) and paragrass (*Urochloa mutica*) to being completely shaded by overhanging Brazilian pepper with little or no wetland vegetation, except for scattered giant leather fern.

The man-made, upland cut drainage canal (i.e., the term canal is meant to define the linear system that drains the majority of surface waters on the property) oriented north to south on the east side of the project site averages approximately 20-ft wide and 6-ft deep (i.e., S3). The drainage canal is largely shaded by overhanging Brazilian pepper and is

devoid of wetland vegetation, except for scattered giant leather fern. The canal connects to a channelized unnamed stream (i.e., V2) at the northeast corner of the project site.

During a review of historic aerial photography (photo dates 1957 and 1968), it was determined that the drainage located at the northeastern corner of the project site was a natural stream prior to channelization. Approximately 0.06 acre of the channelized stream occurs within project limits. The stream is approximately 30-ft wide and averages over 6-ft deep. The channelized stream is densely shaded by Brazilian pepper with occasional white lead tree and river sheoak; scattered patches of coastalplain willow (*Salix caroliniana*), manyflower marshpennywort (*Hydrocotyle umbellata*), and giant leather fern also occur along the lower reaches.

None of the drainages on or in the vicinity of the project site appear to be tidally influenced. The majority of these systems convey surface runoff from surrounding industrial and agricultural areas to downstream reaches. The unnamed stream drains to the northwest and ultimately discharges into Tampa Bay. The highest spring tides and/or storm surges may result in tidal waters being flushed further inland on the Tampa Electric property through the unnamed stream channel. Giant leather fern is a euryhaline species (i.e., ability to tolerate a wide range of degrees of salinity) that can grow in saltwater, brackish water and freshwater. The presence of scattered giant leather ferns in the stream channel could suggest that the local hydrology ranges from fresh water under normal circumstances to an oligohaline condition (slightly brackish) during severe storm/high spring tide events.

Portions of the ditches located southwest of the project site are planned to be crossed by a paved road for access from Wyandotte Road to the project site. Culverts will be installed at each flow-through ditch crossing to maintain flow (6 culvert crossings). A few of the ditches located within the footprint of the project site are also planned to be filled. However, these ditches are dead end systems and do not need to be relocated to maintain flow (i.e., S1, 2, and 11). An access road ditch crossing at S4 and another ditch crossing at S12 along the southern edge of the railroad track extension are also going to be filled without

installation of a culvert because they are located at a dead end. Another deadend ditch (i.e., D2) is also located a little further north along the railroad track spur that will need to be filled. This small ditch that is a junction of two upland-cut ditches that were probably dug to facilitate drainage through the remnant forest after clearing and preparation of farm fields. The ditch is heavily shaded and has sparse to no vegetation, except near the existing rail tracks where light can reach the ground. Near the railroad line, there is a colony of string-lilies (*Crinum americanum*) and a few giant leather ferns in the ditch. The abutting landscape is relict maritime hammock with considerable encroachment of Brazilian pepper trees.

Originally, the northern portion of the eastern canal and the channelized stream at the northeastern corner of the project site were going to be filled. However, the project configuration was redesigned to avoid these systems resulting in a 0.08-acre reduction in jurisdictional impacts. Currently, 0.04 acre of the 0.06-acre unnamed stream to the north of the project site is scheduled to be crossed by an access road and a culvert will be installed (i.e., the seventh culvert crossing). The access road will continue to the northeast to connect the project site to National Gypsum located offsite. At the National Gypsum site, another existing ditch (i.e., D1) will be crossed that already has an existing box culvert (i.e., the eighth culvert crossing). The ditch at the National Gypsum site is a deep and wide channel originally dug to control water when the surrounding land was used for the cultivation of row crops and/or nursery plants. Row crop fields and ditches are evident in aerial photographs taken in the 1930s, 1950s, and 1960s. These ditches are still in use to facilitate drainage for the industries that are now in place.

The ditch is over 20-ft wide at the bottom and 30+ ft wide at the top of bank. It is crossed by a wide box culvert bridge for access to a cell phone tower. It is wet to flowing most of the year and supports a community of southern cattail, Mexican primrosewillow (*Ludwigia octovalvis*), southern shield fern (*Thelyteris kunthii*), peppervine (*Ampelopsis arborea*), and bog hemp (*Boehmeria cylindrica*). The surrounding land is upland with mostly Brazilian pepper cover and many nuisance species like cogon grass, white lead tree, shrub verbena (*Lantana camara*), smutgrass, caesarweed (*Urena lobata*), and

bahiagrass (*Paspalum notatum*). The upland cover is generally thick and overgrown with numerous vines.

A very small (i.e., 0.03 acre) depression will be filled along the southern portion of the project site (i.e., S9). This shallow depression was dry during the site investigations and appears to be hydrologically isolated area that may have been created from the removal of fill material for local access road improvements. It is dominated by the growth of Brazilian peppers. This depression may pond after storm events, but has no true functional wetland component and was identified as FLUCFCS 534-Reservoirs less than 10 acres.

Finally, a highly disturbed freshwater marsh, identified as FLUCFCS 641/619-Freshwater Marsh/Exotic Wetland Hardwoods, occurs along the existing railroad tracks in the vicinity of the project site to the northwest. The grassy marsh is dominated by knotgrass (*Paspalum distichum*) with a small area of open water and minor populations of string-lily, giant leather fern, and southern cattail. Historic aerial photographs indicate that the area once had a wetland shrub or tree component, but this part of the system has been taken over by Brazilian peppers to the exclusion of almost all other species. The altering of the land first for farming and currently for industry leaves this wetland and its abutting forest as relict habitats. Extending the railroad track on the property to include a connection to the project site will result in 0.16 acre of fill in the freshwater marsh. The existing culvert that provides drainage from the marsh to the west across the existing railroad tracks will be extended to accommodate the additional railroad track (i.e., the ninth culvert crossing).

The total impact from filling in wetlands/surface waters on the project site is 0.97 acre. All of the surface water features identified are considered to be under the jurisdiction of the FDEP and USACE.

4.0 CONSTRUCTION PLANS, SCHEDULE AND TECHNIQUES

The limits of construction for the proposed project will encompass 27.03 acres of land, based on a 24.2-acre project site, 2.4 acres of above-grade access roads to the west and north of the facility, and 0.43 acre of railroad track to be added to the existing loop to connect to the project site. The project site will be a new-lined storage facility utilized to manage the gypsum piles. The storage area will have a lining system consisting of a geo-synthetic clay lining and a geo-membrane, overlain by 2 ft of compacted gypsum. Once the outdoor "off spec" gypsum piles meet the specifications required by the wallboard plant, it will either be loaded into trucks using the front end loaders for delivery to the wallboard plant, or loaded into an above grade reclaim hopper using a front end loader and sent to the gypsum load out silo or the 25,000-ton storage dome.

There will be a total of 1,822 ft and 447 ft of access road with a proposed width of approximately 30 ft to be constructed to the west and north of the proposed relocated gypsum facility, respectively (i.e., 1.77 acres and 0.635 acre, respectively). The width of road construction will increase at certain areas where expansion is required such as at the truck scale and at ditch crossings for culvert installations (i.e., 70 to 110 ft). A width of approximately 24 ft of the aboveground access roads will be constructed of pavement over compacted aggregate and an aggregate base over compacted fill material. A railroad track will be extended from the existing rail loop system on the property to connect rail to the new gypsum handling and storage facility. The track will be extended approximately 25 ft to east of the existing tracks. A total of 25.72 acres of the land will be covered with an impervious surface, while an additional 0.54 acre will be back filled and 0.34 acre will be left intact. Out of the 27.03-acre project area, approximately 0.65 acre of jurisdictional area will be filled with an impervious surface and an additional 0.32 acre of jurisdictional area will be backfilled (i.e., a total of 0.97 acre of fill in jurisdictional areas). The following narrative provides the construction plans and techniques to be utilized for the gypsum relocation project over the November 2013 to April 2014 construction schedule.

4.1 ADMINISTRATIVE

A Pre-Construction Conference will be held at the site. Participants will include necessary personnel from the Contractor, Construction Management, and Tampa Electric. An agenda for topics of discussion will be established by Construction Management prior to issuing a Notice to Proceed (NTP) to the Contractor. Existing utilities in the vicinity of work will be located and marked prior to the Contractor receiving the NTP.

After the NTP is issued, establishment of silt fencing, temporary sediment ponds, and other erosion control devices will commence. Jurisdictional areas will be delineated in the field and buffer zones established to define construction limits.

4.2 CLEARING, GRUBBING, AND TOPSOIL REMOVAL

Trees will be cleared within the limits of the project site and along road access corridors and disposed of per Tampa Electric's direction. After clearing, grubbing will occur to remove stumps and other larger materials. Topsoil will then be stripped and stockpiled within the project limits for later use.

4.3 EARTHWORK

Earthwork will be performed using scrapers, dozers, backhoes, and other earthmoving equipment. Embankment material will be obtained from excavation areas of the site as appropriate. Prior to placement of embankment, the excavated materials will be tested for suitability as fill material use. Earth-moving operations will progress from excavation areas to embankment areas, and offsite fill materials will be imported if required. Temporary stockpiles may be established to store excess, segregated or specialized materials.

4.4 DRAINAGE

Perimeter berms will provide flood protection for the new gypsum storage facility. Stormwater will be collected and sent to recycle pond for treatment. Operation of this gypsum storage facility requires the construction of paved roads to access the project site from Wyandotte Road and to connect the site to the National Gypsum property northeast of the project area. It will also include the addition of a rail spur connecting the storage

area to the existing rail loop adjacent to the northwest section of the project. The cross section for this access road will be designed to route runoff to a roadside swale (i.e., V-ditch) that will be sized to capture the required treatment volume for the impervious area. The swale will be designed with ditch blocks that will hold the volume in the swale so that treatment will occur. Attenuation is not proposed for these roadway drainage systems due to the over attenuation that will be a result of the reuse of the captured rainfall within the proposed gypsum storage area berms. Drainage at access road crossings of existing ditches will be via culverts where flow paths are directed beneath the access roads. Culverts will be constructed with reinforced concrete pipe (RCP). Bedding and backfill material will be delivered by truck to the site and placed using backhoes and hand-operated compaction equipment. All drainages will be routed to the surrounding canals that drain west to Tampa Bay. Culvert design was based on the capacity of the existing ditch/canal system located throughout the site. All of the drainage canals drain through a 6-ft by 8-ft concrete box culvert that crosses Wyandotte Road. Survey maps of the site indicate that the existing ditches/canals have several corrugated metal pipe (CMP) culverts in place. These existing culverts limit the flow capacity within the existing canal banks and were analyzed to determine peak flow capacity, based on a no tail water condition.

It was determined that the proposed access road crossings would impact flow through conveyances at nine different locations throughout the project site. Conveyance would need to be maintained in these drainages following the completion of construction by the installation of 24-inch or 36-inch culverts. Conveyance must also be maintained where existing box culverts will be extended at the rail spur, and where an existing box culvert is to remain at the National Gypsum ditch crossing. The new culverts were sized to provide hydraulic capacity equivalent or greater than the hydraulic capacity of the existing culverts. Thus, the development of the gypsum relocation project site and improvements and additions to access will not change existing drainage patterns or reduce the drainage capacity to Tampa Bay. The culverts to be installed should not require dredging. However, some minor dredging could potentially occur along the length of the culvert only as necessary to place the sections level across the channel cross-section.

The locations for the proposed culvert crossings are depicted on Sheets 5-1 through 5-9. The detail sheets for the proposed seven culvert locations are provided on Figures 8 through 15.

Finally, please be aware the Tampa Electric will be submitting a Notice Of Intent (NOI) to the FDEP for using the *Generic Permit for Stormwater Discharge from Large and Small Construction Activities* (Chapter 62-621.300[4][a], F.A.C.). Any construction activity that disturbs greater than or equal to 1 acre and discharges storm waters to waters of the State requires the preparation of a stormwater pollution prevention plan (SWPPP). The SWPPP will be developed before submittal of the NOI and in effect 48 hours after submittal of the NOI. The SWPPP will be updated and amended as needed and kept at the Big Bend Power Station for review upon request.

5.0 OPERATION AND MAINTENANCE

5.1 DRAINAGE FACILITIES

Ditches will be checked as required for erosion, scour, sediment deposits, and other impediments to ensure proper drainage. If ditches require cleaning, this will be performed with small equipment such as bobcats and pickups. Culverts will also be cleaned of sediment as needed. This will be accomplished by vacuum or water-jet trucks.

5.2 TEMPORARY EROSION CONTROL FACILITIES

Silt fencing will be inspected after rainfalls greater than 0.5 inch, or at a minimum frequency of once per week during the construction phase. Ditch checks will be inspected at the same frequency as silt fencing. Sediment deposits greater than 4-inches deep will be removed. Broken ditch checks or torn silt fencing will be replaced as needed until final surface stabilization is achieved for the site. Sediment tracking prevention devices such as rock-surfaced construction entrances will be inspected daily for sediment depth, and replaced if needed to prevent sediment from leaving the site. Sediment deposits greater than 4-inch deep will be removed from temporary sediment ponds.

6.0 ACTIVITIES PROPOSED IN SURFACE WATERS AND FLOODPLAINS

6.1 SURFACE WATERS

All jurisdictional areas identified within the project area consist of man-made drainage ditches and a canal, a channelized natural stream, and a hydrologically isolated depression, except for a highly disturbed freshwater marsh. The previously referenced surface water impacts are considered to be the minimum required to assure safe and efficient construction and operation of the proposed gypsum pile and access roads. In some cases, a small amount of fill may need to be excavated in order to allow for the placement of suitable materials at crossing locations. Should such activity be required, all materials will be disposed of offsite. Permanent fill will be associated with the construction of the gypsum storage facility and access roads within other surface waters. Construction of culverts across surface waters will utilize control measures to prevent erosion during construction. There are no impacts to local drainage patterns anticipated as a result of the proposed action. Representative plan view and cross-sections of the proposed facilities identifying the invert elevations, existing and proposed grades, and jurisdictional limits are provided in Sheets 4, 5, and 5-1 through 5-9 and Figures 8 through 15. Approximately 0.97 acre of manmade upland cut ditches, a very small, hydrologically isolated depression, a highly disturbed natural stream, and a portion of a highly disturbed freshwater marsh will be filled as indicated on the plan view drawings. Along access road crossings of flow-through conveyances, 24-inch or 36-inch RCP culverts will be installed. At the National Gypsum ditch crossing, the existing box culvert will remain. For the construction of the rail spur connection to the rail loop, an existing box culvert will be extended.

Where proposed activities are adjacent to jurisdictional areas, appropriate sediment control methods will be used as required. Sediment controls may include the installation of staked silt fences with hay bales along uplands and shallow wetland edges. Silt and/or turbidity screens will also be placed downstream of construction areas, as required.

During periods of high water levels, temporary mats may be used in jurisdictional areas to provide access for construction. Upon completion of construction activity, matting will be removed and impacted areas restored to their original condition.

6.2 FLOODPLAINS

Based on the results of the modified Hillsborough County – Miscellaneous Coastal Streams model (see Appendix D of Appendix B to this application), floodplain compensation will not be required for this project. According to the model results, at junction 824120 (i.e., the confluence of the drainages at the northeast corner of the project area) the 100-year flood stage reaches an elevation of 2.04-ft NAVD88. This stage elevation is adequately contained within the banks of the streams surrounding the project area. All existing elevations within the project area are above the flood stage elevation thus no adverse impacts to the floodplain are created by the proposed project.

In addition, the project site is not located within a 100-year riverine floodplain. Typically, development within the 100-year riverine floodplain must be compensated by creation of storage for an equal or greater volume elsewhere within the riverine 100-year floodplain. Areas solely within a tidally-produced 100-year floodplain or the riverine 100-year floodplain immediately adjacent to a tidally-produced 100-year floodplain shall not be subject to this level of service performance standard. The project is not located within the flood plain of a lake, stream or other non-tidal water course. The project site is situated within Flood Zone AE, a 100-year flood zone designated by the Federal Emergency Management Agency (FEMA). Flood Zone AE is subject to flooding by the base or 1 percent chance flood and considered to be a high risk area for flooding. However, the flood zone area is coastal and not riverine. The coastal flood area is landward of the shore line, but is typically associated with tidal inundation during storm events.

7.0 MITIGATION PLAN

As stated previously, Tampa Electric proposes to relocate a gypsum storage facility and improve associated access roads across the highly disturbed drainages located at the Big Bend Power Station property (i.e., a 0.97-acre surface water fill impact). Tampa Electric will also need to remove trees and woody under story vegetation. It was determined that only 0.20 acre of the 0.97 acre of jurisdictional surface waters consist of a native, albeit highly disturbed, stream and a highly disturbed freshwater marsh. The remaining 0.77 acre consists of upland cut, man-made surface water runoff ditches and a small depression. Thus, there were 0.04 acre of native stream impacts, 0.74 acre of man-made, upland cut surface water impacts, 0.03 acre of small depression impacts, and 0.16 acre of highly disturbed freshwater marsh impacts. Only the 0.20 acre of true natural watercourse and freshwater marsh impacts was considered for mitigation. A wetland impact summary is provided in Table 1 of Section 2 of this ERP application.

Section 373.4135, Florida Statutes (FS) states that adverse wetland impacts may be offset by the creation, maintenance, and use of mitigation banks. Currently, there are permitted mitigation banks in Florida providing freshwater and/or saltwater impact mitigation. These banks provide replacement functions and values, expressed as credits, for permitted wetland impacts within each bank's service area. The mitigation bank service area generally reflects the drainage or watershed basin where the bank is located. If a project site is located within the service area of a permitted mitigation bank, bank credits may be purchased from the bank to compensate for wetland impacts. ECT determined that there is currently only one permitted mitigation bank with a service area that includes the project site: Tampa Bay Mitigation Bank (TBMB). The TBMB is located in Ruskin, Florida. The old Caloosa Shell pits at the mitigation bank site will be converted to freshwater marsh and mangrove swamp connected by a creek to Cockroach Bay. Currently, oligohaline and freshwater wetland and palustrine open water and emergent wetland mitigation credits are now available from the TBMB for the FDEP and USACE, respectively.

The Uniform Mitigation Assessment Method (UMAM) was developed by various Florida state regulatory agencies, with input from local government and the USACE, Jackson-

ville District. On February 2, 2004, UMAM went into effect at the state level, and those Florida state and local governments responsible for environmental regulation were required to begin utilizing the methodology (Chapter 62-345, F.A.C.). Prior to its implementation at the federal level, the USACE conducted a study of the method and recommended UMAM be used for federal wetland regulatory purposes starting August 1, 2005. Implementation of UMAM by the USACE included a few changes from the state rule. Specifically, the USACE continues to use the Temporal Lag Table - USACE 3 percent discount rate, rather than the state's time lag table, based on a 7 percent rate. Also, the USACE has more restrictions compared to the state in the amount of wetland and upland preservation credit given. The method is a standardized procedure for assessing the functions provided by wetlands and other surface waters, the amount that those functions are reduced by a proposed impact, the amount of mitigation necessary to offset that loss, and to also award and deduct mitigation bank credits.

However, to calculate how many credits are needed from the TBMB, the applicant must multiply the acres of wetland impact by the impact Estuarine Wetland Rapid Assessment Procedure (E-WRAP) analysis score (i.e., e.g., 2 acres of wetland impact with a WRAP score of 0.6 = 2 x 0.6 = 1.2 credits needed). Thus, in this case, the E-WRAP analyses will replace the use of the UMAM to determine the amount of mitigation required to offset adverse impacts to wetlands and other surface waters.

The E-WRAP is a matrix developed by the Mitigation Bank Review Team to assist in the regulatory evaluation of estuarine mitigation bank sites that are created, enhanced, preserved, or restored in order to increase wetland functional lift to mitigate for future wetland losses authorized through the state and federal permit process in Florida. This standardized matrix can also be used to provide an accurate and consistent evaluation of wetland sites. The E-WRAP was developed from the Modified Wetland Rapid Assessment Procedure (M-WRAP), which assesses freshwater functions specifically for use on mitigation bank projects. The rating index can be used to evaluate the current wetland condition. The E-WRAP is a numerical ranking system that can be used to rank individual ecological and anthropogenic factors or variables. The E-WRAP assesses six variables which can be as-

signed a number between 0 and 3.0. A score of 3.0 is considered to be the best a system can function, while a score of 0 is a highly disturbed system exhibiting negligible attributes. The six scores are then totaled and divided by the sum of the total maximum score for all variables. The final E-WRAP score is expressed as a number between 0 and 1.0.

The completed UMAM and E-WRAP forms for the jurisdictional impact are provided in Appendix E. The calculation is provided below:

JURISDICTIONAL ID	FLUCFCS	IMPACT ACREAGES	E-WRAP SCORES*		MITIGATION CREDITS	
V2	511	0.04	x	0.33	=	0.01
W1	641/619	0.16	x	0.36	=	0.06
TOTAL		0.20				0.07

*E-WRAP and UMAM impact scores match (see Appendix E).

The calculation assumes a complete loss of wetland function through fill activities however the hydrology of the stream channel will be maintained through the installation of a culvert. Even though the hydrological function of the system is not being lost, Tampa Electric has assumed a worst case impact scenario for the mitigation determination. Therefore, based upon the analyses provided, Tampa Electric will assume that purchasing 0.07 of oligohaline or freshwater wetland mitigation credits for FDEP and palustrine open water or emergent wetland credits for USACE from the TBMB will be more than sufficient to ameliorate impacts associated with the proposed project construction (see Table 3 of Section 2 of this ERP application). The credits will be purchased from the TBMB by Tampa Electric after Tampa Electric receives approval from the FDEP and a permit application from the USACE. The mitigation credits will be debited based upon the schedules established for the TBMB.

8.0 SUMMARY

The Project is in the public interest in that it will ultimately provide more efficient electric service and reliability to the public. The Project will unavoidably result in 0.97 acre of permanent fill in a natural, but highly altered stream (i.e., 0.04 acre), a highly disturbed freshwater marsh (i.e., 0.16 acre), and man-made, upland cut ditches and a small depression (i.e., 0.77 acre). The natural stream and wetland impacts are proposed to be mitigated through purchase of mitigation credits from a permitted mitigation bank. In addition, it is not anticipated that any threatened or endangered species will be affected by project construction activities.

FIGURES

FIGURE 1.
LOCATION MAP
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: ESRI Street Map Data, 2011; Sargent & Lundy, 2011; ECT, 2012

TECO
TAMPA ELECTRIC

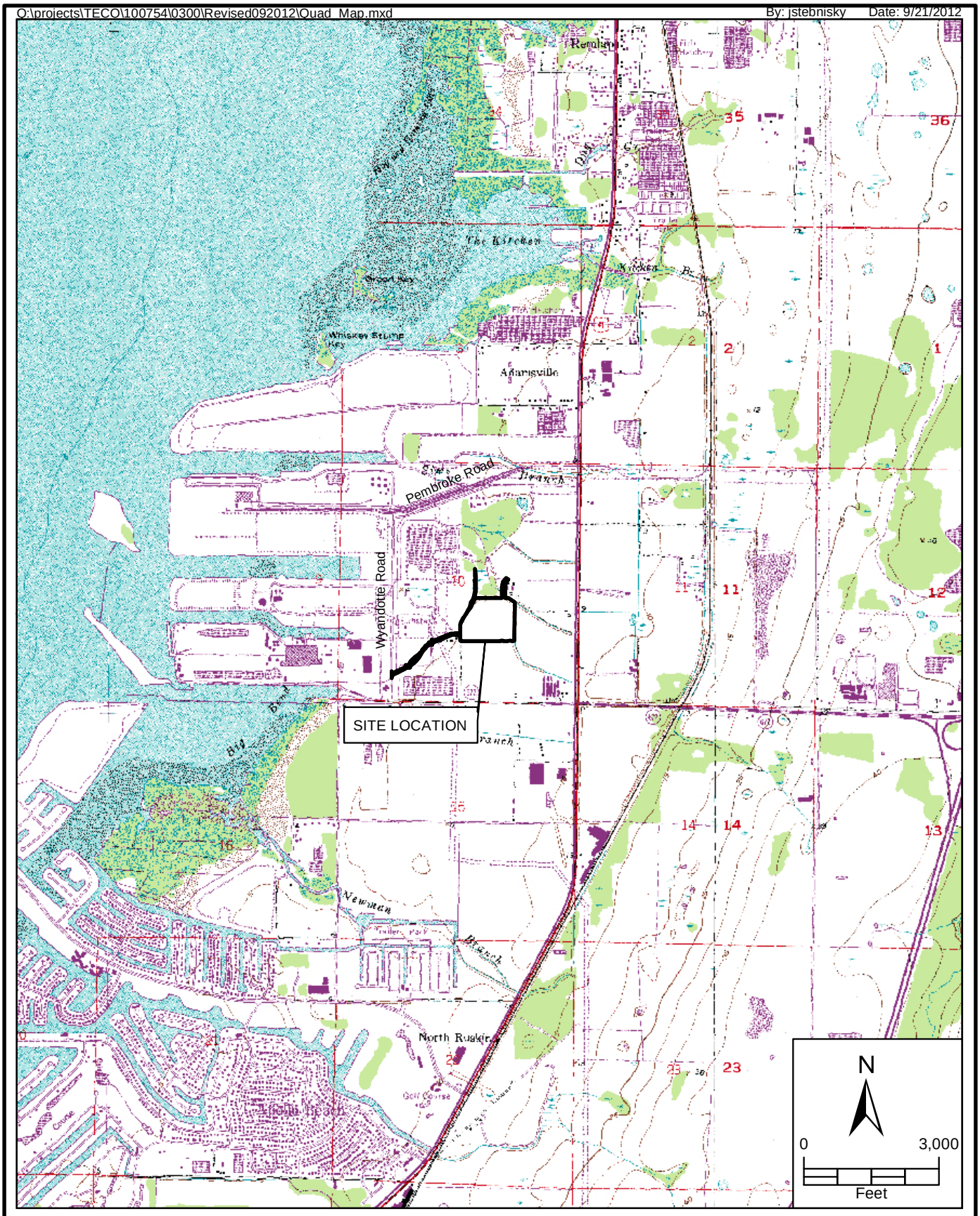
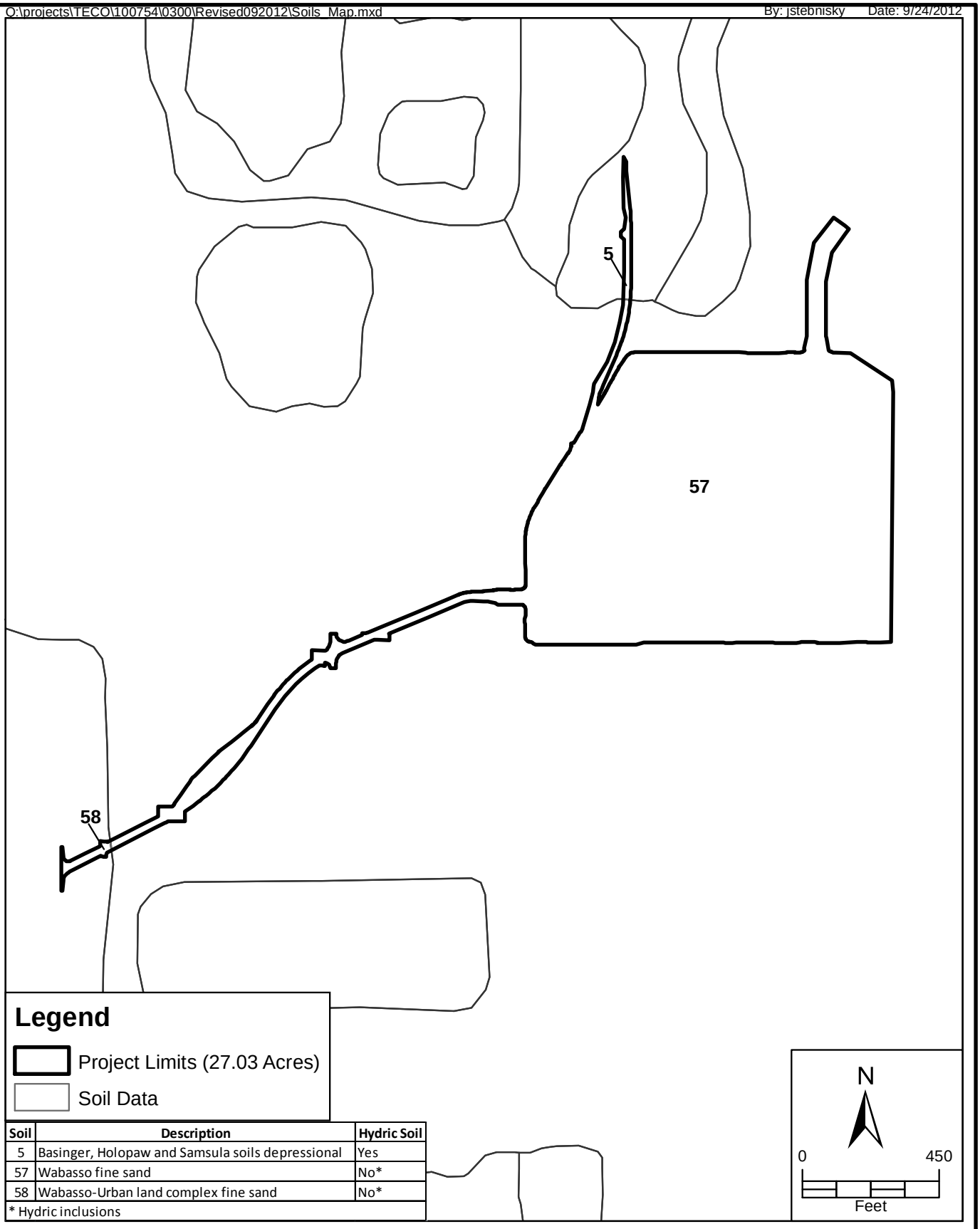


FIGURE 2.
USGS TOPOGRAPHIC QUADRANGLE MAP (T31S, R19E, S10)
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: Labins.org Quadrangle Map of Gibsonton, FL., 1987; Sargent & Lundy, 2011; ECT, 2012

TECO
TAMPA ELECTRIC

O:\projects\TECO\100754\0300\Revised092012\Soils_Map.mxd By: jstebnisky Date: 9/24/2012



Soil	Description	Hydric Soil
5	Basinger, Holopaw and Samsula soils depressional	Yes
57	Wabasso fine sand	No*
58	Wabasso-Urban land complex fine sand	No*
* Hydric inclusions		

FIGURE 3.
SOILS MAP
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: Hydric Soils of Florida, 2000; Soil Survey Geographic Database (SSURGO), 2002; Sargent & Lundy, 2011; ECT, 2012

TECO
TAMPA ELECTRIC

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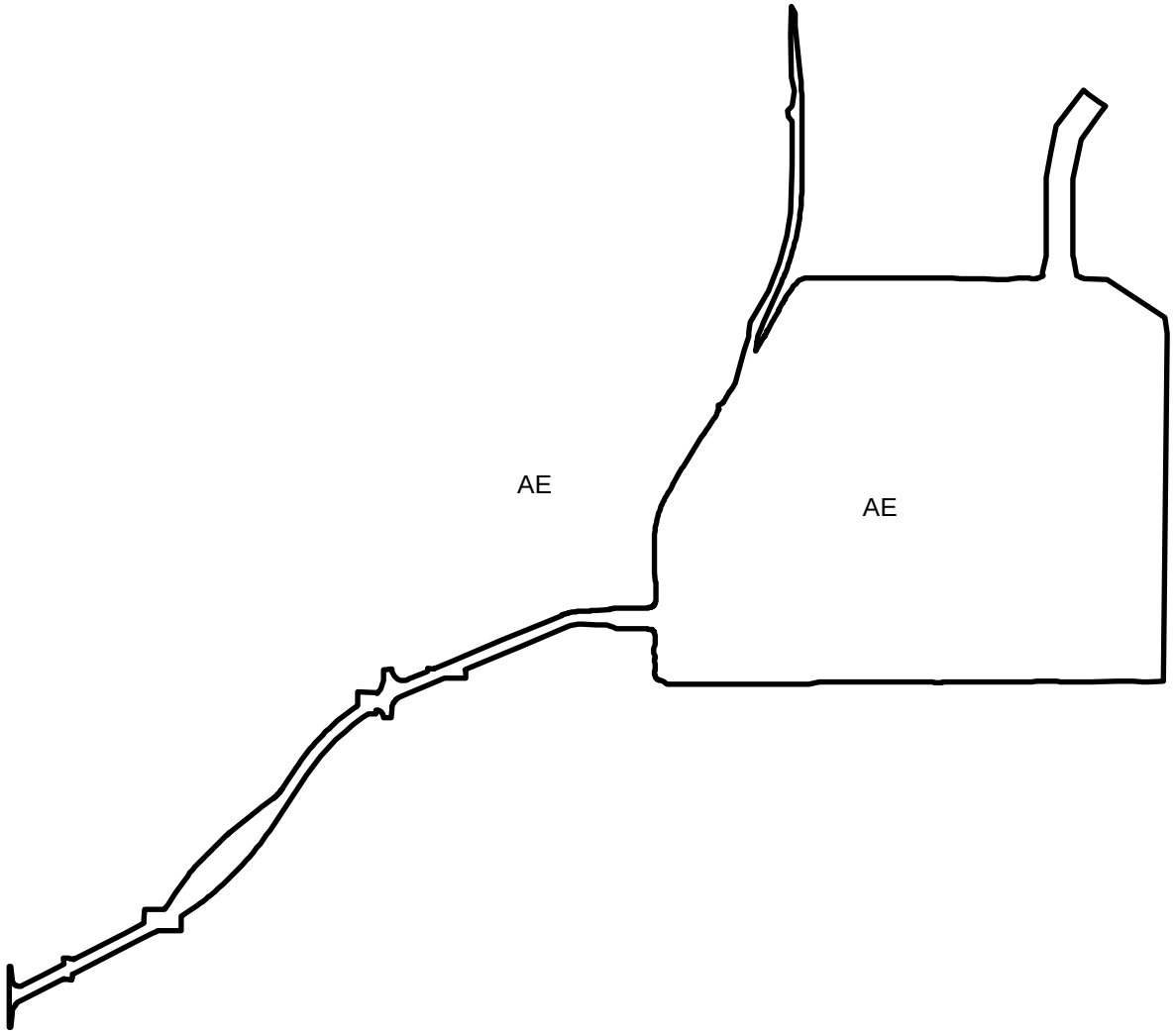


Legend

Project Limits (27.03 Acres)

Flood Zone

AE - An area inundated by 100-year flooding, for which BFEs have been determined (FEMA Storm Surge Flood Elevation=11.0 ft NGVD).

N

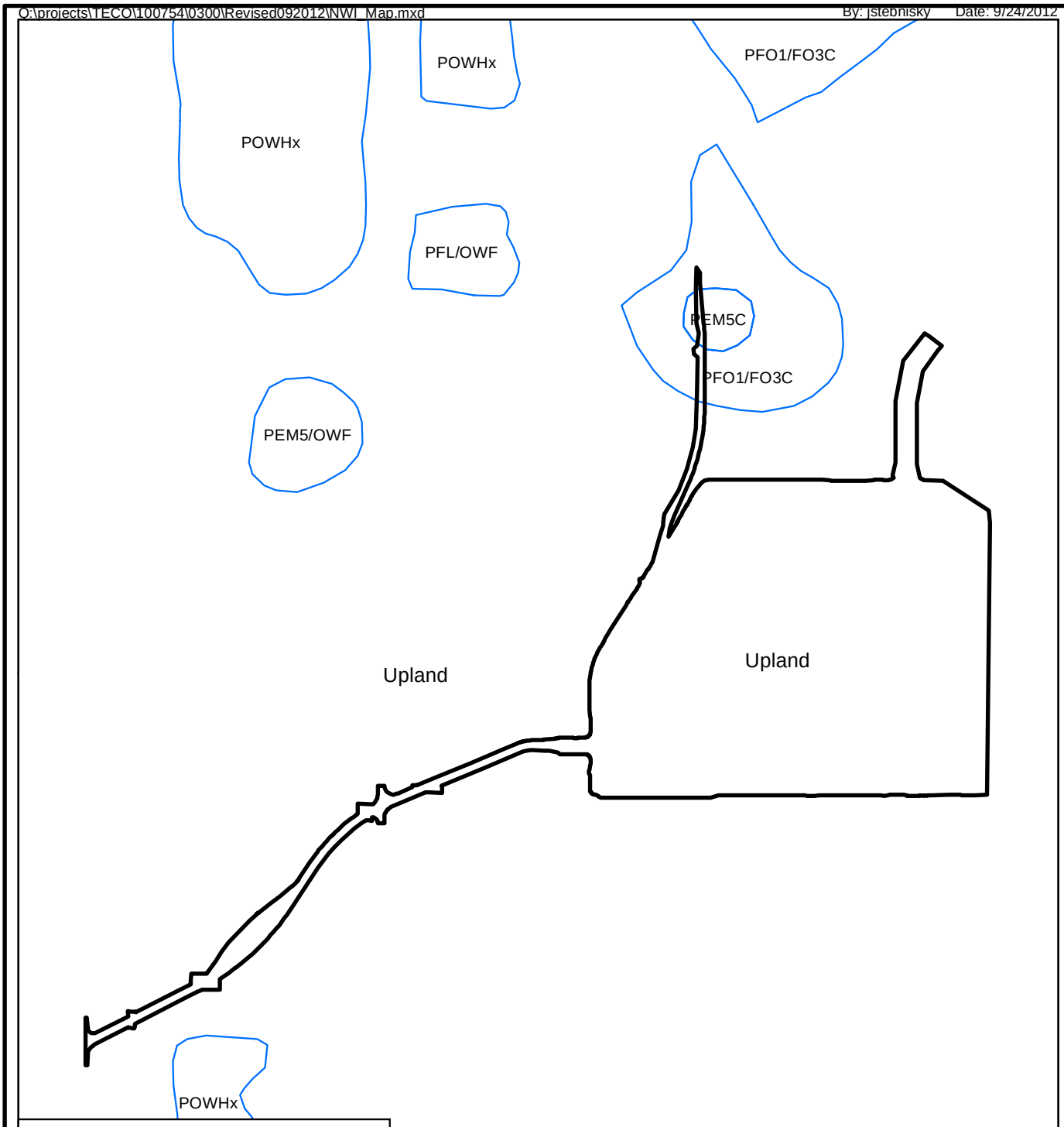
0 450

Feet

FIGURE 4.
FLOODPLAIN MAP
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: Hillsborough County FEMA, 2008; Sargent & Lundy, 2011; ECT, 2012

TECO TAMPA ELECTRIC



ATTRIBUTE	SYSTEM	CLASS1	SUBCLASS	CLASS2	SUBCLASS2	WATER
PFO1/FO3C	P=Palustrine	FO=Forested	1=Broad-leaved Deciduous	FO=Forested	3=Broad-leaved Evergreen	C=Seasonally Flooded
PEM5C	U=Upland	EM=Emergent	5=N/A	N/A	N/A	C=Seasonally Flooded

FIGURE 5.
NATIONAL WETLANDS INVENTORY MAP
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: U.S. Fish & Wildlife Services, 2006; Sargent & Lundy, 2011; ECT, 2012

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TAMPA ELECTRIC

Path: O:\projects\TECO\100754\0300\Revised092012\Aerial.mxd User: jstebnisky Date: 9/21/2012

FIGURE 6.
AERIAL PHOTOGRAPH MAP
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: SWFWMD Aerial Photograph, 2011; Sargent & Lundy, 2011; ECT, 2012

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By: jstebnisky Date: 9/25/2012

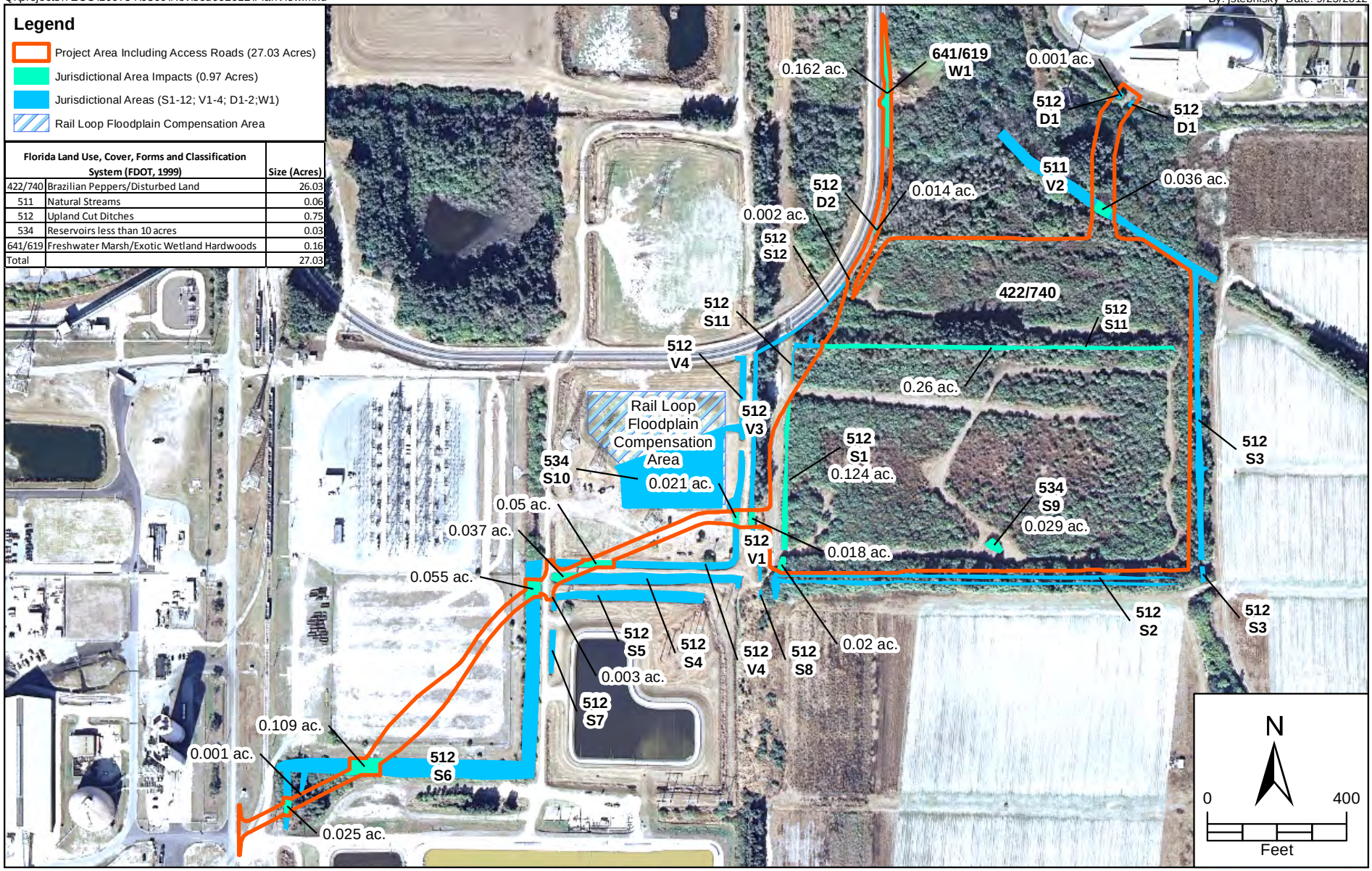

FIGURE 7.
JURISDICTIONAL/LAND USE AND COVER MAP
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: SWFWMD Aerial Photograph, ,2011; Sargent & Lundy, 2011; ECT, 2012

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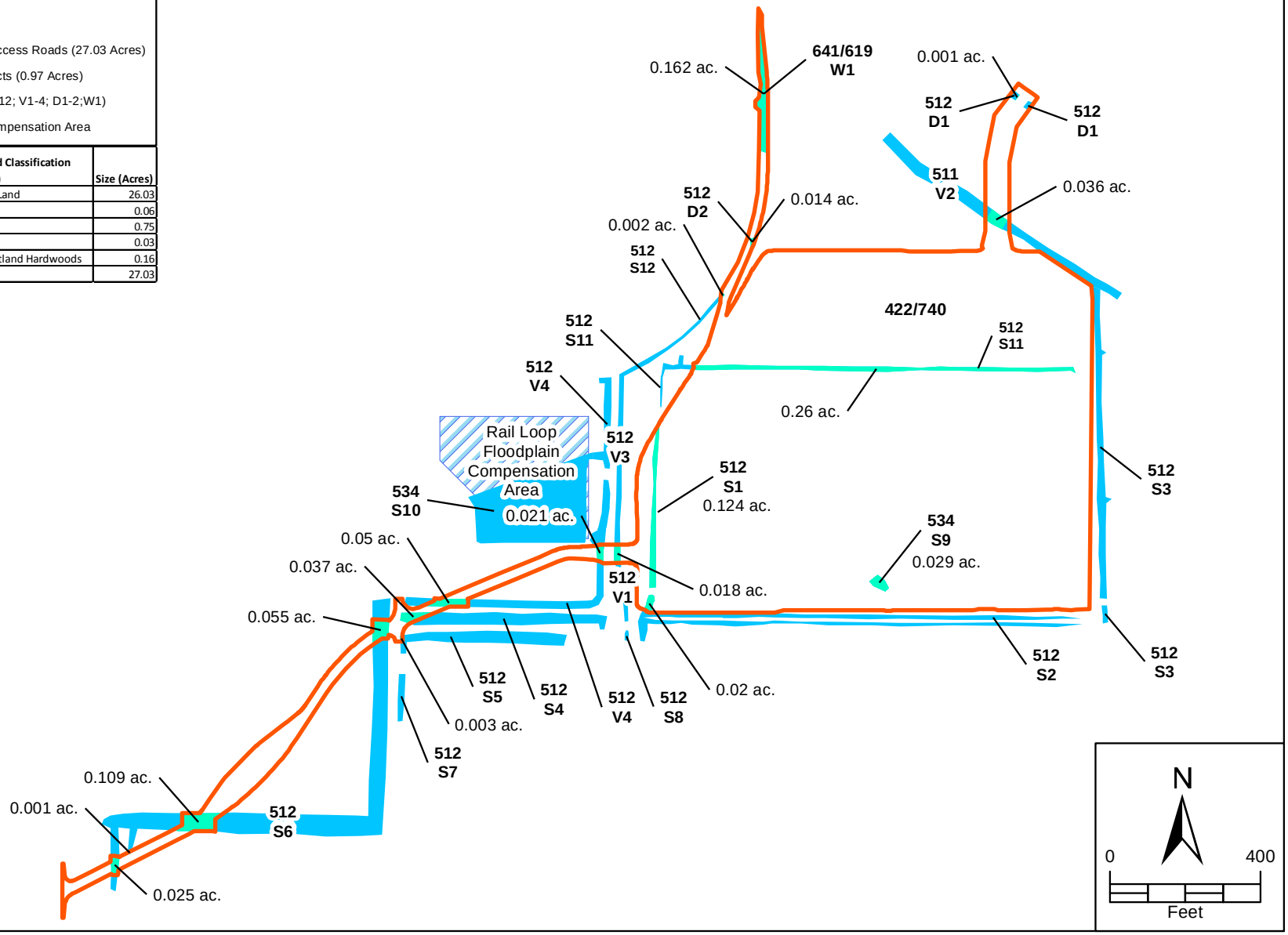
Q:\projects\TECO\100754\0300\Revised092012\Land_Use.mxd

By: jstebnisky Date: 9/25/2012

Legend

- Project Area Including Access Roads (27.03 Acres)
- Jurisdictional Area Impacts (0.97 Acres)
- Jurisdictional Areas (S1-12; V1-4; D1-2;W1)
- Rail Loop Floodplain Compensation Area

Florida Land Use, Cover, Forms and Classification System (FDOT, 1999)		Size (Acres)
422/740	Brazilian Peppers/Disturbed Land	26.03
511	Natural Streams	0.06
512	Upland Cut Ditches	0.75
534	Reservoirs less than 10 acres	0.03
641/619	Freshwater Marsh/Exotic Wetland Hardwoods	0.16
Total		27.03



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Sources: Sargent & Lundy, 2011; ECT, 2012

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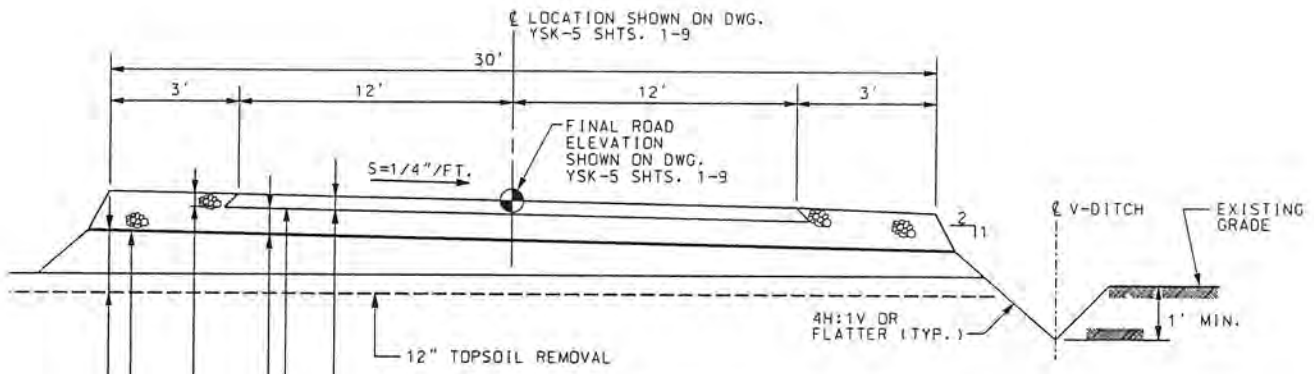

TYPICAL SECTION
HAUL ROAD
SECTION YSK-4-01
N.T.S.

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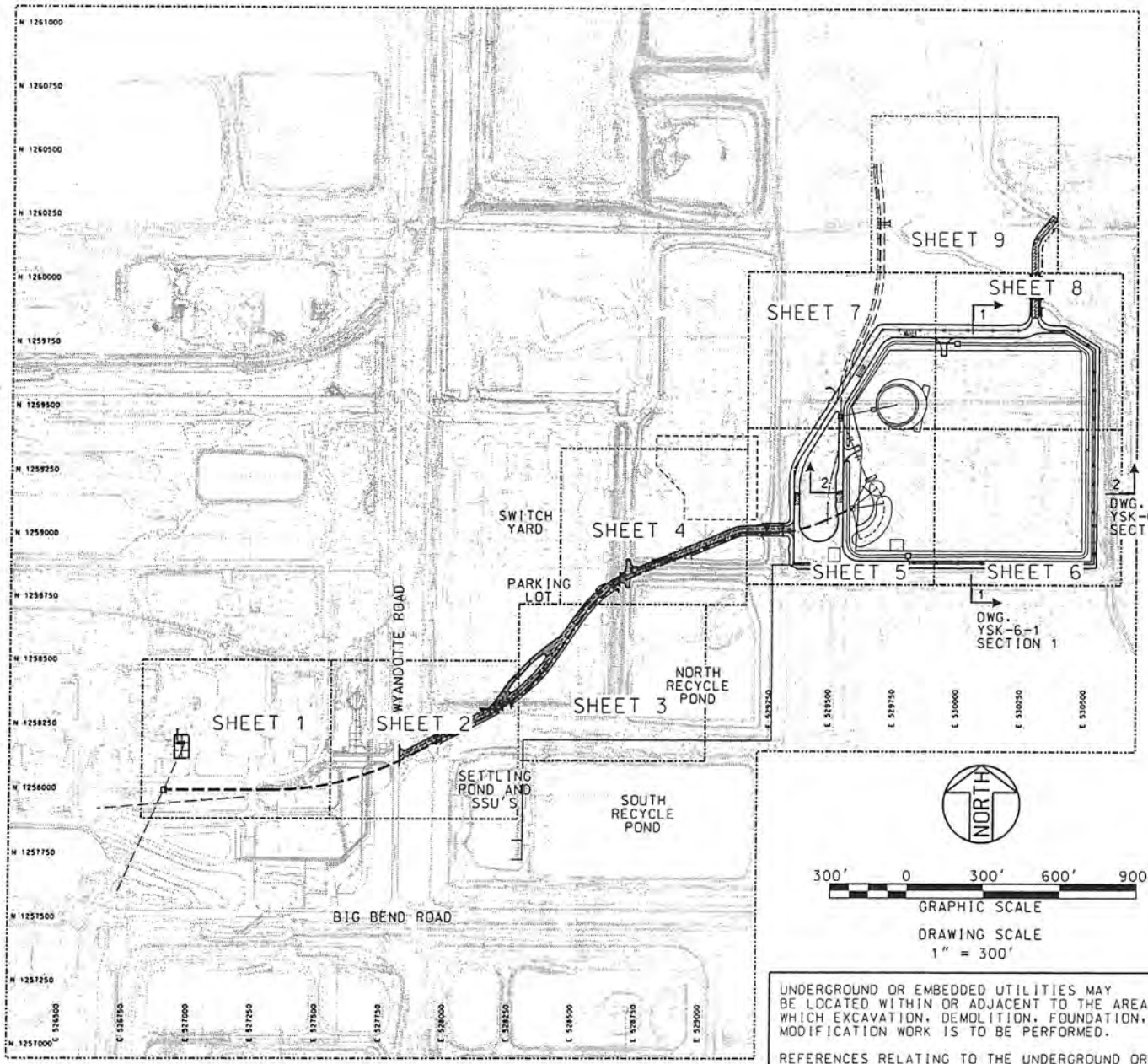

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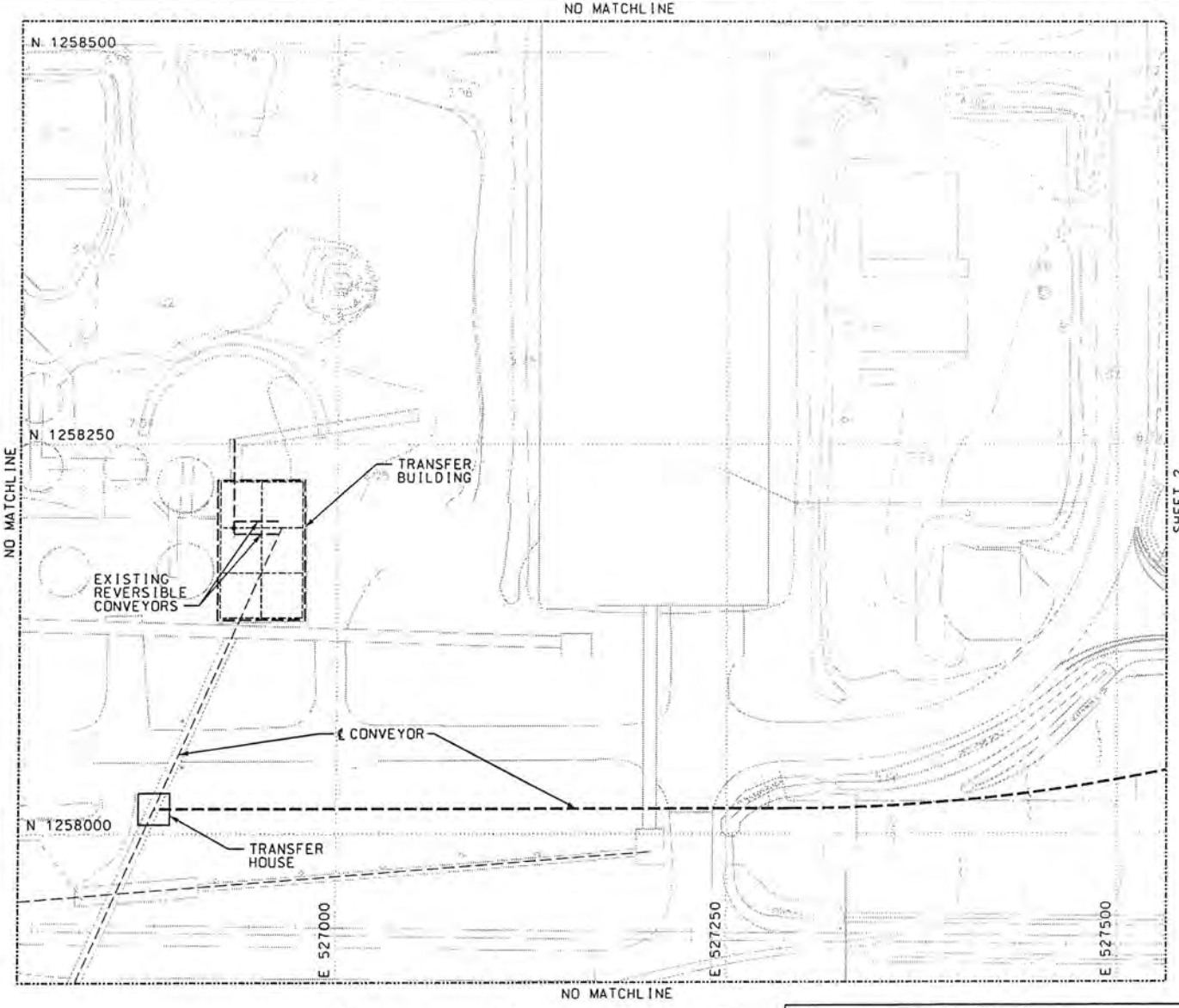

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GRAPHIC SCALE

DRAWING SCALE
1" = 50'

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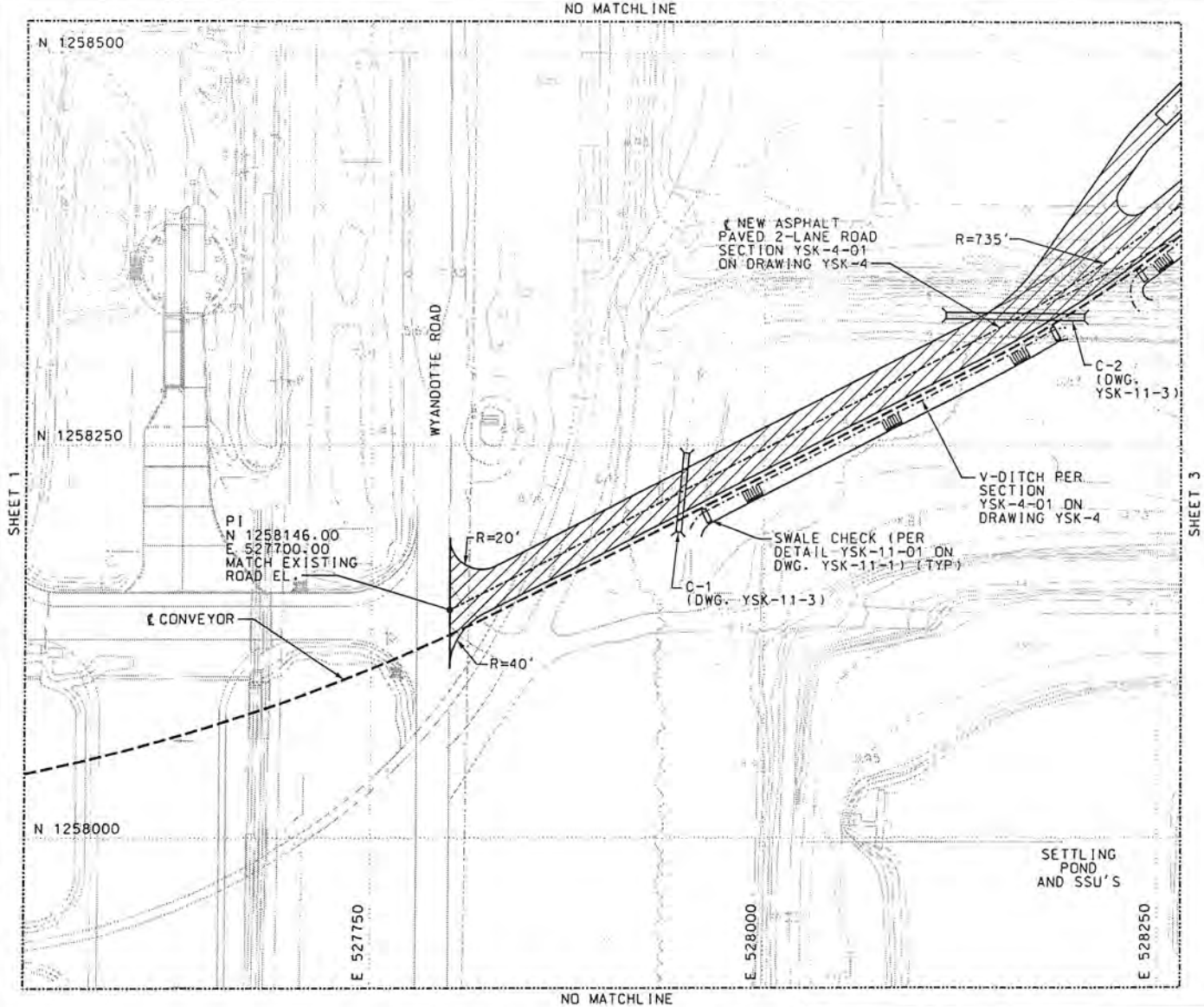

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GRAPHIC SCALE

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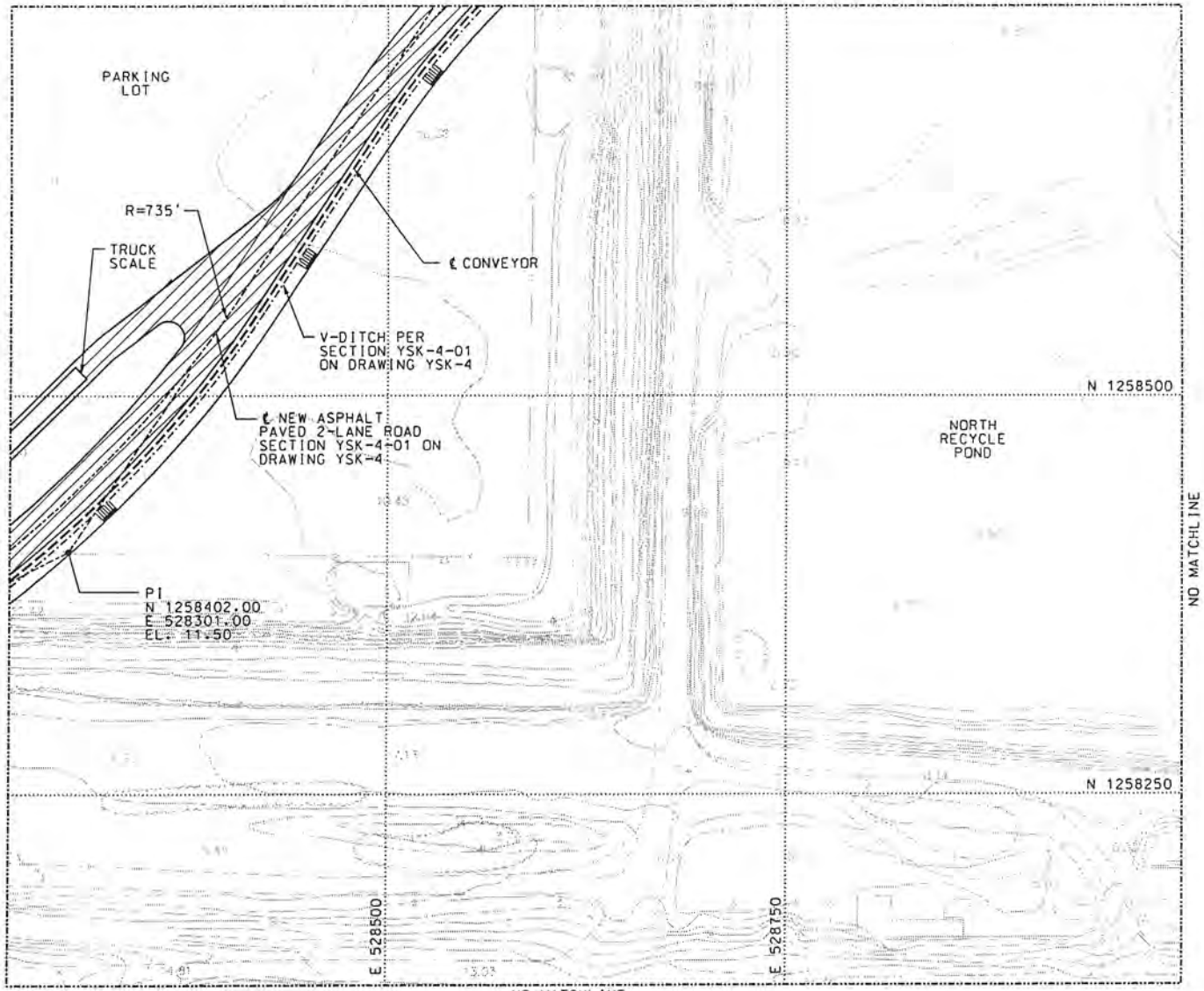

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GRAPHIC SCALE

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CJ Nelson 3/29/2012

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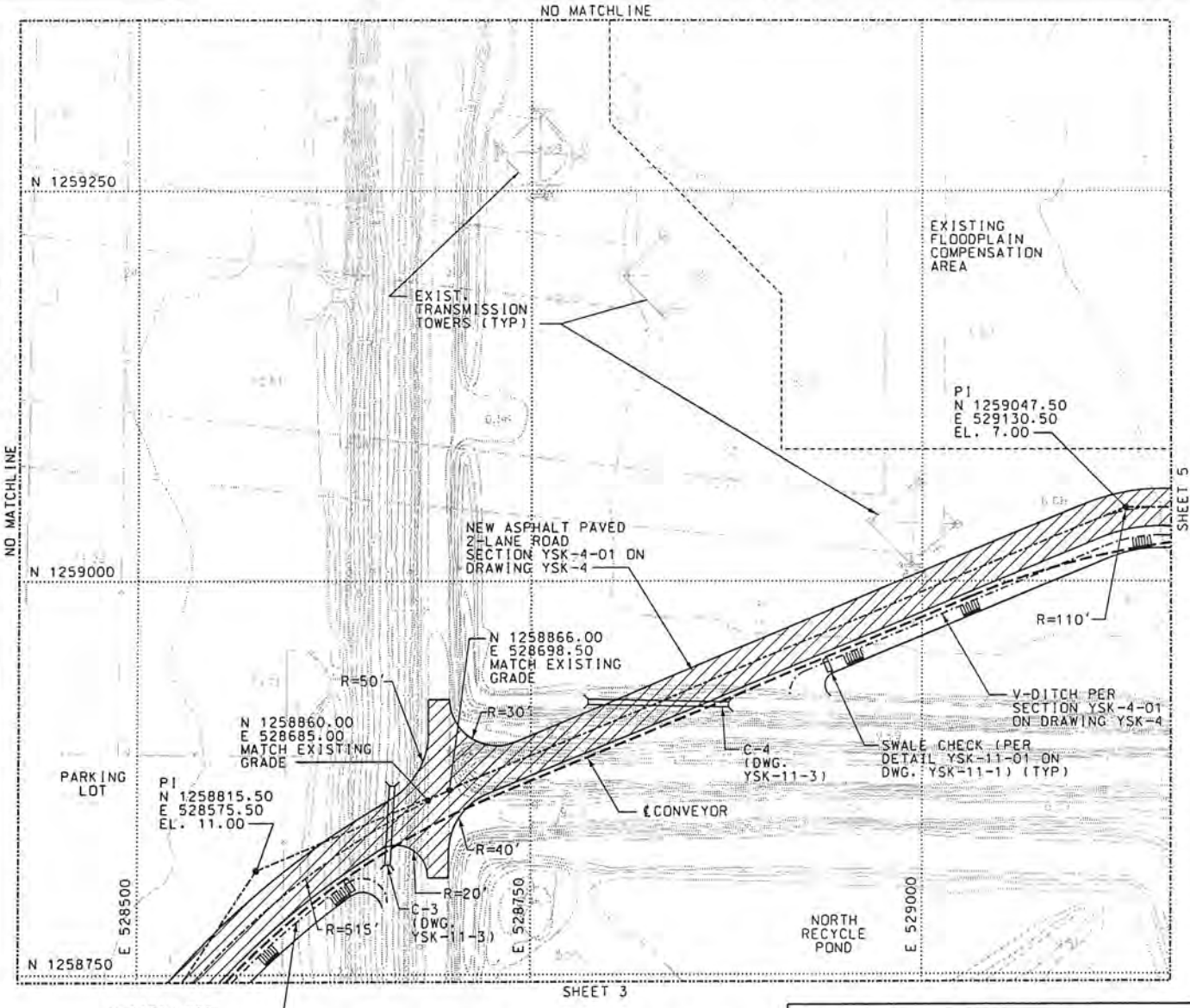

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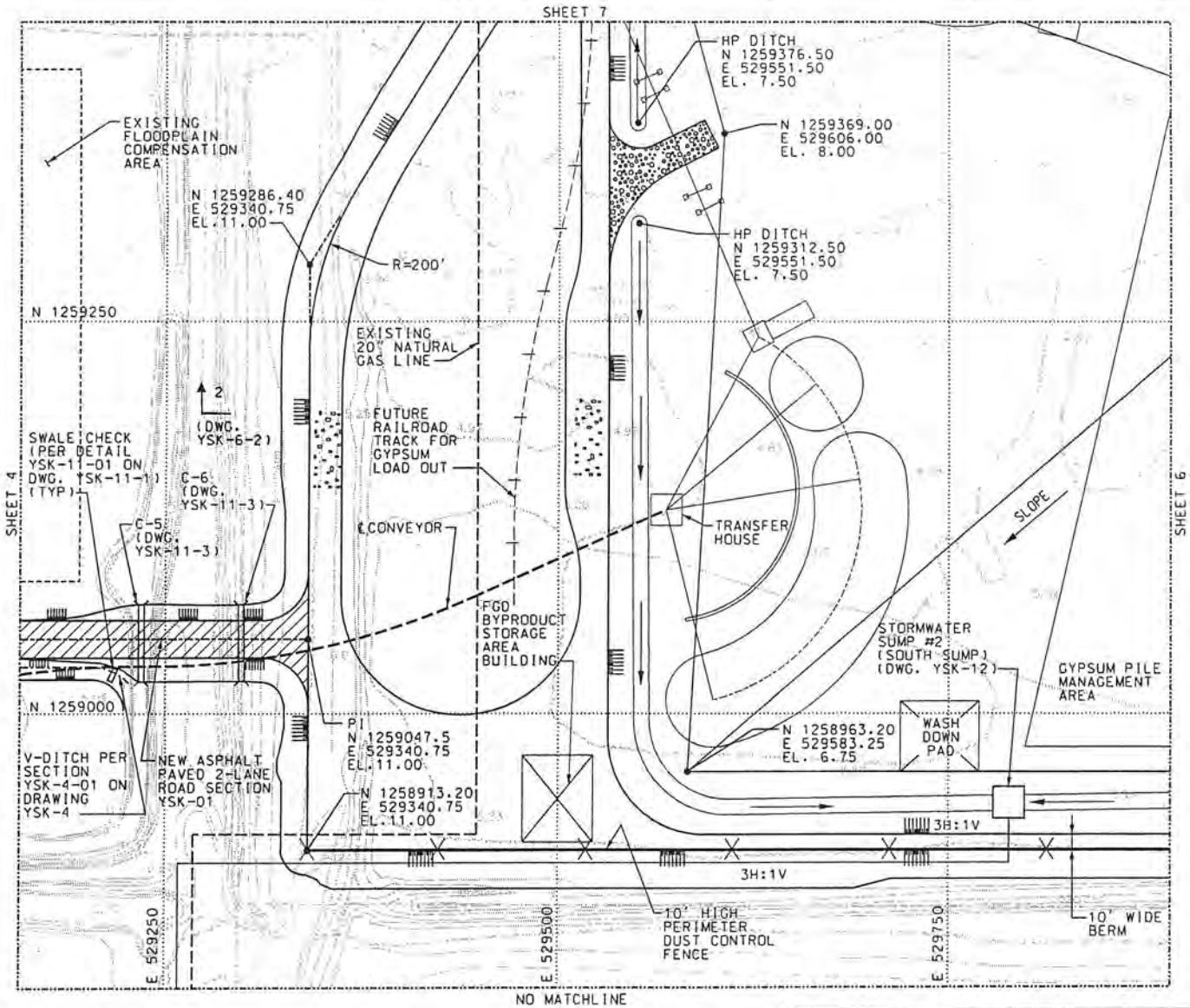

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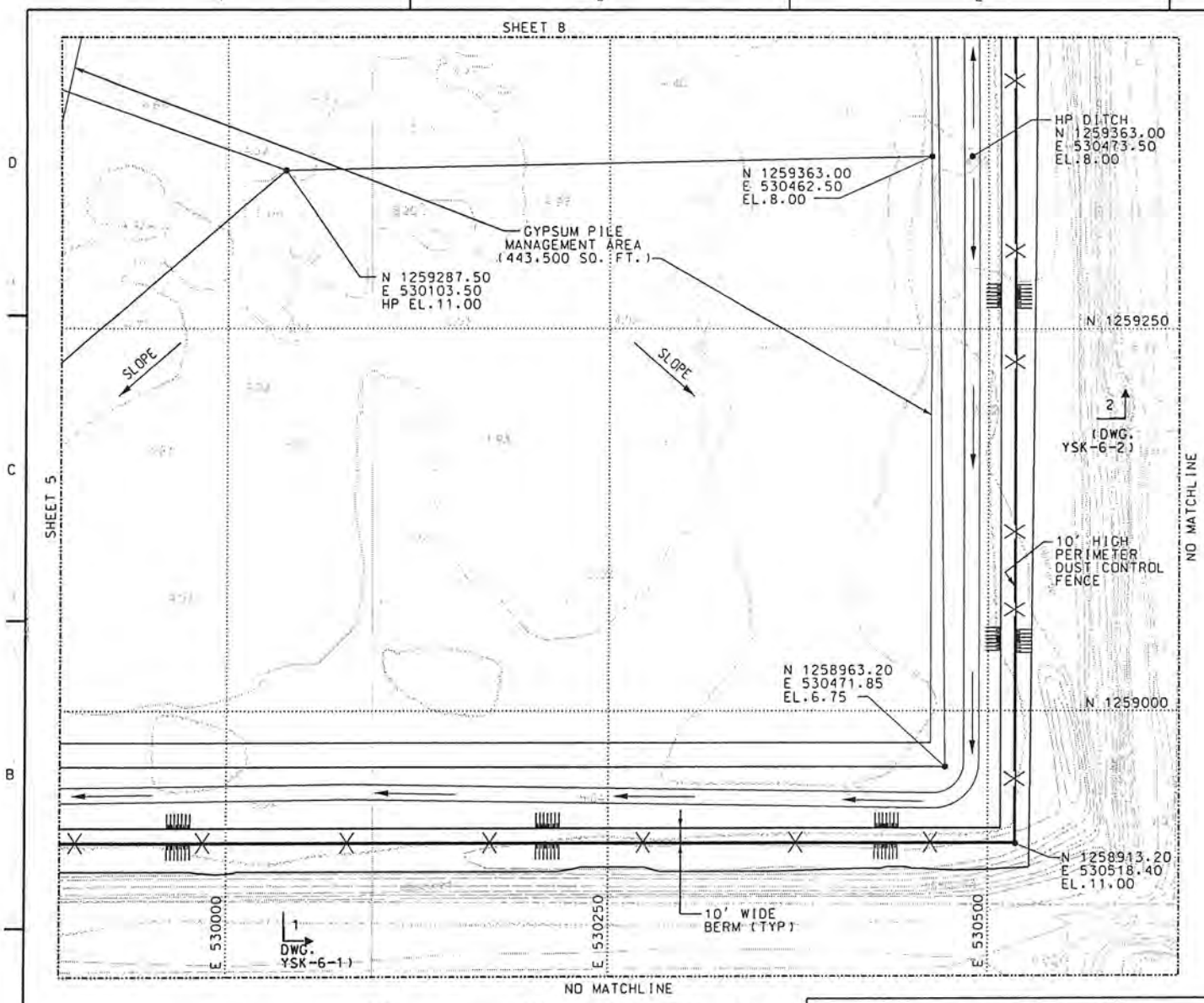

50' 0 50' 100' 150'

GRAPHIC SCALE

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1" = 50'

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APPROVED BY: C. NELSON

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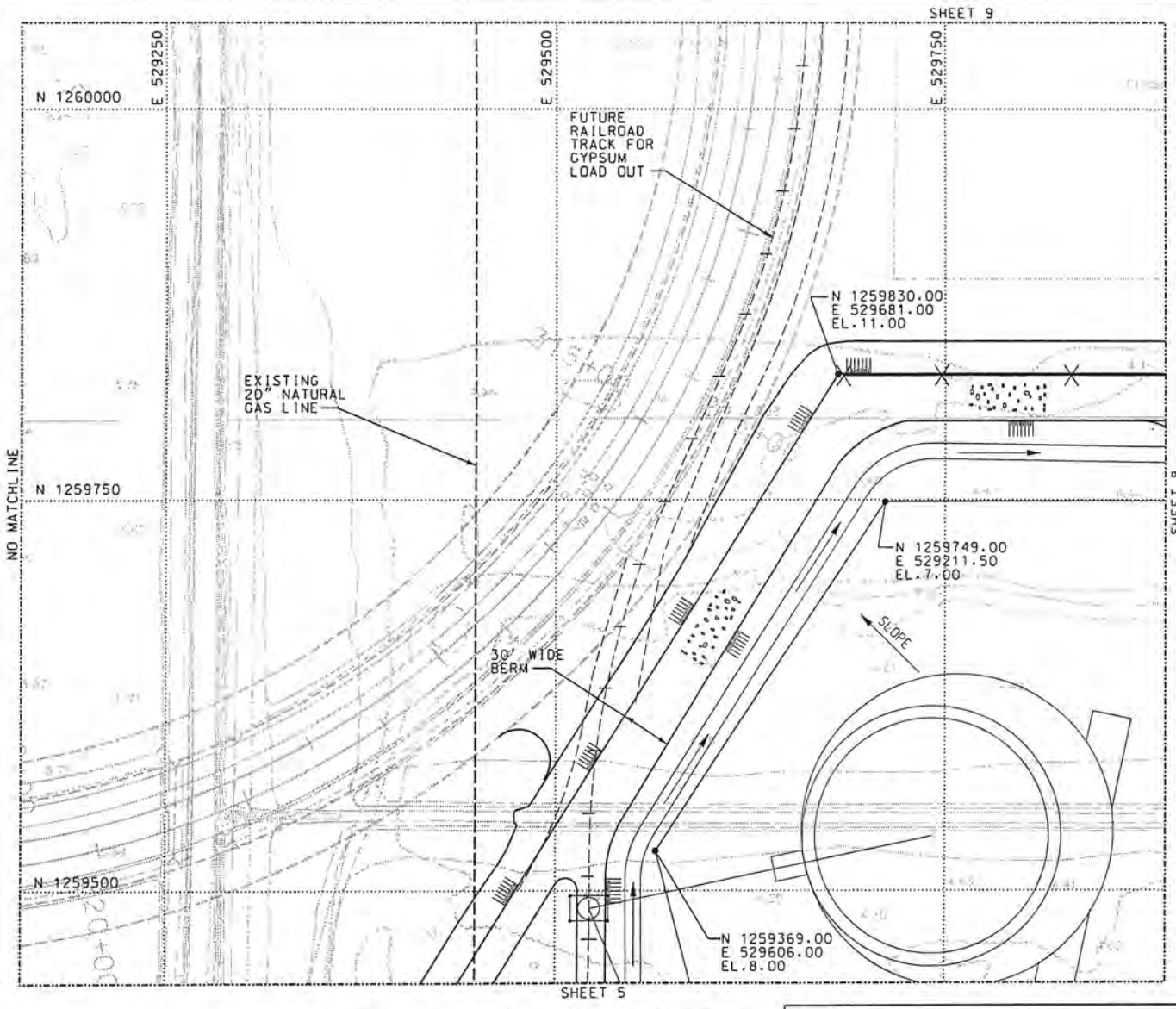
TECO
TAMPA ELECTRIC

PROJECT
GYPSUM HANDLING SYSTEM
UNITS 1, 2, 3 & 4

BIG BEND POWER STATION
TAMPA ELECTRIC CO

DRAWING TITLE
FINAL SITE PLAN
AND DETAIL SHEETS

DRAWING NUMBER	REVISION
B2741-YSK-5-6	A
SHEET 6 OF 9	



50' 0 50' 100' 150'

GRAPHIC SCALE

DRAWING SCALE

1" = 50'

NORTH

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03-29-2012

MY LICENSE RENEWAL DATE IS: 02-28-2013
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REVIEWED BY: J. PERRY

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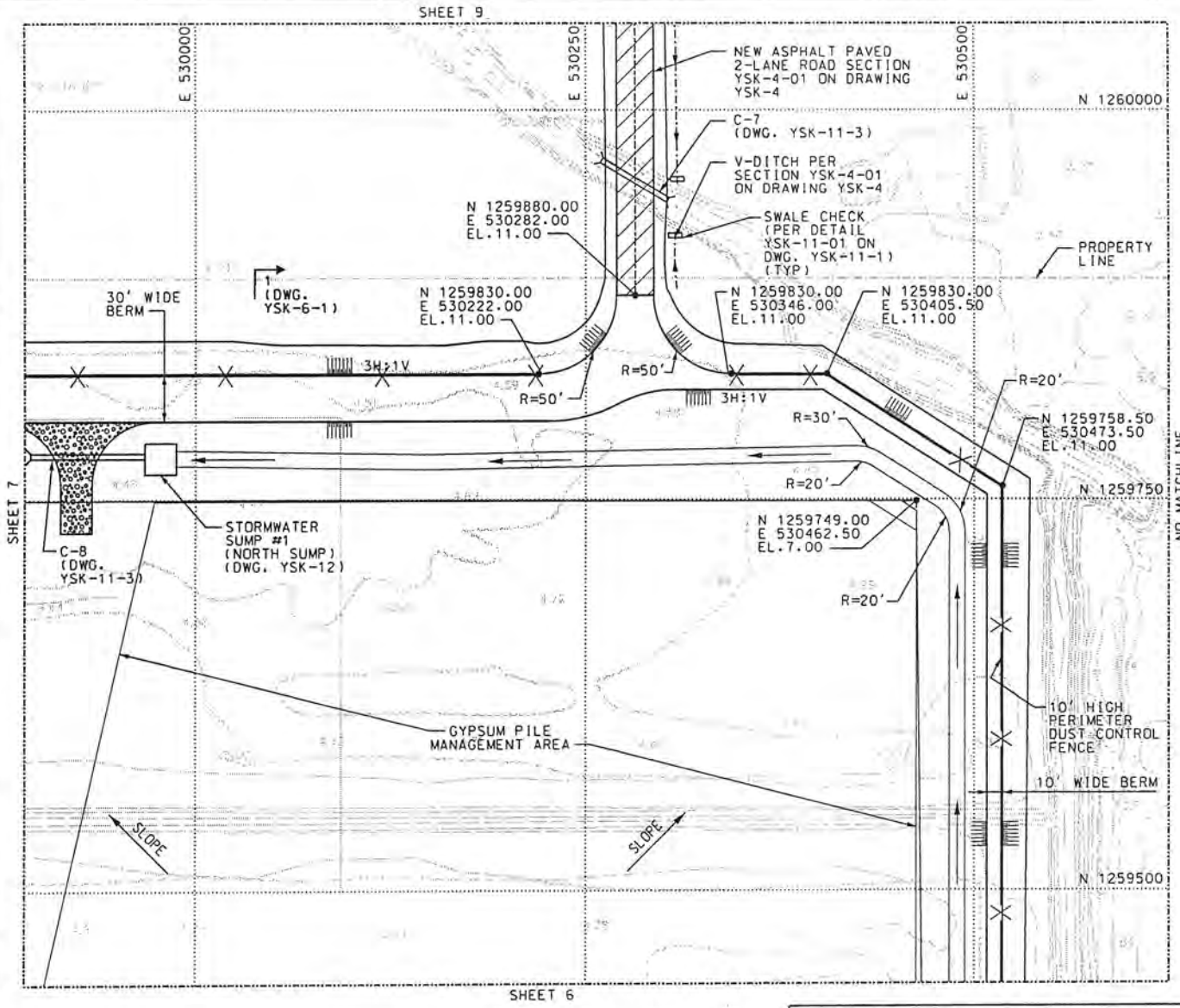

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GRAPHIC SCALE

DRAWING SCALE

1' = 50'

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FINAL SITE PLAN
AND DETAIL SHEETS

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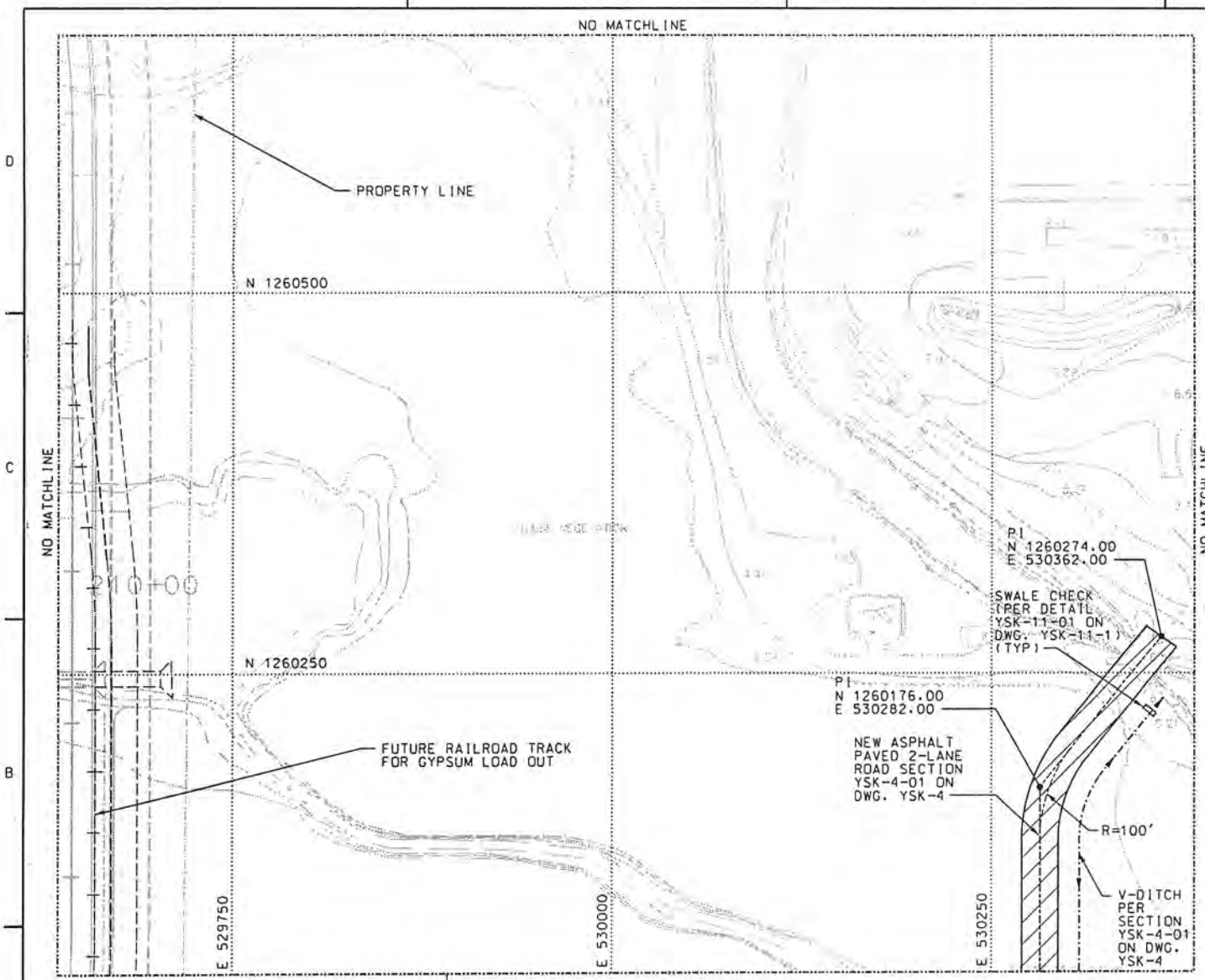

50' 0 50' 100' 150'

GRAPHIC SCALE

DRAWING SCALE
1" = 50'

NORTH

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GYPSUM HANDLING SYSTEM
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BIG BEND POWER STATION
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AND DETAIL SHEETS

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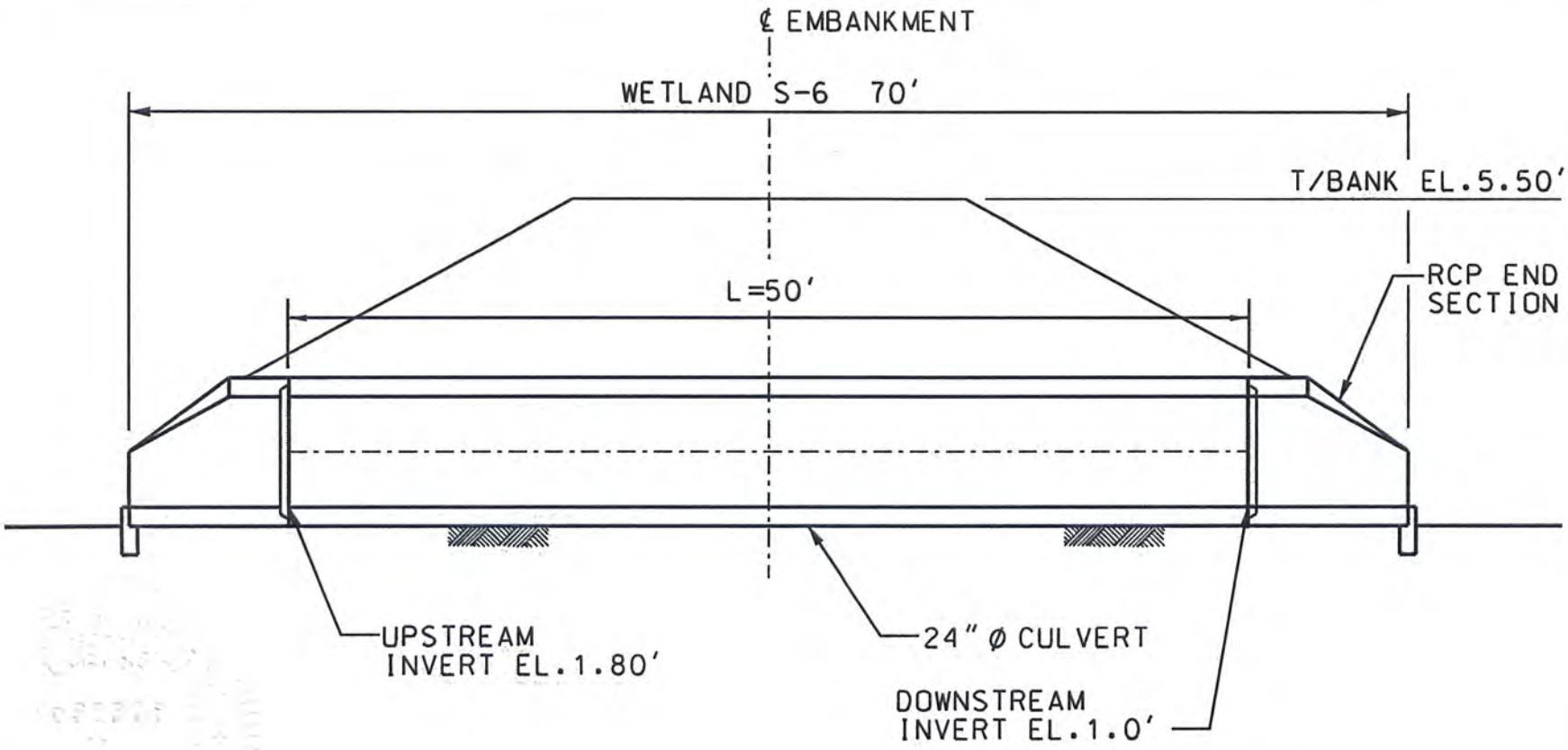
SHEET 9 OF 9	



C-1 LOOKING WEST

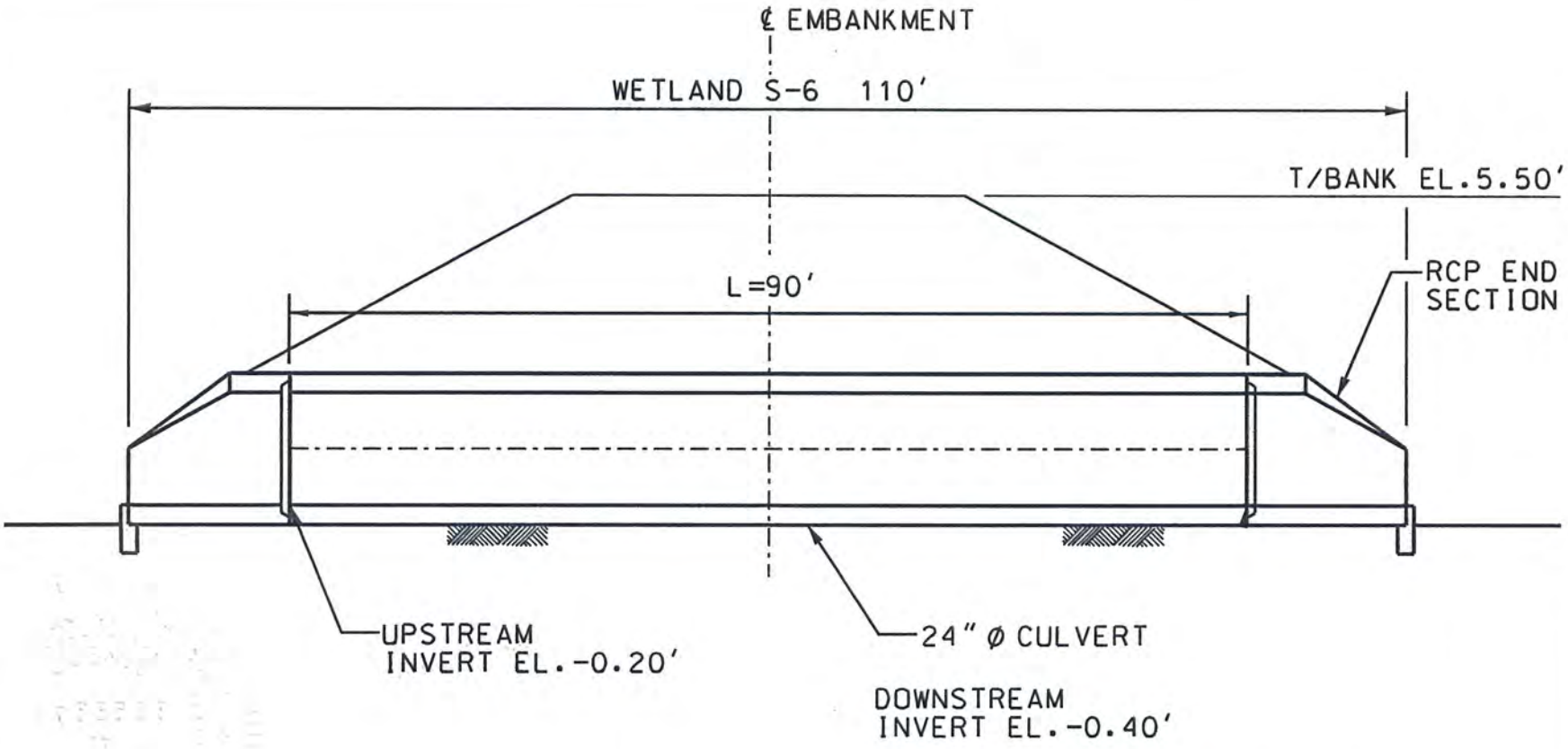
N.T.S.
ELEVATIONS IN NAVD 88

C J Nelson
3/29/2012

FIGURE 8
CULVERT DESIGN C-1
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM RELOCATION PROJECT
SOURCE: SARGENT & LUNDY,LLC,2012;ECT,2012

CHARLES J. NELSON
#52508

TECO
TAMPA ELECTRIC



C-2 LOOKING NORTH

N.T.S.
ELEVATIONS IN NAVD 88

C J Nelson
3/29/2012

FIGURE 9
CULVERT DESIGN C-2
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM RELOCATION PROJECT
SOURCE: SARGENT & LUNDY,LLC,2012;ECT,2012

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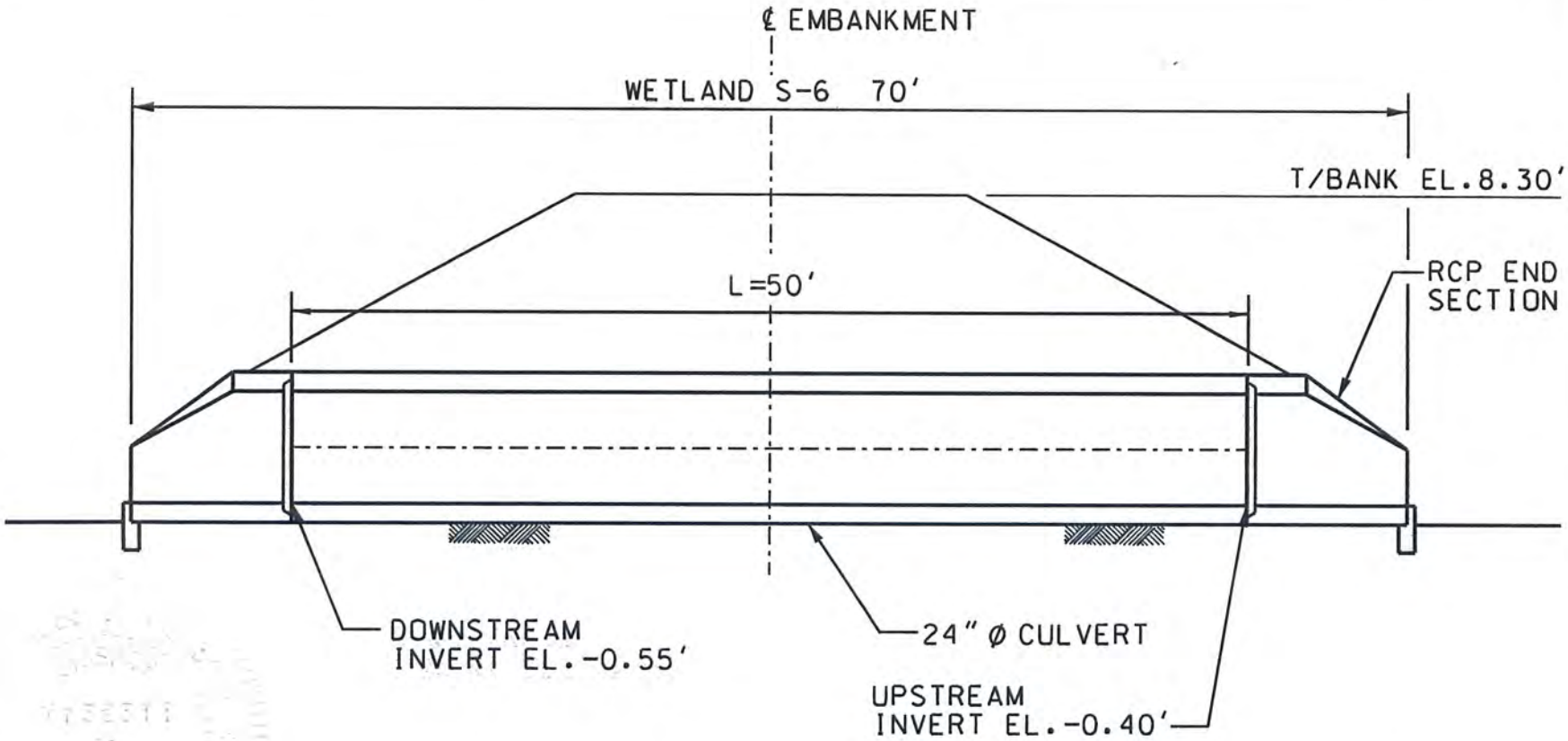

C-3 LOOKING EAST

N.T.S.
ELEVATIONS IN NAVD 88

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FIGURE 10
CULVERT DESIGN C-3
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM RELOCATION PROJECT
SOURCE: SARGENT & LUNDY,LLC,2012;ECT,2012

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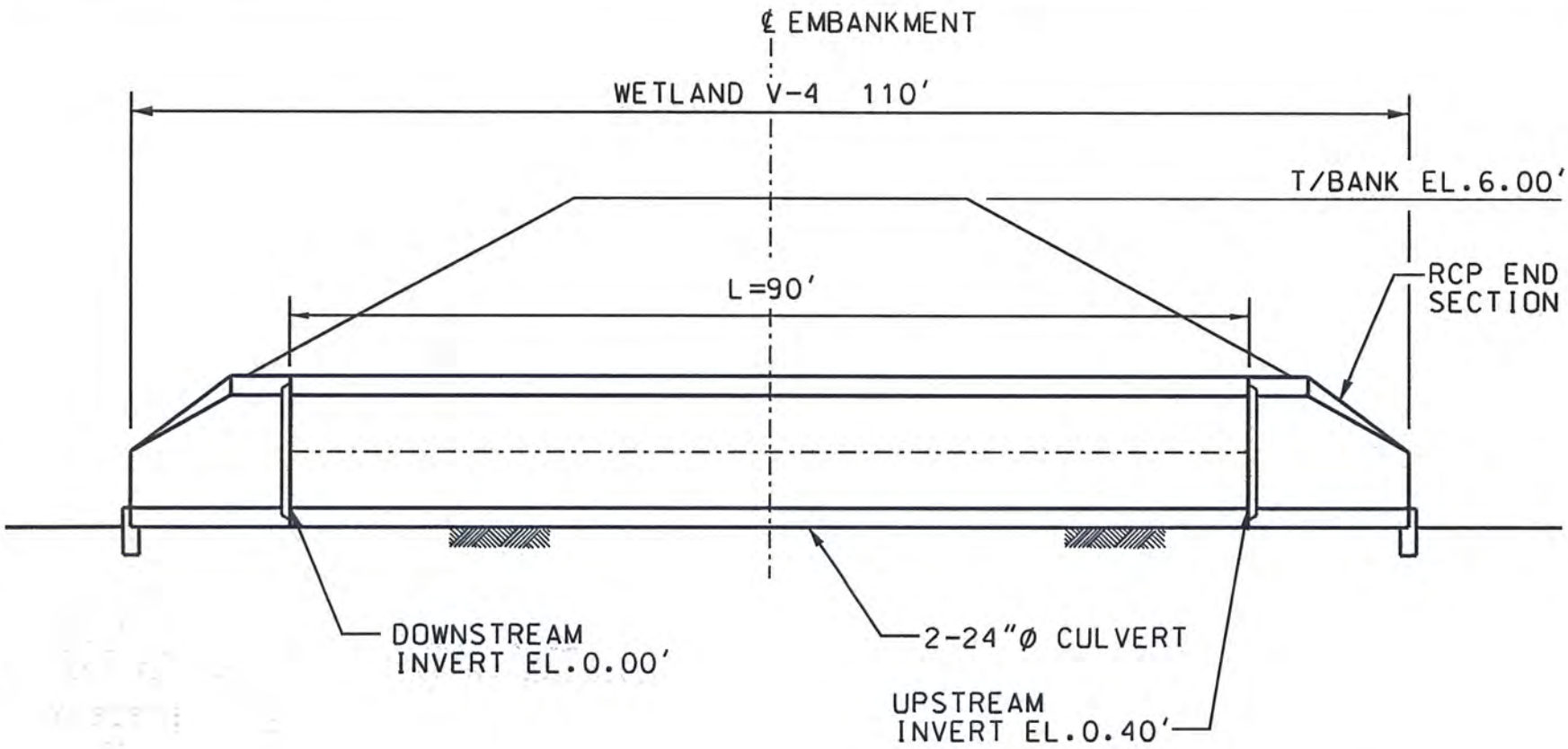

C-4 LOOKING NORTH

N.T.S.
ELEVATIONS IN NAVD 88

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3/29/2012

FIGURE 11
CULVERT DESIGN C-4
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM RELOCATION PROJECT
SOURCE: SARGENT & LUNDY,LLC,2012;ECT,2012

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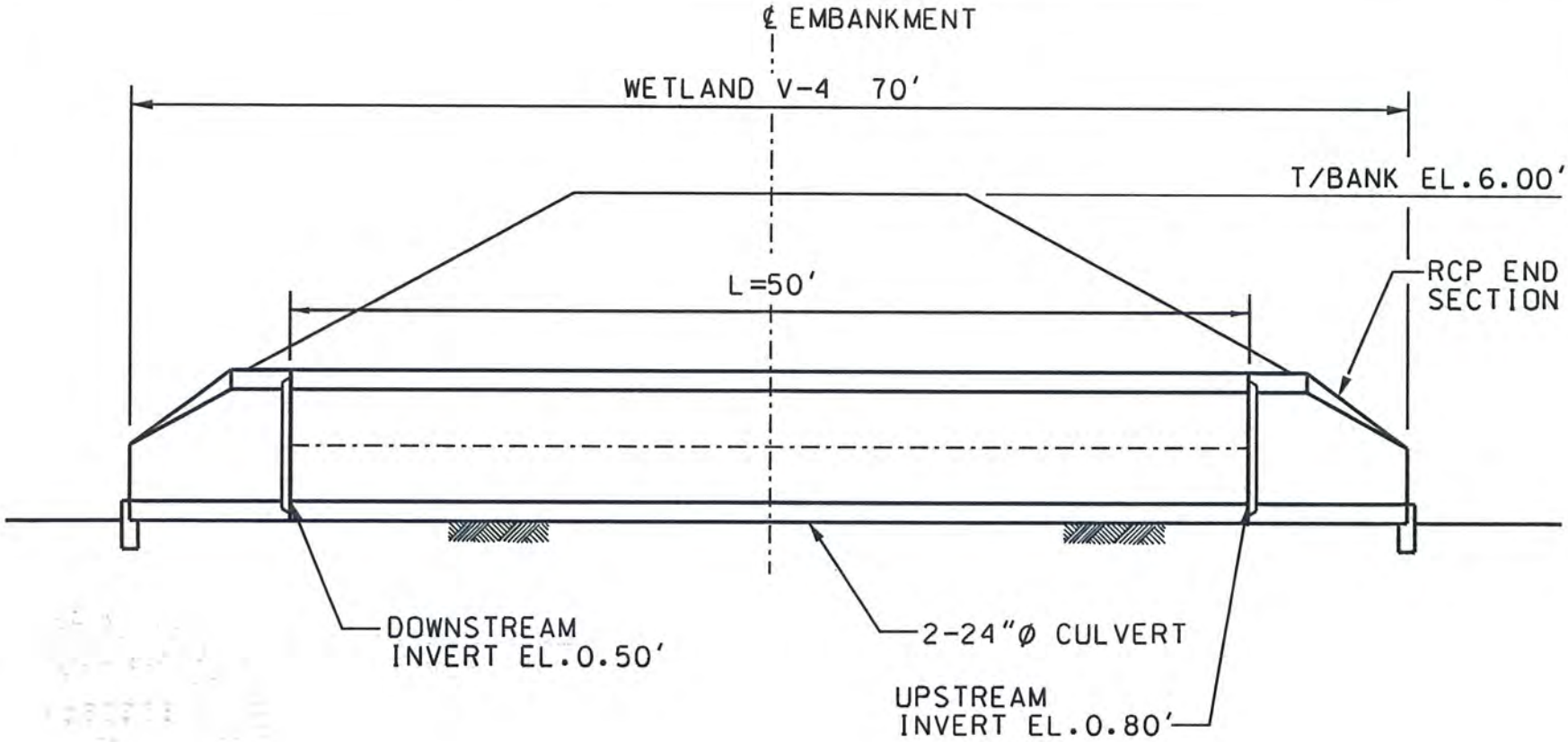

C-5 LOOKING EAST

N.T.S.
ELEVATIONS IN NAVD 88

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3/29/2012

FIGURE 12
CULVERT DESIGN C-5
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM RELOCATION PROJECT
SOURCE: SARGENT & LUNDY,LLC,2012;ECT,2012

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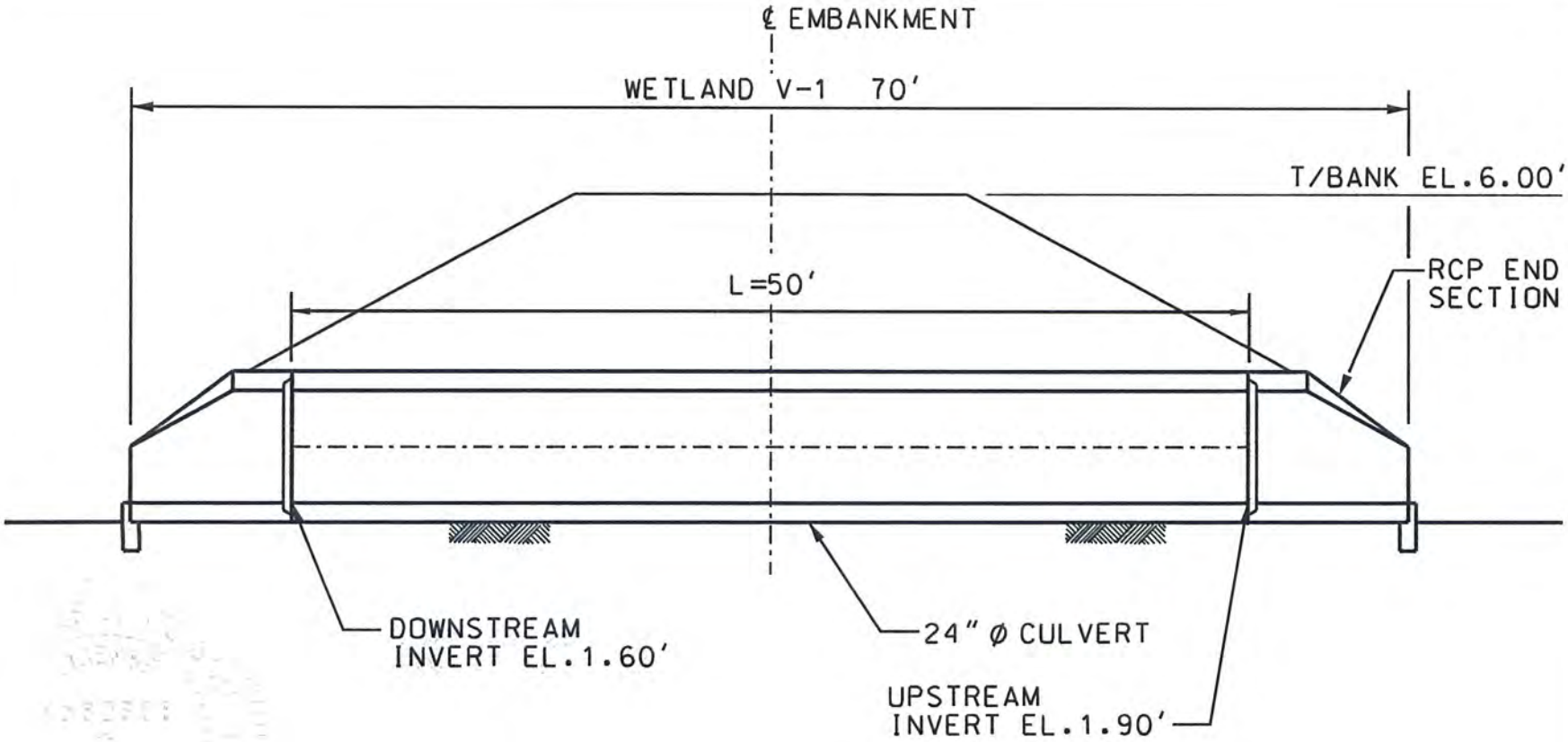

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C-6 LOOKING EAST

N.T.S.
ELEVATIONS IN NAVD 88

FIGURE 13
CULVERT DESIGN C-6
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM RELOCATION PROJECT
SOURCE: SARGENT & LUNDY,LLC,2012;ECT,2012

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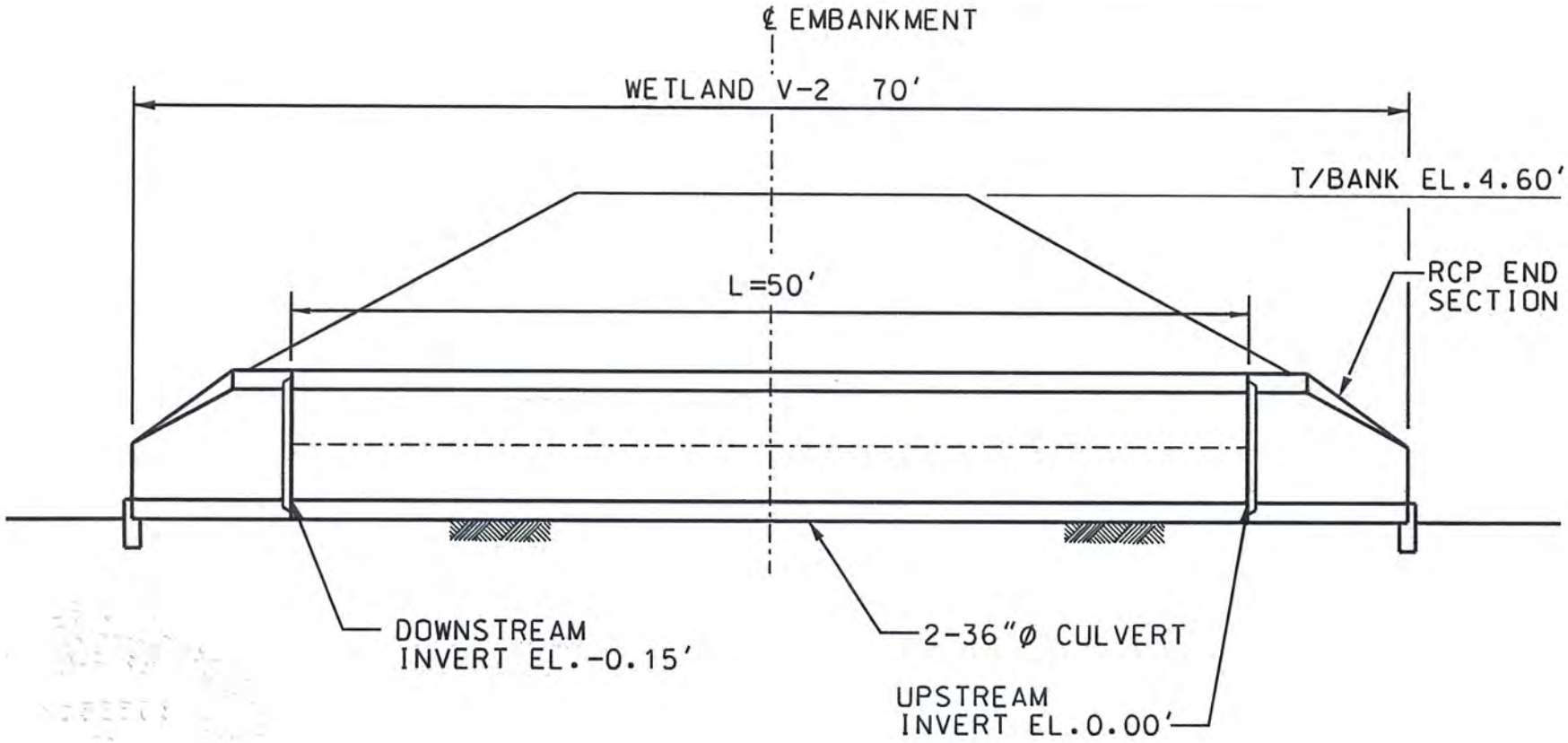
TAMPA ELECTRIC



C-7 LOOKING NORTH

N.T.S.
ELEVATIONS IN NAVD 88

C J Nelson
3/25/2012

FIGURE 14
CULVERT DESIGN C-7
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM RELOCATION PROJECT
SOURCE: SARGENT & LUNDY,LLC,2012;ECT,2012

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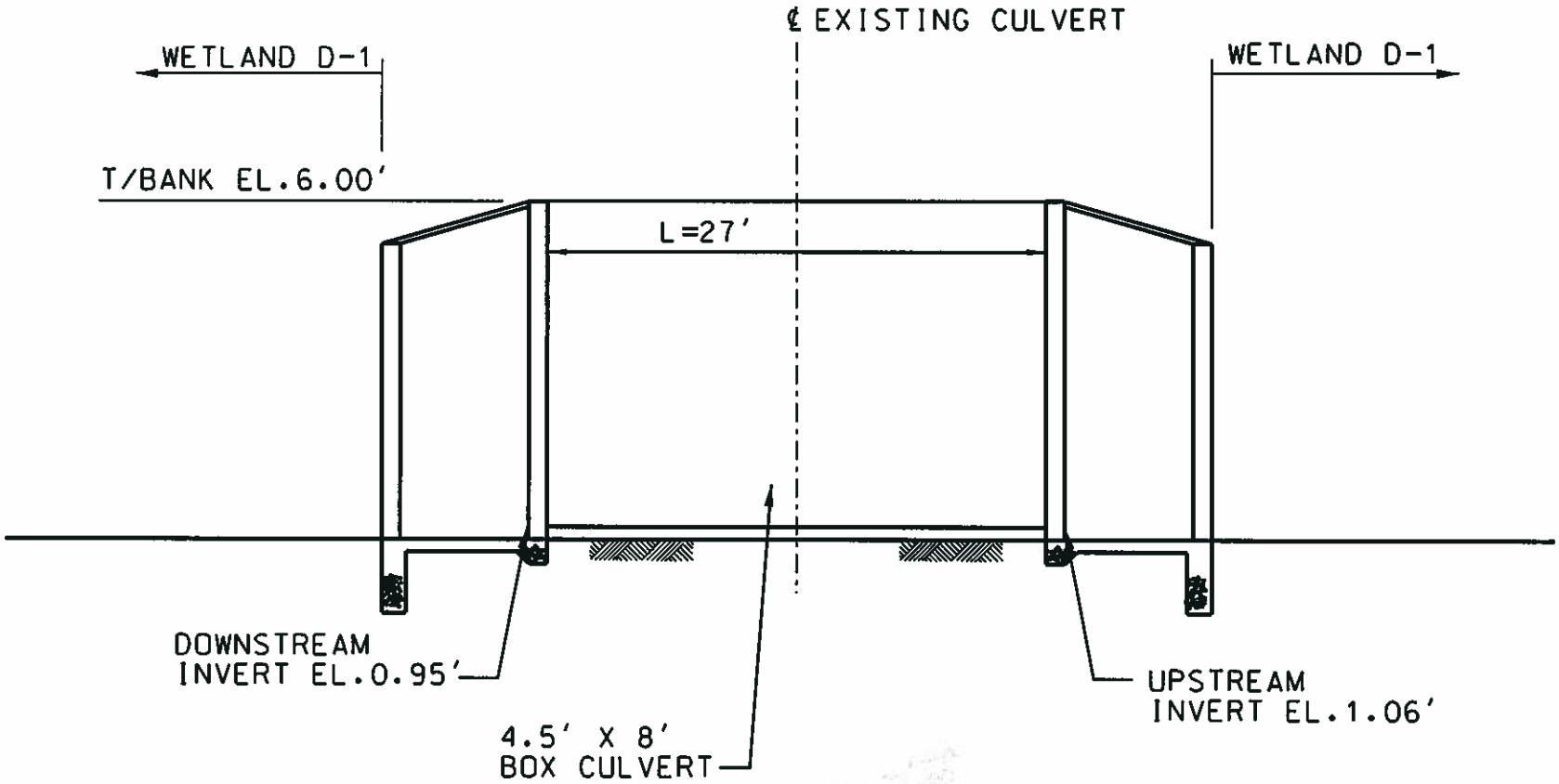


NOTE:
SEASONAL HIGH
WATER TABLE
EL.1.90'

C-8 LOOKING NORTHEAST

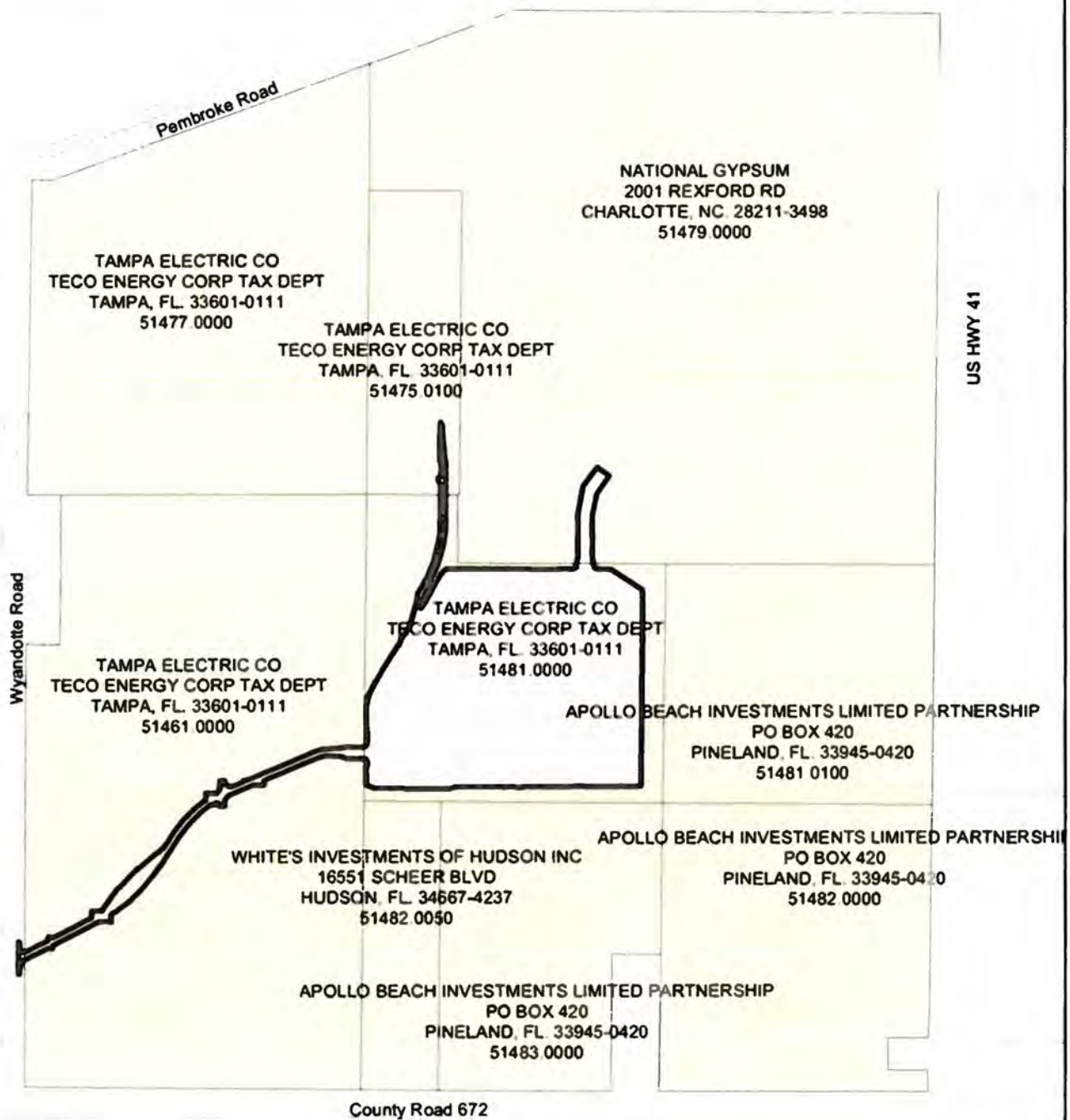
N.T.S.
ELEVATIONS IN NAVD 88

FIGURE 15
CULVERT DESIGN C-8
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM RELOCATION PROJECT
SOURCE: SARGENT & LUNDY,LLC,2012;ECT,2012

C J Nelson 10/5/2012
CHARLES J. NELSON
#52508

APPENDIX A

ADJACENT PROPERTY OWNERSHIP MAP



Legend

- Project Limits (27.03 Acres)
- Adjacent Parcels
- Hillsborough County Parcel Data

N

0 700

Feet

APPENDIX A
ADJACENT PROPERTY OWNERSHIP MAP
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: Hillsborough County Property Appraiser, 2011; Sargent & Lundy, 2011; ECT, 2012

TECO
TAMPA ELECTRIC

APPENDIX B

DRAINAGE REPORT

TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION
GYPSUM STORAGE AREA/
CONVEYOR IMPROVEMENTS PROJECT
DRAINAGE REPORT

Prepared for:

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Southwest District Office
Division of Environmental Resources
13051 North Telecom Parkway
Temple Terrace, Florida 33637-0926

Prepared by:

ECT
Environmental Consulting & Technology, Inc.

1408 North Westshore Boulevard
Suite 115
Tampa, Florida 33607

Certificate of Authorization #5520

Ryan P. Martin, P.E.
FL. REG. No.: 63867

100754-0400-1200
October 2012

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1 INTRODUCTION

Tampa Electric Company (TEC) proposes to construct a new gypsum storage and handling facility (the Project). The existing gypsum storage and handling facility, located near the southern boundary of TEC's property, is required to be either upgraded or replaced to achieve the goals of the Big Bend Remedial Action Plan (RAP). In accordance with the RAP, the design of the new facilities will provide enhanced protection of groundwater, surface water, and air resources in the vicinity of the power station. The project site was chosen by TEC after an extensive alternatives analysis utilizing environmental and operational criteria. Additionally, the new location for the gypsum facility, in the northeast portion of the site, is adjacent to the property of TEC's largest customer for the product gypsum. This will allow for direct transport of gypsum by truck between the TEC facility and the customer's storage area without the need to use public thoroughfares, greatly reducing related impacts on local transportation infrastructure. Furthermore, the project will be constructed in a former spray field area, where no sensitive wetland or upland habitats are located. Finally, the footprints of access and haul roads associated with this project have been reduced to the greatest extent practical and these facilities will be constructed of pervious material, where feasible, in order to minimize effects on local hydrologic functions and drainage. For all of the above reasons, the selected location and design features of this project incorporate an appropriate level of consideration for avoidance and minimization of environmental impacts.

The entire Project area will be lined. The lining system will consist of a geo-synthetic clay lining and an 80 mil geo-membrane, overlain by 2 feet (ft) of compacted gypsum. Perimeter berms will provide flood protection. Rainfall that occurs within the 8-ft berms that protect the property will be captured and routed to TEC's industrial wastewater treatment system. This system is already in use to provide process water to the power plant. All runoff caused by rainfall within the berm of the gypsum storage area will be classified as industrial wastewater due to the nature of the project. Therefore, the runoff will be subject to the industrial wastewater treatment standards and not subject to the Environmental Resource Permit's (ERP's) stormwater treatment criteria. Treatment will be provided for runoff captured from the access roads in roadside swales. The Project site

will be cleared and development will proceed after site preparation. Along with the storage site, a key component to this project will be the conveyor that will deliver gypsum from the power plant to the site, and the access road that will travel along the conveyor's path. The conveyor and access road will be contained within TEC property.

The proposed access road alignment includes portions that cross various ditches formerly used for agricultural and roadway drainage. The surface water management plan will ensure that the conveyance capacity of the ditches will be maintained. Under the proposed plan, the existing drainage patterns will be maintained through the use of culverted sections in the locations where ditches are proposed to be crossed. As mentioned above, water quality treatment for runoff from the bermed gypsum storage area is not required under the ERP. Treatment will be provided for runoff captured from the access roads in roadside swales. All runoff will be classified as industrial wastewater and will be captured and routed to the Big Bend Power Station's industrial wastewater system.

The Project site resides within the Wolf Branch portion of the Bull Frog Creek Watershed, in a minor system called Jackson Branch.

The Hillsborough River Combined Storm Water Management Model (SWMM) prepared by Hillsborough County and approved by the Federal Emergency Management Agency (FEMA) was used to analyze the existing and proposed site improvements (i.e., HCSWMM431b). Hillsborough County's geographic information services (GIS) coverage shows the proposed site is not located within a *Peak Sensitive* or *Volume Sensitive* area and therefore is limited to the 25-year pre-development versus 25-year post development criteria for areas that are non-tidal in Hillsborough County.

It is the intent of this report to produce a quality surface water management plan for the TEC Big Bend Power Station Gypsum Storage Area/Conveyor Improvements Project. This surface water management plan is being provided to satisfy the requirements of the owner/applicant (i.e. TEC) and the Florida Department of Environmental Protection

(FDEP). This drainage report was prepared by Environmental Consulting & Technology, Inc. (ECT).

2 GENERAL INFORMATION

2.1 LOCATION

The approximately 27-acre project site is located east of Wyandotte Road, south of Pembroke Road, north of Big Bend Road (SR 672), and west of U.S. Highway 41 in Section 10, Township 31 South, Range 19 East, in Hillsborough County, Florida. Approximately 24.2 acres of the 27-acre Project site includes the actual bermed area that will serve as the storage area.

2.2 ZONING, DRI, AND OTHER PERMITS

1. Zoning is compatible with the proposed land use.
2. Development of Regional Impact (DRI) – No development order is required for this project.
3. No other permits are pending.

2.3 MAINTENANCE OF THE STORMWATER SYSTEM

All onsite conveyance structures will be owned and maintained by the applicant. A Property Owners Association will not be required.

2.4 OPERATION AND MAINTENANCE INSTRUCTIONS

2.4.1 OPERATION

The project's surface water management system is gravity operated and requires no operator action.

2.4.2 MAINTENANCE

Pipes and structures will be cleaned, maintained, and inspected regularly, and will be free of debris, and/or sediment. Other structures will be maintained as directed by the providing vendor.

3 BASIS OF ANALYSIS

3.1 MODEL

The area has been previously modeled by Hillsborough County through their watershed management program. The location of the TEC Big Bend Power Station Gypsum Storage Area/Conveyor Improvements Project is included in the Bullfrog Creek watershed and, therefore, modeled in the SWMM model (HCSWMM431b). This model utilizes the U.S. Soil Conservation Service (SCS) method to complete runoff calculations and routing and stage analysis of the waterways. See Figure 1 for the Existing Model's Link Node Diagram/Basin Delineation and Figure 2 for the Proposed Model's Link Node Diagram/Basin Delineation.

3.2 RUNOFF CURVE NUMBERS

Runoff curve numbers were previously calculated during the initial modeling effort by Hillsborough County. These curve numbers were not altered for this project. The proposed changes that will be in effect in the post-development condition will not alter the hydrology of the watershed. No additional runoff will be created based on the proposed design. All rainfall that occurs within the bermed area will be captured and routed to TEC's process water facilities. Please see Appendix A for composite curve number calculations.

3.3 SOILS

The hydrologic soil groupings used for calculating the curve numbers for the initial Hillsborough County modeling effort were not altered for this project. The proposed changes that will be in effect in the post-development condition will not alter the hydrology of the watershed. No additional runoff will be created based on the proposed design. All rainfall that occurs within the bermed area will be captured and routed to TEC's process water facilities. Southwest Florida Water Management District (SWFWMD) GIS data includes a soil coverage containing polygons for each soil type. The GIS coverage provides descriptions of these soil types and their corresponding hydrologic soil grouping. The site is completely located in type "B/D" soils-Wabasso fine

sands (Soil survey identification number 57). See Figure 3 for a soils map of the project area.

3.4 RAINFALL DEPTHS AND DISTRIBUTION

Hillsborough County's modeling effort approximated rainfall depths from isohyetal maps in the SWFWMD Environmental Resource Permitting Information Manual (ERPM). The depths approximated for the 25-year and 100-year storm events are 8.0 and 11.0 inches, respectively. The SCS Florida Modified Type II rainfall distribution was used. This distribution was also taken from the ERPM. See Figures 4 and 5 for the SWFWMD 25- and 100-year isohyetal rainfall maps.

3.5 TIME OF CONCENTRATION

The times of concentration used for the initial Hillsborough County modeling effort were not altered for this project. The proposed changes that will be in effect in the post-development condition will not alter the times of concentration of the basins that will be impacted. For the basin that will be impacted, the drainage path taken from the most hydraulically distant point of the basin to the discharge point of the basin is still intact.

3.6 GROUNDWATER CONDITIONS

The groundwater conditions used in the initial Hillsborough County modeling effort were not altered for this project. The proposed changes that will be in effect in the post-development condition will not alter the groundwater hydraulics of the watershed. The seasonal high water (SHW) level for the project site was determined by averaging the elevations established at three stations located within the unnamed stream channel adjacent to the northeast corner of the project site that collects runoff from the project site in the existing condition. The SHW level stations were established along the bank slope of the channel using the growth limits of wetlands vegetation. The value for the SHW was set at 1.88 feet (ft) North American Vertical Datum of 1988 (NAVD88). The proximity of this site to the coast and the location of the SHW level elevation determination within the project area mean that this estimate is conservative. The fact that the SHW level estimate was made along the eastern edge of the project site, while all flows are moving in a direction away from that location and to the coast, along with the

topography of the site (predominately flat with man-made drainage ditches throughout), lead to the determination that this estimate of the SHW level elevation is conservative and can be applied throughout the project area.

3.7 DESIGN CRITERIA

The post-development conditions have been designed to show no adverse impacts versus the pre-developed conditions for the 25-year (yr)/24-hour (hr) and 100-yr/24-hr storm events stages. The post-developed conditions will retain the existing drainage patterns by maintaining any conveyance ways through culverted sections. No water quality treatment is provided for the bermed project area as all runoff will be classified as industrial wastewater and will be captured and routed to TEC's offsite recycle pond to be used in power generating processes. Water quality treatment will be provided for runoff captured from the access roads in roadside swales. No attenuation is proposed for this site as there is no generation of additional runoff volume attributed to the design changes.

ECT used Hillsborough County's Regional SWMM model study for the Wolf Branch (of Bullfrog Creek) watershed to acquire 100-yr/24-hr and 25-yr/24-hr stage data for the proposed project site. The proposed stormwater modeling and permit application considers the site to be filled and prepared for development. The plans (prepared by others) depict the site work.

3.8 CULVERTED SECTION ANALYSIS

Based on survey information and wetland delineation, it was determined that the construction of the Project would impact flow through conveyance ditches in nine different locations throughout the project site. Conveyance would need to be maintained in these ditches following the completion of construction. Figure 6 shows the location of nine impacted ditch sections. These sections will need to be treated to ensure that conveyance on the property is maintained. Figure 7 shows the location of existing culverted sections and their maximum conveyance as well as the proposed crossings and their maximum conveyance.

4 DESCRIPTION OF ANALYSIS

4.1 PRE-DEVELOPMENT CONDITIONS

The property in its pre-development condition occurs in a historically agricultural area. The Project area consists of open space, wetland, and industrial use in combination. The Project site is currently clear of trees, for the most part, but overgrown with Brazilian pepper and other invasive species. The area has been previously modeled by Hillsborough County through their watershed management program, as mentioned in Section 3.1. The Project site is adjacent to a modeled unnamed natural drainage. The unnamed natural drainage junction adjacent to the project site is junction 824120. At the proposed project site location, the existing channel bottom is at an elevation of approximately 0.0 ft NAVD88. Additional junctions representing the Project site area of the Bullfrog Creek watershed exist at junction number 824100 (1285-ft downstream of junction 824120) and junction number 824130 (1490-ft upstream of the proposed crossing). These junctions are linked via trapezoidal channels with a total length of 2775 ft and numbered 9824120 and 9824130. These junctions and channel fall within sub-basin 824080. Appendix B contains existing model input and output files. These files include the existing site hydraulics (*.s4d file) and the existing site hydrology (*.wpx files) for the 25- and 100-year events. The existing model stage results are also included within the 25- and 100-year *.smx files. Further hydrologic and hydraulic information pertaining to the existing model can be found in Appendix G. Appendix H contains a compact disc (CD) containing the complete existing conditions model input and output files for the mean annual, 5, 10, 25, 50, and 100-year events.

4.2 POST-DEVELOPMENT CONDITIONS

In the post-development condition, the Project area was accounted for in the model by removing the total acreage of the Project area from the existing basin in which it is located. The Project proposes to capture all rainfall that falls within the Project area and route the runoff produced through a pipe system to Big Bend Station's existing industrial wastewater treatment system. By reducing the total acreage of sub-basin 824080, the proposed model replicates the effect that the proposed gypsum storage area will have on the local hydrology. As mentioned in Section 3.0 of this report, the Basis of Analysis, the

curve number for sub-basin 824080 was not changed as the Project site has similar overall drainage characteristics as the rest of the sub-basin. The time of concentration also was not changed in the proposed model as the proposed project will not alter the flow path from the most hydraulically distant point within sub-basin 824080 to the discharge point.

Appendix C contains the proposed model input and output files. These files include the proposed site hydraulics (*.s4d file) and the site hydrology (*.wpx files) for the 25- and 100-year events. The proposed model stage results are also included within the 25- and 100-year *.smx files. Appendix D contains the model results comparison tables for all existing and proposed SWMM model runs. Further hydrologic and hydraulic information pertaining to these junctions in the proposed model can be found in Appendix H, an attached CD containing the complete proposed conditions model input and output files for the 2.33 (mean annual), 5-, 10-, 25-, 50-, and 100-year events.

4.3 CULVERTED SECTION ANALYSIS

The conveyance through onsite ditches to be crossed for the construction of this project and operation of this facility will need to be maintained. Conveyance is proposed to be maintained through the use of culverted sections in the impacted locations. As previously mentioned, Figure 6 shows the location of the nine impacted ditch crossings. Through survey and field verification, the design for the proposed culverted sections can be determined through the use of Manning's Equation. For four of the nine ditch sections that will be crossed, an existing culvert is in place within the same ditch in a location up or downstream of the proposed crossing. This allows for proposed culverts to be sized. For the two crossings at the northeast corner of the project area, the channel is modeled in the SWMM model and the flow can be taken out of the model files to ensure that culverts are designed with the capability of conveying adequate flow. Two crossings exist within the project area over a ditch that does not seem to have culverts within the ditch currently. This ditch appears to function as a storage area. There is little slope throughout the length of the ditch. In order to continue to provide a conveyance for the flow that does occur, a representative trapezoidal channel was determined with a slope and flow using Manning's Equation to determine the size of an adequate culvert. For the crossing at the

National Gypsum ditch, the maximum potential existing flow is calculated. The proposed culvert will provide the same conveyance as the existing condition. For the crossing at the rail spur, the existing culvert will be extended to an adequate length and maintain the same conveyance characteristics. A variety of sources were used to determine sufficient information about the existing ditches and culverts to calculate their maximum conveyance with the Manning's Equation. These sources include site specific survey, wetland delineation, construction plans, as-built drawings and historical model information. The culverted section calculations are located in Appendix E.

4.4 PROJECT AREA RUNOFF

Runoff from the bermed gypsum storage area portion of this project will be captured and routed Big Bend Station industrial wastewater treatment system, which consists primarily of treatment/recycling ponds. Calculations to determine the volume captured and required to be accounted for in these ponds are included in Appendix F.

4.5 ROADWAY DRAINAGE

Operation of this gypsum storage facility requires the construction of paved roads to access the project site from Wyandotte Road and to connect the site to the National Gypsum property northeast of the project area. The cross section for this access road will be designed to route runoff to a roadside swale that will be sized to capture the required treatment volume for the impervious area. The swale will be designed with ditch blocks that will hold the volume in the swale so that treatment will occur. Attenuation is not proposed for these roadway drainage systems due to the over attenuation that will be a result of the reuse of the captured rainfall within the proposed gypsum storage area berms. Since none of that rainfall will reach the unnamed natural drainage, additional runoff from the proposed impervious surfaces of the access roads won't lead to a net stage increase upstream of the project area. Calculations for the sizing of this swale are included in Appendix G.

4.6 INTERNAL DITCH DRAINAGE

Several ditches exist within the proximity of the proposed gypsum storage area. Two of these ditches are major hydraulic features within the project area. These major hydraulic

features will not be impacted by the construction of the gypsum storage area. The berms for the gypsum storage area are constructed outside the top of bank of these existing ditches, leaving the flow through these ditches unimpacted. These ditches are identified as Non-Impacted Ditches #1 and #2 in Figure 7 of this report.

The construction of the gypsum storage area does impact two ditches that are onsite. These ditches were identified as jurisdictional/wetland areas (see Section 3.2 of ERP application). These ditches will be eliminated during the process of construction. The elimination of these interior ditches will not impact the overall hydraulics or hydrology of the Project area. These ditches are identified as Impacted Ditches #1 and #2 in Figure 7 of this report. Based on the overall sight specific survey for this project, the drainage basins for these ditches are limited by the non-impacted flow through ditches that will remain.

Impacted Ditch #1 is isolated to the area inside the proposed berms. All of the drainage basin that historically contributed to this ditch is going to be removed, along with the ditch, with the proposed construction. Also, based on the survey, Impacted Ditch #1, which runs east and west, does not connect hydraulically with the non-impacted ditch that runs south to north. According to Hillsborough County's modeling effort, junction 824120, which approximates the location of the confluence of the ditches in the northeast corner of the project area, reaches an elevation of 2.04-ft NAVD88 during the 100-year rainfall event. This flood elevation remains below the top of bank elevation of both ditches; therefore, Impacted Ditch #1 is not hydraulically connected to the remaining overall site hydraulics. Thus, the elimination of Impacted Ditch #1 will not cause adverse impacts upstream of its location during any rainfall event.

Impacted Ditch #2 is also isolated to the area inside the proposed berms. The entire drainage basin of this ditch will be altered by the construction of the Project. With the entire drainage basin to Impacted Ditch #2 to be contained within the berms of the Project area, the removal of the ditch will not cause adverse impacts upstream of its location during any rainfall event. In conclusion, the modification to the ditches within

the proposed project area will not alter the hydraulics or hydrology of the surrounding area.

5 MODELING RESULTS

5.1 HYDROLOGIC AND HYDRAULIC MODELING

In addition to the required 25-year and 100-year design events, the model was run for the 2.33-year, 5-year, 10-year, and 50-year events. Running the additional events allowed for a check for no adverse impacts during low flow events. Table 1 lists these events with their rainfall depths, durations and distributions.

Table 1. Design Storms

Frequency (years)	Depth (inches)	Duration (hours)	Distribution
2.33 (Mean Annual)	4.5	24	Type II Florida-Modified
5	5.5	24	Type II Florida-Modified
10	7.0	24	Type II Florida-Modified
*25	8.0	24	Type II Florida-Modified
50	10.0	24	Type II Florida-Modified
*100	11.0	24	Type II Florida-Modified

**See Figures 3 and 4 for SWFWMD 25- and 100-year isohyetal rainfall maps, respectively.*

In order to simulate potential upstream impacts caused by the proposed changes, the original Hillsborough County-Wolf Branch Basin – Miscellaneous Coastal Streams Model (HCSWMM431b) was modified for our application.

As previously mentioned, Appendix D includes the Model Result Comparison tables for each event. The tables are summarized in Table 2 for the 25-year and 100-year design events. As shown in Table 2, there are 17 junctions within the Jackson Branch system. None of these junctions exhibit a stage increase during the 25 and 100-year events. This is to be expected. The resultant change in hydrology to the Jackson Branch system is a result of the gypsum storage facility design intent to capture all rain that historically fell within the project area. There is no increase of impervious area to the drainage basin and there is no additional discharge. Three junctions, 824080, 824085, and 824100 are downstream of the project site and exhibit slight stage decreases. This is to be expected since the project area is no longer contributing to the hydrology of the drainage basin.

Table 2. Jackson Branch Junctions – Change in Stage

Summary of Junctions Proposed - Existing Model		
Junction Locale	**25-Year Event (ft)**	**100-Year Event (ft)**
82400	0	0
824000	0	0
824080	-0.03	-0.09
824085	-0.02	-0.08
824100	0	-0.02
824110	0	0
824120	0	0
824130	0	0
824140	0	0
824200	0	0
824300	0	0
824400	0	0
824490	0	0
824500	0	0
824590	0	0
824600	0	0
824650	0	0

5.2 FLOODPLAIN COMPENSATION

Based on the results of the modified Hillsborough County – Miscellaneous Coastal Streams model (attached in Appendix D), floodplain compensation will not be required for this project. According to the model results at junction 824120, the confluence of the streams at the northeast corner of the project area, the 100-year flood stage reaches an elevation of 2.04-ft NAVD88. This stage elevation is adequately contained within the banks of the streams surrounding the Project area. All existing elevations within the project area are above the flood stage elevation therefore, no adverse impacts to the floodplain are created by the Project.

6 CULVERTED SECTION RESULTS

The construction of the Project would impact flow through conveyance ditches in nine different locations throughout the project site. Table 3 below shows the results of calculations completed to ensure that conveyance on site is maintained post construction. As previously mentioned, the calculations are included in Appendix E.

Table 3. Existing/Proposed Summary of Conveyances

Existing Conveyance Location Description	Existing Flow Through Section (CFS)	Proposed Conveyance Location Description	Proposed Design Capacity (CFS)	Proposed Minimum Culvert Size (Inches)	Proposed Minimum Culvert Slope (ft/ft)	Proposed Culvert Slope Direction
E1	10.5	P1	31.7	24	0.016	To North
E1	10.5	P2	11.6	24	0.002	To East
E1	10.5	P3	13.5	24	0.003	To North
Existing Ditch Section #1 @ P4	21.7	P4	31.0	24 (2)	0.004	To West
Existing Ditch Section #1 @ P5	32.6	P5	38.0	24 (2)	0.006	To North
E2	13.5	P6	19.0	24	0.006	To North
Existing Ditch Section #3 @ P7	44.1	P7	71.3	36 (2)	0.0024	To Northwest
E3	499.9	P8	499.9	54 x 96	0.0046	To Northwest
E4	141.2	P9	141.2	36 x 60 (2)	0.00095	To West

Notes: CFS = Cubic feet per second
ft/ft = Foot per foot

7 CONCLUSION

The impacts identified through the modeling efforts are considered to be insignificant. Based on existing and proposed modeling, the proposed relocated gypsum storage facility design will not result in any significantly adverse impacts upstream or downstream of the modified section. The proposed design will provide function as well as allow existing flow regimes to remain intact.

FIGURES

Path: Q:\projects\TECO\100754\0400\Existing Link Node Diagram.mxd User: jstebnisky Date: 5/15/2012

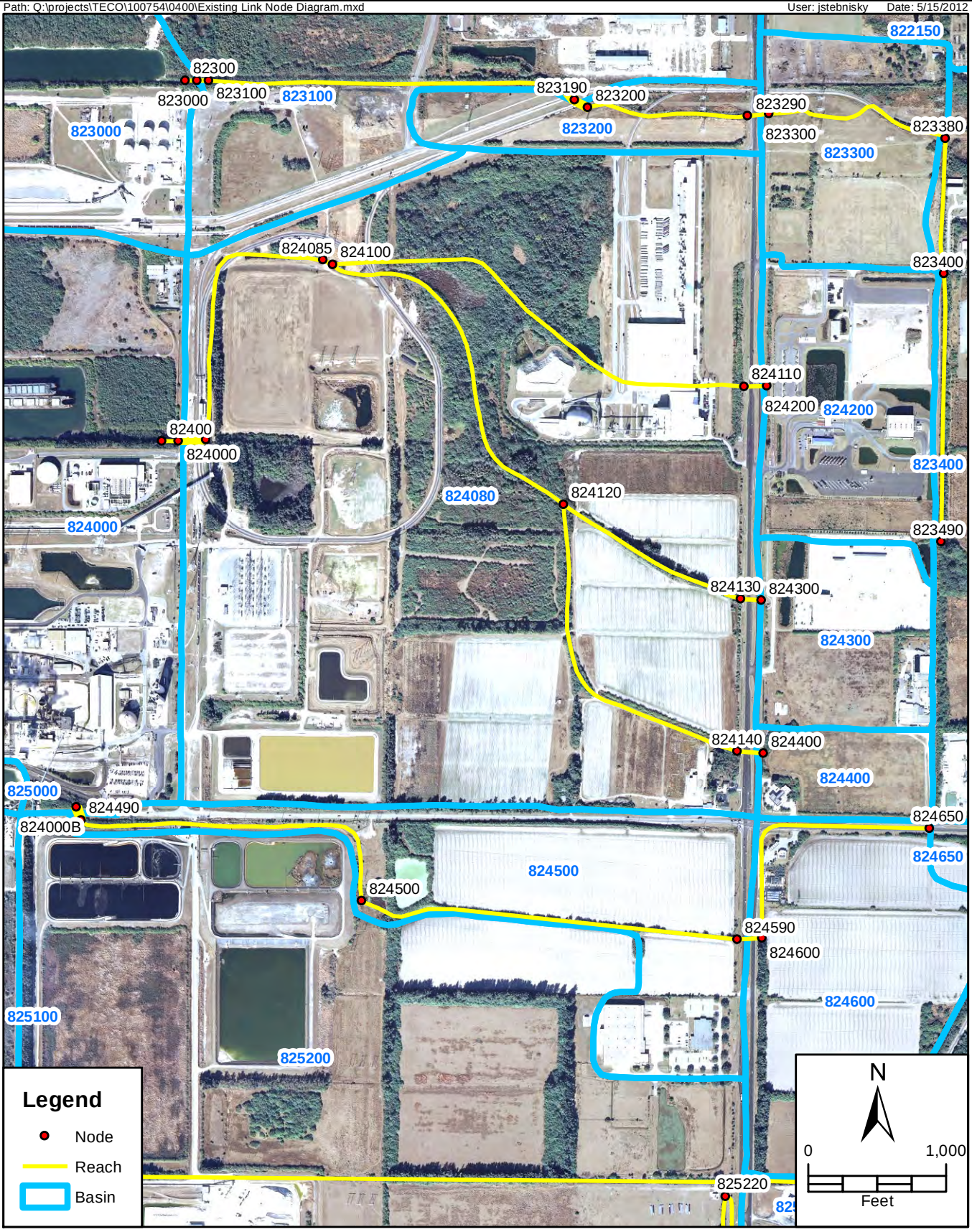


FIGURE 1.
EXISTING LINK NODE DIAGRAM/BASIN DELINEATION
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: SWFWMD Aerial Photography, 2012; ECT, 2012.

TECO
TAMPA ELECTRIC

Path: Q:\projects\TECO\100754\0400\Revised092012\Proposed_LinkNodeDiagram.mxd User: jstebnisky Date: 9/23/2012

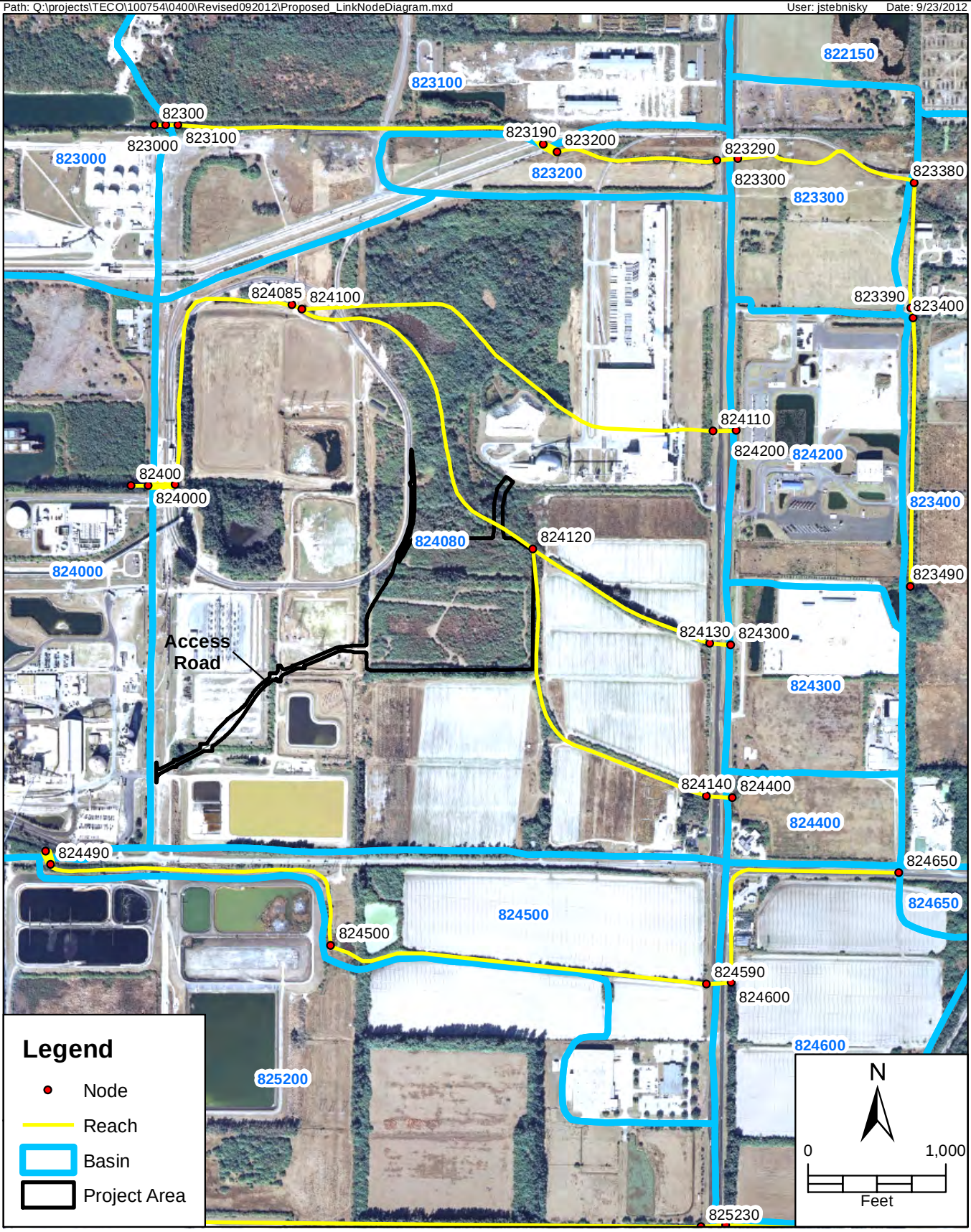
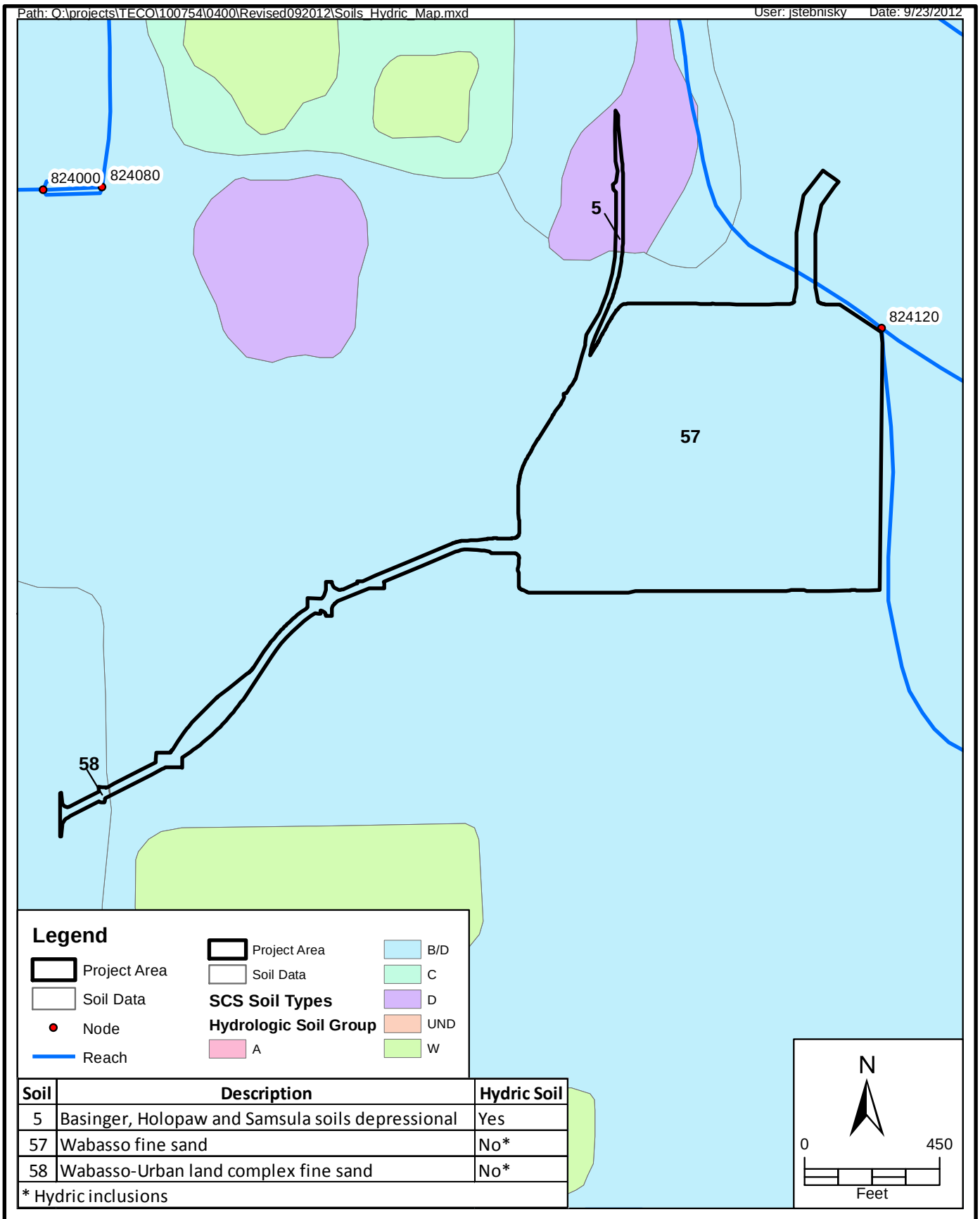


FIGURE 2.
PROPOSED LINK NODE DIAGRAM/BASIN DELINEATION
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: SWFWMD Aerial Photography, 2011; ECT, 2012.

TECO
TAMPA ELECTRIC



Soil	Description	Hydric Soil
5	Basinger, Holopaw and Samsula soils depressional	Yes
57	Wabasso fine sand	No*
58	Wabasso-Urban land complex fine sand	No*
* Hydric inclusions		

FIGURE 3.
SOILS MAP
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: Hydric Soils of Florida, 2000; Soil Survey Geographic Database (SSURGO), 2002; Sargent & Lundy, 2011; ECT, 2012

TECO
TAMPA ELECTRIC

Path: O:\projects\TECO\100754\0400\vr25rainfall.mxd User: jstebnisky Date: 5/2/2012

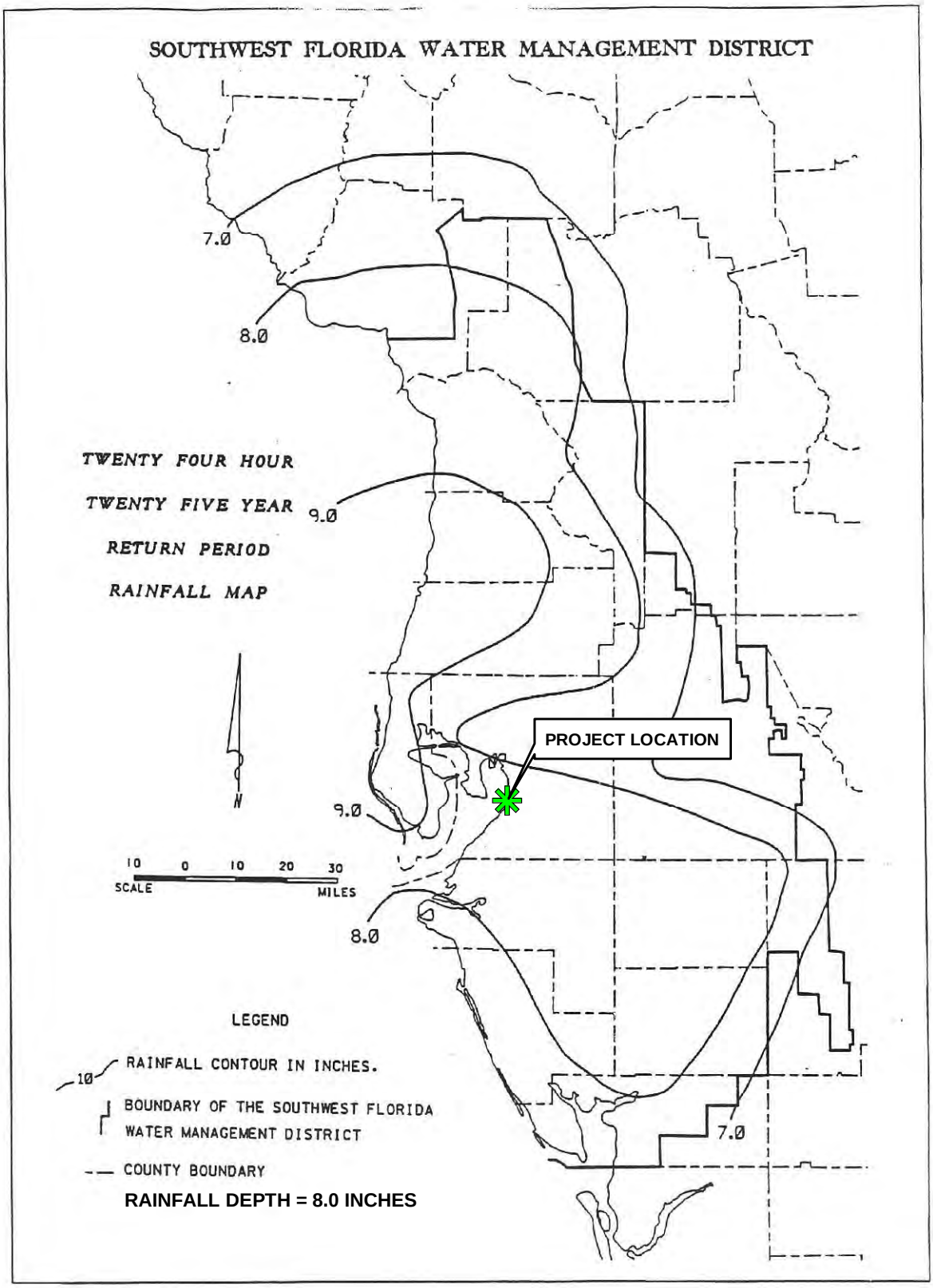


FIGURE 4.
25 YEAR/24 HOUR RAINFALL DEPTH
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Source: ECT, 2012

TECO
TAMPA ELECTRIC

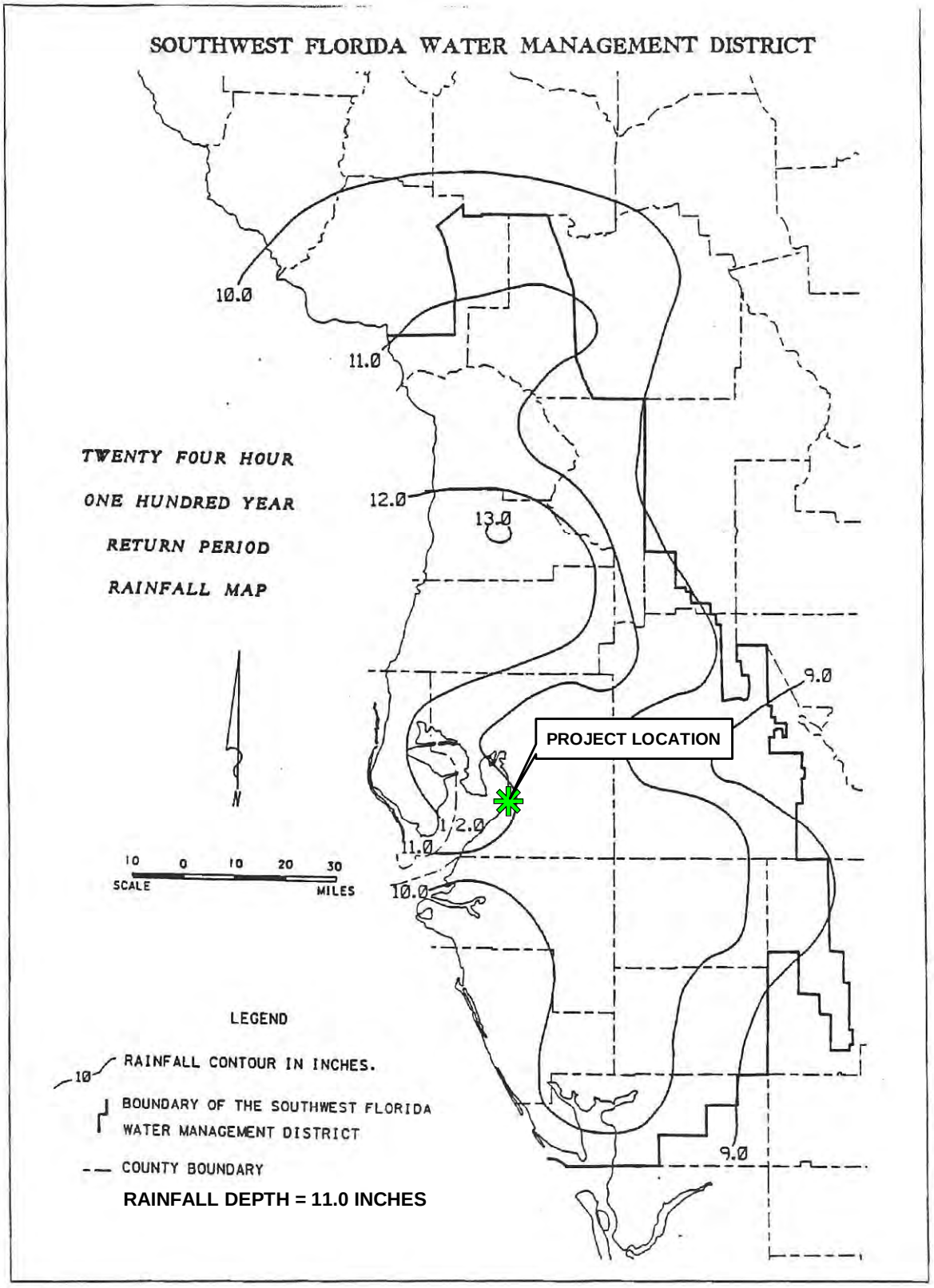


FIGURE 5.
100 YEAR/24 HOUR RAINFALL DEPTH
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Source: ECT, 2012

TECO
TAMPA ELECTRIC

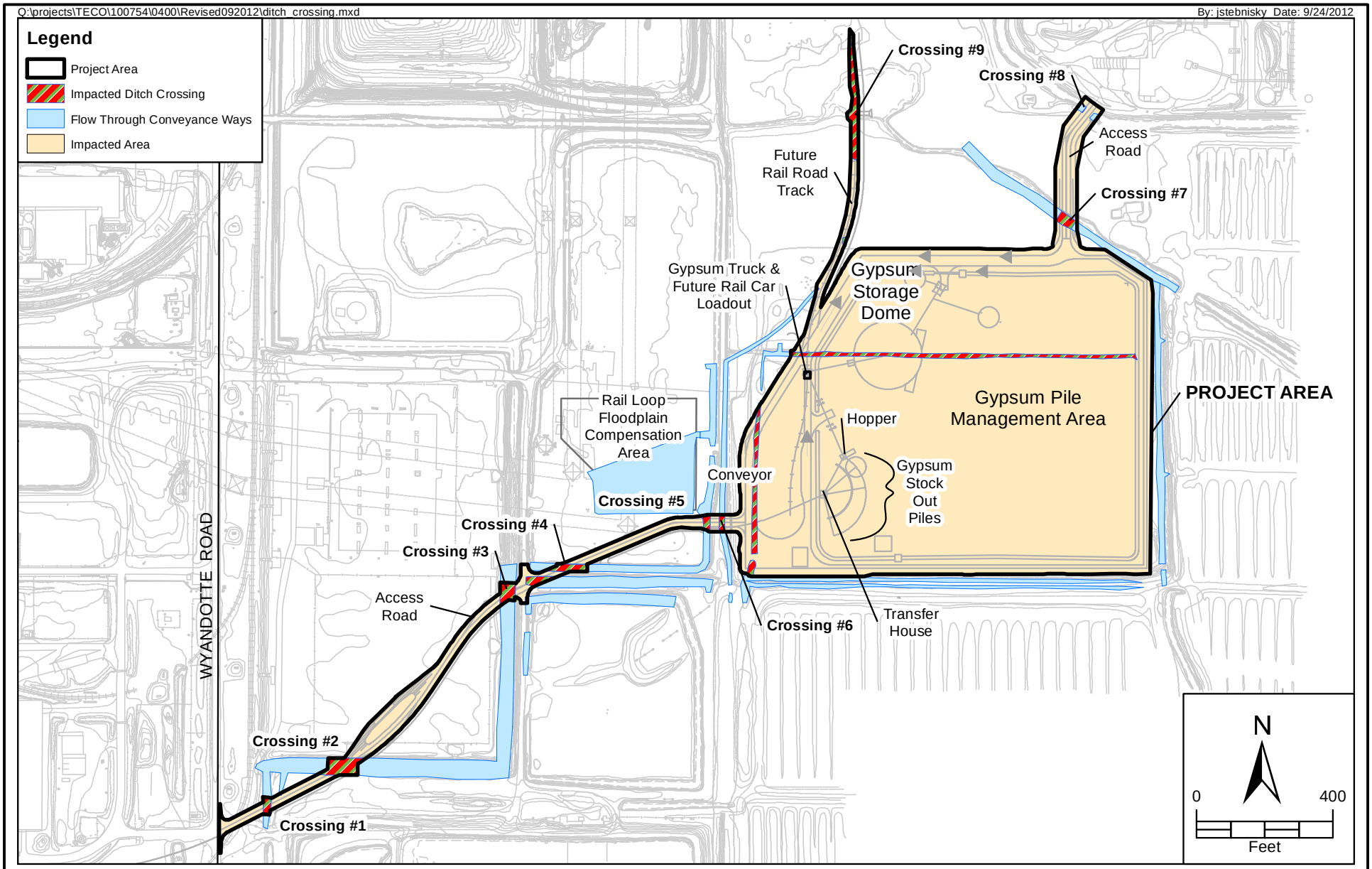


FIGURE 6.
IMPACTED DITCH CROSSINGS
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: ESRI Street Map Data, 2011; Sargent & Lundy, 2011; ECT, 2012

TECO
TAMPA ELECTRIC

Q:\projects\TECO\100754\0400\Revised092012\Conveyance_Locations.mxd

By: jstebnisky Date: 9/24/2012

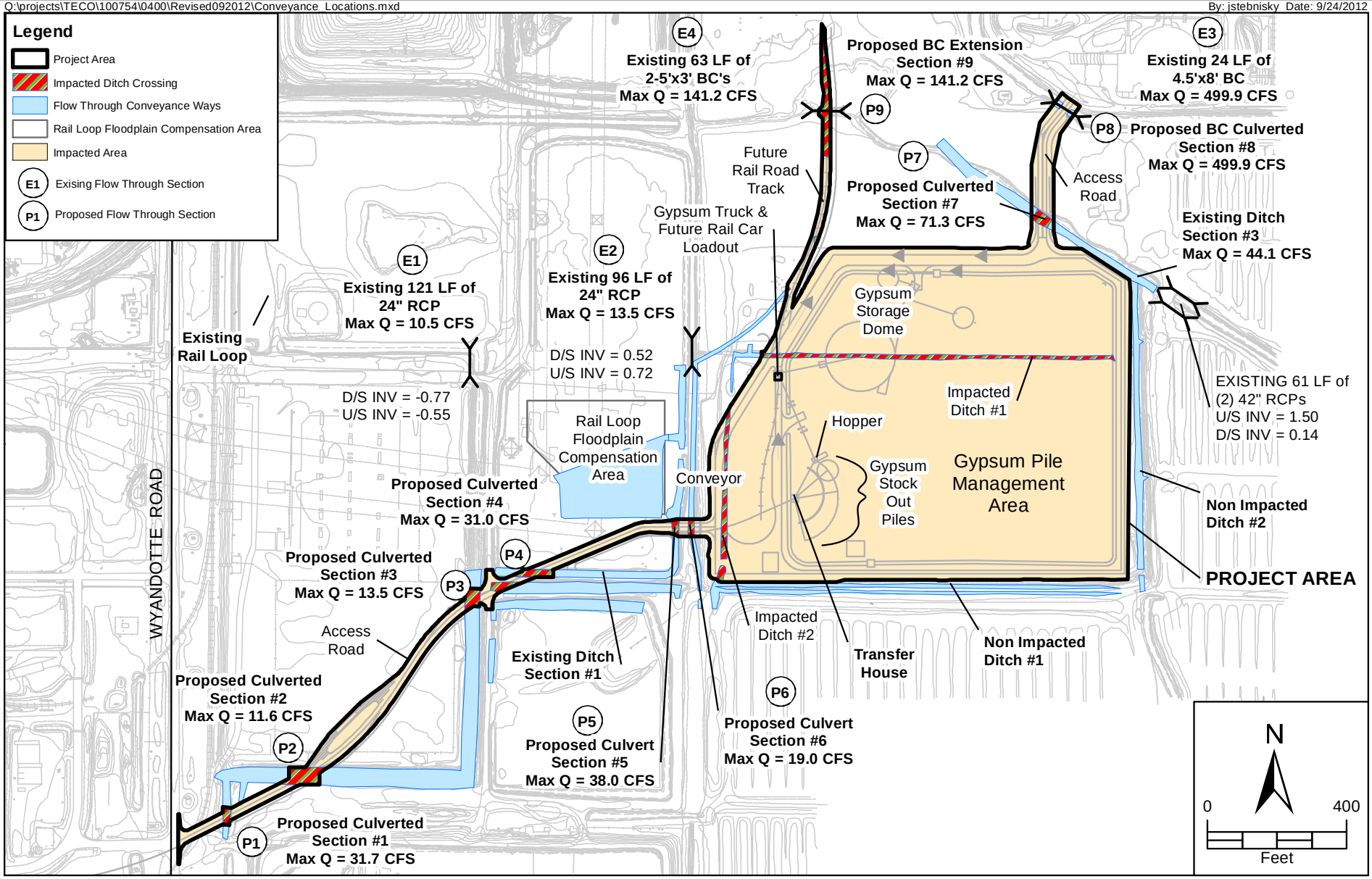


FIGURE 7.
EXISTING/PROPOSED CONVEYANCE SECTION LOCATIONS/INFORMATION
TAMPA ELECTRIC COMPANY
BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT
HILLSBOROUGH COUNTY, FLORIDA

Sources: ESRI Street Map Data, 2011; Sargent & Lundy, 2011; ECT, 2012

TECO
TAMPA ELECTRIC

APPENDIX A

COMPOSITE CURVE NUMBER CALCULATIONS

ECT
Environmental Consulting & Technology, Inc.

PROJECT TEC Cypress CN Calcs
PROJECT NO. 100754-0400
SHEET NO. 1 OF 1
CALCULATED BY [illegible] DATE 1/4/2012
CHECKED BY _____ DATE _____

From the Existing Hillsborough County - Miscellaneous Coastal Streams model, Basin 824080 has a CN of 86 and an acreage of 410.24 Ac

An estimated curve number for the project area is equal to 79 for "Woods-Grass combination" in Good Condition on Table 2-2c in TR-55. If the project area were to be used for a composite CN calc, the CN would be calculated as shown.

410.24
- 28.25
381.99 Ac - remaining acreage

(381.99 × 86) + (28.25 × 79) =
35082.89

@ a CN of 86 not counting project area.

Composite CN = $\frac{35082.89}{410.24} = 85.5 \approx 86$

∴ Existing composite CN for basin is same as CN used in existing model. Therefore CN should not change in proposed condition when project area is removed from basin.

APPENDIX B

EXISTING CONDITIONS MODEL INPUT AND OUTPUT FILES

1. MC-25_EX112010.S4D
2. WB-25.WPX
3. WB-100.WPX
4. MC-25_EX112010.SMX
5. MC-100_EX112010.SMX

```
*   NBLOCKS   INBLK1  OUTBLK1   INBLK2  OUTBLK                                    MC-25_ex112010.S4D
SW    2         8        12       12      14
* NITCH NSCRATCH(1)NSCRATCH(2)NSCRATCH(3)NSCRATCH(4)NSCRATCH(5)NSCRATCH(NTH)
MM    6   10   11   13   14   15   16
* ========================================================================
@     8   'WB-25.WPX'
@    11   'MC-25_ex112010.HOT'
@    12   'MC-25_ex112010.INT'
@    15   'MC-25_ex112010.SMX'
@    16   'MC-25_ex112010.PLT'
* ========================================================================
$COMBINE
A1  11
B1  '  GENERATE HYDROGRAPH FROM INTERNAL SCS METHOD'
B1  '  MAKE SWMM INTERFACE FILE          '
* ========================================================================
$EXTRAN
A1 'WOLF BRANCH BASIN - MISCELLANEOUS COASTAL STREAMS  7/25/00 FINAL'
A1 'EXISTING CONDITIONS 25 YEAR, 24 HOUR EVENT '
**************************************************************************
** 7/10/00  Editted roadway overflow elevation for 825420 from 12.5 to 12.8 *
**              Added interbasin overland connection from 825430 to 825630      *
** 7/20/00  Added floodplain definition (From Type 6 to Type 8) for channels*
**       9823170, 9823290, 9823490, 9826640, 9826665                            *
** 7/25/00  Edited 9825600 to 6825600 to model earthen berm obstruction          *
**              Dropped 825640 and made 825615 linear storage for better model  *
**************************************************************************
*        ISOL     KSUPER   LOSSES
B0       2        0       1
*         JELEV    JDOWN
BB        1        0
*====================*
*====================*                     1 hour    5 min
*      NTCYC    DELT     TZERO   NSTART    INTER     JNTER    JREDO  IDATZ(opt)
B1     57600    2.0       0.0      1       1800      150      0
*    32 HOUR SIMULATION
*      METRIC   NEQUAL   AMEN    ITMAX    SURTOL
B2       0        0     10.0      120    0.0015
*     H-prnt  Q-prnt H-plot Q-plot   NJSW
B3      0      0      142      223     0     0    0
B6         82100   82200   82300   82400   82510   82615   82620   82645   82900   82900
           82930   82940  821000  821100  821190  821200  821290  821300  821390  821400
          821490  821500  822000  822050  822100  822110  822190  822150  822200  822250
          822290  822300  822350  822390  822400  822410  822420  822490  822500  823000
          823100  823170  823180  823190  823200  823290  823300  823380  823390  823400
          823490  824000  824080  824085  824100  824110  824120  824130  824140  824200
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          825230  825300  825390  825400  825410  825420  825430  825500  825600  825610
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          826850  826855  826860  826865  826900  826970  826980  826990  829000  829100
          829190  829200  829300  829400  829410  829450  829500  829510  829600  826940
          826950  825429
B7       9821000 9821100 9821190 1821200 9821290 1821300 2821300 3821300 9821390 1821400
         2821400 3821400 9821490 1821500 2821500 9822000 1822050 2822050 1822100 2822100
         3822100 9822150 9822190 1822200 9822110 1822250 9822290 1822300 2822300 3822300
         9822350 9822390 1822400 2822400 9822410 1822420 2822420 9822490 1822500 2822500
         9823000 1823100 9823170 1823180 1823190 2823190 3823190 1823200 2823200 9823290
         1823300 9823380 9823390 1823400 9823490 9824000 1824080 2824080 9824085 1824100
```

```
         9824120 9824140 1824400 9824130 1824300 9824110 1824200 1824490 2824490 9824500
         9824590 1824600 9824650 9825100 1825200 9825610 9825610 1825650 9825650 9825653
         1825655 9825615 9825616 1825700 1825700 9825620 1825630 2825630 1825800 2825800
         9825900 9825220 9825410 1825420 9825430 1825500 9825230 1825230 1825300 9825390
         1825400 9826150 9826190 9826200 9826245 1826250 9826290 1826295 1826400 2826400
         1826300 9826305 1826310 9826315 1826320 9826325 1826350 9826450 9826500 1826550
         9826560 1826570 2826570 3826570 9826600 9826640 1826650 2826650 3826650 9826665
         9826685 1826700 1826750 2826750 9826790 1826800 2826800 9826780 1826850 2826850
         9826855 1826860 9826865 1826900 2826900 9826970 9826980 1826990 9829000 9829100
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         1829600 7821200 7821300 7821400 7821500 7822050 7822100 7822200 7822250 7822300
         7822400 7822420 7822500 7823100 7823180 7823190 7823200 7823300 7823400 7824080
         7824100 7824200 7824300 7824400 7824490 7824600 7825200 7825300 7825400 7825420
         7825500 7825630 7825655 7825700 7825800 7826250 7826295 7826300 7826310 7826320
         7826350 7826400 7826500 7826550 7826570 7826650 7826700 7826750 7826800 7826850
         7826860 7826900 7826990 7826990 7829100 7829200 7829600 1826950 2826950 9826940
         6825430 9825429 6825600
*==============================
** Conduit Data
*==============================
*  NCOND   NJUNC(1)NJUNC(2)  Q0    NKLASS AFULL     DEEP    WIDE    LEN    ZP(1)   ZP(2)  ROUGH   STHETA  SPHI      KENT  KEXIT KMIN  STRE *NOTES
************************
*****  DUG CREEK  *******                                                                                                                  *
************************
C1  9821000  821000   82100   0      6       0.000   5   100         500   -2.00   -2.00    0.02    7.0         7.0      0     0     0  1  * BOUNDARY
C1  9821100  821100  821000   0      8       0.000   0    0          144   -1.10   -2.00   0.035 9821100     0.00635     0     0     0  1  * S#W-1
C1  9821190  821190  821100   0      8       0.000   0    0         1615   -4.50   -1.10   0.035 9821190 0.002205263     0     0     0  1  * S#W-1 COPY
** US 41
C1  1821200  821200  821190   0      2      80.000   8   10          135   -4.50   -4.50   0.015       0           0   0.1     1     0  1  * FDOT
C1  9821290  821290  821200   0      8       0.000   0    0         1890    0.87   -4.50   0.035 9821290  0.00294127     0     0     0  1  * S#W-2
** CSX R.R.
C1  1821300  821300  821290   0      1      15.904  4.5  4.5         120    0.87    0.87   0.015       0           0   0.1     1     0  1  * FDOT
C1  2821300  821300  821290   0      1      15.904  4.5  4.5         120    0.87    0.87   0.015       0           0   0.1     1     0  1  * FDOT
C1  3821300  821300  821290   0      1      15.904  4.5  4.5         120    0.87    0.87   0.015       0           0   0.1     1     0  1  * FDOT
C1  9821390  821390  821300   0      6       0.000   11   15        2790    8.00    0.87   0.035    3.33        3.33     0     0     0  1  * E,F
** NORTH ST.
C1  1821400  821400  821390   0      3      16.116  3.6  5.7          80    9.00    8.00   0.015       0           0   0.1     1     0  4  * E,F
C1  2821400  821400  821390   0      3      16.116  3.6  5.7          80    9.00    8.00   0.015       0           0   0.1     1     0  4  * E,F
C1  3821400  821400  821390   0      3      16.116  3.6  5.7          80    9.00    8.00   0.015       0           0   0.1     1     0  4  * E,F
C1  9821490  821490  821400   0      6       0.000   8    15        4690   19.00    9.00   0.035   2.083       2.083     0     0     0  1  * E,F
** MESSLER RD.
C1  1821500  821500  821490   0      1       3.142   2    2           80   21.50   20.00   0.026       0           0   0.5     1     0  4  * E,F
C1  2821500  821500  821490   0      1       7.069   3    3           80   20.50   19.00   0.015       0           0   0.1     1     0  4  * E,F
********************************
*****  KITCHEN BRANCH  *********
********************************
C1  9822000  822000   82200   0      6       0.000   5   300         500   -2.10   -2.50    0.02       3           3     0     0     0  1  * BOUNDARY
** US 41
C1  1822100  822100  822000   0      2      50.000   5   10          113   -2.00   -2.00   0.015       0           0   0.1     1     0  1  * FDOT
C1  2822100  822100  822000   0      2      45.000   5   9           150   -2.10   -2.10   0.015       0           0   0.1     1     0  1  * FDOT
C1  3822100  822100  822000   0      2      45.000   5   9           150   -2.10   -2.10   0.015       0           0   0.1     1     0  1  * FDOT
**********************
*** KRACKER AVE TRIB **
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C1  9822150  822150  822100   0      6       0.000   8    4          965   -2.00   -2.00   0.035       6           6     0     0     0  1  * EM
C1  9822190  822190  822150   0      6       0.000   8    4          890   -2.00   -2.00   0.035       6           6     0     0     0  1  * E,F&M
** CORNER OF KRACKER AND PHILLIPS
C1  1822200  822200  822190   0      1      15.904  4.5  4.5         80    -1.00   -2.00   0.015       0           0   0.1     1     0  4  * E,F
********************************
*****  KITCHEN BRANCH CONT'D) **
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C1  9822110  822110  822100   0      8       0.000   0    0           785   -1.10   -2.00   0.035 9822110 0.001246497     0     0     0  1  * E,F &M
** PHILLIPS LANE
C1  1822250  822250  822110   0      2     142.500  4.75  30           80   -1.10   -1.10   0.015       0           0   0.1     1     0  4  * E,F , S#W-3
C1  9822290  822290  822250   0      8       0.000   0    0          1460   -0.65   -1.10   0.035 9822290 0.000408219     0     0     0  1  * S#W-3
** CSX R.R.
C1  1822300  822300  822290   0      1      12.566   4    4           105   -0.65   -0.65   0.015       0           0   0.1     1     0  1  * FDOT
C1  2822300  822300  822290   0      1      12.566   4    4           105   -0.65   -0.65   0.015       0           0   0.1     1     0  1  * FDOT
C1  3822300  822300  822290   0      1      12.566   4    4           105   -0.65   -0.65   0.015       0           0   0.1     1     0  1  * FDOT
C1  9822350  822350  822290   0      6       0.000   8   20          1870    0.00   -0.65   0.035       4           4     0     0     0  1  * EM (DBL DITCH)
C1  9822390  822390  822350   0      6       0.000   8   20          2265    1.00    0.00   0.035       4           4     0     0     0  1  * EM (DBL DITCH)
**  SIDE DITCH CROSSINGS OF CSX R.R. 4300 FEET SOUTH OF MAIN CSX-KITCHEN CROSSING
C1  1822400  822400  822390   0      1      12.566   4    4           100    1.50    1.00   0.015       0           0   0.1     1     0  1  * E,F
C1  2822400  822400  822390   0      1      12.566   4    4           100    1.50    1.00   0.015       0           0   0.1     1     0  1  * E,F
C1  9822410  822410  822400   0      6       0.000  12   20          1240    2.80    1.50   0.035     2.2         2.2     0     0     0  1  * E,F (DBL DITCH)
** SIDE DITCH CROSSINGS OF CSX R.R. 1.05 MILES SOUTH OF MAIN CSX-KITCHEN CROSSING
C1  1822420  822420  822410   0      1       3.142   2    2            65    3.00    2.80   0.015       0           0   0.1     1     0  4  * FDOT
C1  2822420  822420  822410   0      3      11.310   3   4.8           65    3.00    2.80   0.026       0           0   0.5     1     0  4  * FDOT
C1  9822490  822490  822420   0      6       0.000  12   20          4100    4.00    3.00   0.035     2.2         2.2     0     0     0  1  * E,F, S#W-8
** CR 672/BIG BEND ROAD @ CSX RR
C1  1822500  822500  822490   0      3      12.566  3.2   5           115    5.00    4.00   0.015       0           0   0.1     1     0  1  * E,F, S#W-8
C1  2822500  822500  822490   0      1       4.909  2.5  2.5          115    5.00    4.00   0.015       0           0   0.1     1     0  1  * E,F, S#W-8
*****************************
*** KRACKER AVE OUTFALL******
*****************************
** KRACKER AVE.
C1  1822050  822050  822000   0      1       3.142   2    2            80    0.50   -0.50   0.015       0           0   0.1     1     0  4  * E,F
C1  2822050  822050  822000   0      3       5.027   2   3.2           80    0.50   -0.50   0.015       0           0   0.1     1     0  4  * E,F
***********************************
******  SIMS BRANCH  **************
***********************************
C1  9823000  823000   82300   0      6       0.000   5   300          500   -2.00   -2.50    0.02       3           3     0     0     0  1  * BOUNDARY
** N OF CSX R.R. AT BIG BEND INDUSTRIAL PARK - OUTFALL
C1  1823100  823100  823000   0      1      19.635   5    5           140   -2.00   -2.00   0.015       0           0   0.1     1     0  1  * E,F
*C1  9823170  823170  823100   0      6       0.000  10    6          2515   -0.50   -2.00   0.035    1.75        1.75     0     0     0  1  * E,F
C1  9823170  823170  823100   0      8       0.000   0.0  0.0         2515   -0.50   -2.00   0.035  9823170    0.000596    0     0     0  1  * E,F
** CSX R.R. AT BIG BEND INDUSTRIAL PARK
C1  1823180  823180  823170   0      2      50.000   5    10           80    1.26    1.92   0.015       0           0   0.1     1     0  4  * F, S#W-4
** CSX R.R. AT BIG BEND INDUSTRIAL PARK
C1  1823190  823190  823180   0      1      12.566   4    4            80    0.09    1.17   0.026       0           0   0.5     1     0  4  * F, S#W-4
C1  2823190  823190  823180   0      1      12.566   4    4            80    0.09    1.17   0.026       0           0   0.5     1     0  4  * F, S#W-4
C1  3823190  823190  823180   0      1      12.566   4    4            80    0.09    1.17   0.026       0           0   0.5     1     0  4  * F, S#W-4
** CSX R.R. AT BIG BEND INDUSTRIAL PARK
C1  1823200  823200  823190   0      1      12.566   4    4            80    0.22    1.18   0.015       0           0   0.1     1     0  4  * F, S#W-4
C1  2823200  823200  823190   0      1      12.566   4    4            80    0.22    1.18   0.015       0           0   0.1     1     0  4  * F, S#W-4
*C1  9823290  823290  823200   0      6       0.000  10    3          1160    1.40    0.22   0.035   0.875       0.875     0     0     0  1  * E,F
C1  9823290  823290  823200   0      8       0.000   0.0  0.0         1160    1.40    0.22   0.035 9823290     0.001017    0     0     0  1  * E,F
** US 41
C1  1823300  823300  823290   0      2      40.000   4    10          115    3.00    1.40   0.015       0           0   0.1     1     0  2  * FDOT
C1  9823380  823380  823300   0      8       0.000   0    0          1360    3.20    3.00   0.035 9823380 0.000247059     0     0     0  1  * S#W-6 COPY
C1  9823390  823390  823380   0      8       0.000   0    0           900    3.30    3.20   0.035 9823390 0.000211111     0     0     0  1  * S#W-6
** POWELL RD.
C1  1823400  823400  823390   0      4      21.614  4.3   6.4          95    3.60    3.30   0.026       0           0   0.5     1     0  4  * E,F
*C1  9823490  823490  823400   0      6       0.000   7    4          2000    5.00    3.60   0.035       1           1     0     0     0  1  * E,F
C1  9823490  823490  823400   0      8       0.000   0.0  0.0        2000    5.00    3.60   0.035 9823490 0.000700      0     0     0  1  * E,F
***********************************
*****  JACKSON BRANCH *************
***********************************
C1  9824000  824000   82400   0      6       0.000   5   300          500   -2.54   -2.60    0.02       3           3     0     0     0  1  * BOUNDARY
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*** BIG BEND INDUSTRIAL DRAINAGE**
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** WYANDOTTE ROAD
C1  1824080  824080  824000   0      2      56.000   7    8          175   -1.01   -2.54   0.015       0           0   0.1     1     0  1  * S#W-10
C1  2824080  824080  824000   0      2      56.000   7    8          175   -1.01   -2.54   0.015       0           0   0.1     1     0  1  * S#W-10
C1  9824085  824085  824080   0      6       0.000   7    20        2125    0.30   -1.01   0.035    1.25        1.25     0     0     0  1  * E,F
** TECO GRAVEL RD - WETLAND OUTFALL
C1  1824100  824100  824085   0      1      23.758  5.5  5.5        100    0.30    0.30   0.026       0           0   0.5     1     0  1  * E, F, S#W-9
C1  9824110  824110  824100   0      6       0.000   7    10        1800    3.40    1.00   0.035       1           1     0     0     0  1  * EM
** US 41 - 3150 FEET NORTH OF 672
C1  1824200  824200  824110   0      1       7.069   3    3          122    3.60    3.40   0.015       0           0   0.1     1     0  1  * FDOT
**********************
*** TRIB 1 TO WETLAND *
**********************
C1  9824120  824120  824100   0      6       0.000   7    10        1285    1.50    1.00   0.035       1           1     0     0     0  1  * EM
C1  9824130  824130  824120   0      6       0.000   7    10        1490    3.70    1.50   0.035       1           1     0     0     0  1  * EM
** US 41 - 1530 FEET NORTH OF CR 672
C1  1824300  824300  824130   0      1       7.069   3    3           66    3.90    3.70   0.015       0           0   0.1     1     0  4  * FDOT
**********************
*** TRIB 2 TO WETLAND *
**********************
C1  9824140  824140  824120   0      6       0.000   7    10        2615    5.00    1.50   0.035       1           1     0     0     0  1  * EM
** US 41 - 470 FEET NORTH OF CR 672
C1  1824400  824400  824140   0      1       7.069   3    3          138    5.20    5.00   0.015       0           0   0.1     1     0  1  * FDOT
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***** JACKSON BRANCH MAIN ****
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** BIG BEND/CR 672 OUTFALL @ BEACH RD.
C1  1824490  824490  824000   0      1       4.909  2.5  2.5        100    1.15    1.59   0.015       0           0   0.1     1     0  1  * S#W-11
C1  2824490  824490  824000   0      1       4.909  2.5  2.5        100    1.15    1.59   0.015       0           0   0.1     1     0  1  * S#W-11
C1  9824500  824500  824490   0      6       0.000   5    4         2550    2.00    1.15   0.035       2           2     0     0     0  1  * E,F,S#W-11
C1  9824590  824590  824500   0      6       0.000   5    4         2780    3.00    2.00   0.035       2           2     0     0     0  1  * E,F
** US 41 - 910 FEET SOUTH OF CR 672
C1  1824600  824600  824590   0      2      40.000   4    10         110    3.50    3.00   0.015       0           0   0.1     1     0  1  * E,F
C1  9824650  824650  824600   0      6       0.000   7    15        2250    5.00    3.50   0.035       1           1     0     0     0  1  * EM
**************************************
*****  NEWMAN BRANCH MAIN  ***********
**************************************
C1  9825100  825100   82510   0      6       0.000   12   200        500   -4.00   -4.00    0.02       5           5     0     0     0  1  * BOUNDARY
** DICKMAN DR.
C1  1825200  825200  825100   0      2     480.000   12   40         125   -4.00   -4.00   0.015       0           0   0.1     1     0  1  * E,F BRIDGE
*C1  9825600  825600  825200   0      8       0.000   0    0         1000   -4.00   -4.00   0.035 9825600      0.0001     0     0     0  1  * S#W-13 COPY
C1  9825610  825610  825600   0      8       0.000   0    0         2550   -3.60   -4.00   0.035 9825610 0.000256863     0     0     0  1  * S#W-13
******************************************
*****  NEWMAN BRANCH SOUTHERN OUTFALL ***
******************************************
** DICKMAN DRIVE
C1  1825650  825650  826190   0      8       0.000   0    0          475   -4.00   -4.00   0.015 1825650      0.0001     0     0     0  1  * S#W-16 BR:
LowCh=9.29, Rd=11.55
C1  9825650  825650  825600   0      8       0.000   0    0          825   -4.00   -4.00   0.035 9825650      0.0001     0     0     0  1  * S#W-13 COPY
C1  9825653  825653  825650   0      8       0.000   0    0         2050   -1.05   -4.00   0.035 9825653 0.001539024     0     0     0  1  * S#W-13 COPY
** PIERRES WAY
C1  1825655  825655  825653   0      3       5.498   2    3.5         50   -1.29   -1.05   0.026       0           0   0.5     1     0  4  * S#W-14
C1  9825615  825615  825655   0      8       0.000   0    0          650   -1.00   -1.29   0.035 9825615 0.000546154     0     0     0  1  * S#W-13 COPY
C1  9825616  825615  825610   0      8       0.000   0    0          235   -3.00   -3.60   0.035 9825616 0.002653191     0     0     0  1  * S#W-13 COPY
** changed 825615 to storage 700 ft x 70 ft 7/25/00
** ELLSBERRY RD.
C1  1825700  825700  825615   0      1       3.142   2    2          150    3.00    1.50   0.026       0           0   0.5     1     0  1  * E,F
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*****  NEWMAN BRANCH MAIN (CONT'D)****
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C1  9825620  825620  825615   0      6       0.000   12   25        1580    1.20   -3.00   0.035   0.313       0.313     0     0     0  1  * E,F
** US 41
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C1  1825630  825630  825620   0      2      96.000   8    12          121    1.20    1.20   0.015       0           0   0.1     1     0  1  * FDOT
C1  2825630  825630  825620   0      2      96.000   8    12          121    1.20    1.20   0.015       0           0   0.1     1     0  1  * FDOT
** CSX R.R.
C1  1825800  825800  825630   0      2      96.000   6    16           80    3.63    3.58   0.015       0           0   0.1     1     0  4  * FDOT
C1  2825800  825800  825630   0      2      96.000   6    16           80    3.63    3.58   0.015       0           0   0.1     1     0  4  * FDOT
C1  9825900  825900  825800   0      6       0.000   12   15          680    4.00    3.63   0.035       3           3   0       0     0  1  * EM
*****************************************
*****  NEWMAN BRANCH TECO DITCH OUTFALL**
*****************************************
** TECO SOUTH DITCH TO DICKMAN ROAD
C1  9825220  825220  825200   0      6       0.000   10   30         5910    4.00   -4.00   0.035       5           5   0       0     0  1  * E,F
C1  9825410  825410  825220   0      6       0.000   10   25          810    6.10    4.00   0.035      10          10   0       0     0  1  * EM
** US 41
C1  1825420  825420  825410   0      1       7.069   3    3           129    6.30    6.10   0.015       0           0   0.1     1     0  1  * FDOT
C1  9825430  825430  825420   0      6       0.000   10   10         1170    6.50    6.30   0.035       1           1   0       0     0  1  * EM
*****************
***** EXISTING INTERBASIN CONNECTION
C1  9825429  825429  825630   0      6       0.000   10   10         1700     8.0    3.50   0.035       2           2   0       0     0  1  * EM
** CSX R.R. UNDER POWER LINES
C1  1825500  825500  825430   0      1       4.909   2.5  2.5         125    9.41    8.82   0.015       0           0   0.1     1     0  1  * FDOT
** TECO NORTH DITCH TO DICKMAN ROAD
C1  9825230  825230  825200   0      6       0.000   16   20         5900    4.00   -4.00   0.035       4           4   0       0     0  1  * E,F
C1  1825230  825230  825220   0      1      15.904   4.5  4.5          85    4.00    4.00   0.026       0           0   0.5     1     0  4  * E,F
** US 41
C1  1825300  825300  825230   0      2      40.000   5    8           110    4.00    4.00   0.015       0           0   0.1     1     0  1  * FDOT
C1  9825390  825390  825300   0      6       0.000   16   20          845    4.00    4.00   0.035       4           4   0       0     0  1  * E,F
** CSX R.R.
C1  1825400  825400  825390   0      1       7.069   3    3           135    5.50    4.00   0.015       0           0   0.1     1     0  1  * E,F
***********************************************
**********  APOLLO BEACH **********************
***********************************************
C1  9826150  826150   82615   0      6       0.000   7    200         500   -4.00   -4.00   0.025       3           3   0       0     0  1  * BOUNDARY
C1  9826190  826190  826150   0      8       0.000   0    0          1450   -4.00   -4.00   0.035 9826190      0.0001   0       0     0  1  * S#W-17 copy
C1  9826200  826200   82620   0      6       0.000   7    200         500   -3.50   -3.50   0.025       3           3   0       0     0  1  * BOUNDARY
C1  9826245  826245  826200   0      8       0.000   0    0          7150   -3.20   -3.50   0.035 9826245 0.000141958   0       0     0  1  * S#W-17 copy
** FAIRWAY BLVD.
C1  1826250  826250  826245   0      2     216.000   12   18           60   -3.17   -3.20   0.015       0           0   0.1     1     0  4  * F ,  S#W-17
C1  9826290  826290  826250   0      8       0.000   0    0          5140    0.00   -3.17   0.035 9826290 0.000716732   0       0     0  1  * S#W-17 copy
** US 41
C1  1826295  826295  826290   0      1      15.904   4.5  4.5         180    6.00    3.00   0.026       0           0   0.5     1     0  1  * E,F
** CSX R.R.
C1  1826400  826400  826295   0      1       4.909   2.5  2.5         120    8.38    7.59   0.015       0           0   0.1     1     0  1  * FDOT
C1  2826400  826400  826295   0      1       9.621   3.5  3.5         120    8.14    7.68   0.015       0           0   0.1     1     0  1  * FDOT
***************
*** TRIB 1 ****
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** US 41 DRIVEWAY CULVERT
C1  1826300  826300  826290   0      1      38.485   7    7           80    1.00    0.00   0.026       0           0   0.5     1     0  4  * E,F
C1  9826305  826305  826300   0      6       0.000   10   6           485    1.40    1.00   0.035   1.183       1.183   0       0     0  1  * E,F
** US 41 DRIVEWAY CULVERT
C1  1826310  826310  826305   0      1      28.274   6    6           120    1.50    1.40   0.015       0           0   0.1     1     0  1  * E,F
C1  9826315  826315  826310   0      6       0.000   10   6           595    2.00    1.50   0.035       2           2   0       0     0  1  * E,F
** US 41 DRIVEWAY CULVERT
C1  1826320  826320  826315   0      1      19.635   5    5           340    2.50    2.20   0.015       0           0   0.1     1     0  1  * E,F
C1  9826325  826325  826320   0      6       0.000   10   6           260    6.00    2.50   0.035       2           2   0       0     0  1  * E,F
** CSX R.R. & US 41
C1  1826350  826350  826325   0      1       7.069   3    3           300    8.12    6.88   0.015       0           0   0.1     1     0  1  * FDOT
***********************************************
**********  WILDCAT CREEK *********************
***********************************************
C1  9826450  826450   82645   0      6       0.000   6.5  200         500   -3.50   -3.50   0.025       3           3   0       0     0  1  * BOUNDARY
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C1  9826500  826500  826450   0      8       0.000   0    0          2950   -3.50   -3.50   0.035 9826500      0.0001     0     0     0  1  * S#W-17 copy
** GOLF COURSE PATH
C1  1826550  826550  826500   0      6       0.000   10   20          195   -2.00   -3.50   0.035       6           6     0     0     0  1  * EM-Golf Cart path
not modeled
C1  9826560  826560  826500   0      8       0.000   0    0          4950   -2.53   -3.50   0.035 9826560  0.00029596     0     0     0  1  * S#W-17 COPY
** GOLF & SEA BLVD. @ MILLER MAC RD.
C1  1826570  826570  826560   0      1      28.274   6    6           100   -2.02   -2.53   0.015       0           0   0.1     1     0  1  * F, S#W-18
C1  2826570  826570  826560   0      1      28.274   6    6           100   -2.62   -1.99   0.015       0           0   0.1     1     0  1  * F, S#W-18
C1  3826570  826570  826560   0      1      28.274   6    6           100   -2.55   -2.07   0.015       0           0   0.1     1     0  1  * F, S#W-18
C1  9826600  826600  826570   0      6       0.000   9   20          1210   -1.00   -2.62   0.035   0.833       0.833     0     0     0  1  * E,F
*C1  9826640  826640  826600   0      6       0.000   8   20          4055    2.20   -1.00   0.035       1           1     0     0     0  1  * E,F
C1  9826640  826640  826600   0      8       0.000   0.0 0.0         4055    2.20   -1.00   0.035  9826640  0.000789     0     0     0  1  * E,F
** US 41
C1  1826650  826650  826640   0      2      96.000   8    12          116    2.20    2.20   0.015       0           0   0.1     1     0  1  * FDOT
C1  2826650  826650  826640   0      2      96.000   8    12          116    2.20    2.20   0.015       0           0   0.1     1     0  1  * FDOT
C1  3826650  826650  826640   0      2      96.000   8    12          116    2.20    2.20   0.015       0           0   0.1     1     0  1  * FDOT
*C1  9826665  826665  826650   0      6       0.000   10   12          715    2.64    2.20   0.035     1.5         1.5     0     0     0  1  * E,F
C1  9826665  826665  826650   0      8       0.000   0.0 0.0         715    2.64    2.20   0.035   9826665  0.000615     0     0     0  1  * E,F
****************
*** TRIB 1 *****
****************
C1  9826685  826685  826665   0      6       0.000   8    4           650    8.98    4.00   0.035     4.5         4.5     0     0     0  1  * EM
** CSX R.R AT RUSKIN VEGETABLE CORP.
C1  1826700  826700  826685   0      1       4.909  2.5  2.5          380    9.28    8.98   0.015       0           0   0.1     1     0  1  * FDOT
************************************************
**********  WILDCAT CREEK (CONT'D)*************
************************************************
** CSX R.R
C1  1826750  826750  826665   0      2     128.000   8    16           85    2.64    2.64   0.015       0           0   0.1     1     0  4  * FDOT
C1  2826750  826750  826665   0      2     128.000   8    16           85    2.64    2.64   0.015       0           0   0.1     1     0  4  * FDOT
C1  9826780  826780  826750   0      6       0.000   10   12          1460    8.03    2.64   0.035     1.5         1.5     0     0     0  1  * E,F
** SAND FIELD DRIVE
C1  1826850  826850  826780   0      1      12.566   4    4           100    8.27    8.68   0.026       0           0   0.5     1     0  1  * F, S#W-19
C1  2826850  826850  826780   0      1      12.566   4    4           100    8.31    8.03   0.026       0           0   0.5     1     0  1  * F, S#W-19
C1  9826855  826855  826850   0      6       0.000   10   8          2120   17.50    8.27   0.035   1.375       1.375     0     0     0  1  * E,F
** UNNAMED DIRT ROAD (SECTION 27)
C1  1826860  826860  826855   0      4      15.268  3.6  5.4          100   18.00   17.50   0.026       0           0   0.5     1     0  1  * E,F
C1  9826865  826865  826860   0      6       0.000   10   6          2080   29.00   18.00   0.035     0.9         0.9     0     0     0  1  * E,F
** TECO POWER LINE ACCESS ROAD
C1  1826900  826900  826865   0      1      12.566   4    4            60   29.50   29.00   0.026       0           0   0.5     1     0  4  * E,F
C1  2826900  826900  826865   0      1      12.566   4    4            60   29.50   29.00   0.026       0           0   0.5     1     0  4  * E,F
C1  9826940  826940  826900   0      6       0.000   15   6          1900   41.00   29.50   0.035      10          10     0     0     0  1  * EM
** I-75
C1  1826950  826950  826940   0      2      24.000   4    6           304   41.10   41.00   0.015       0           0   0.1     1     0  1  * FDOT
C1  2826950  826950  826940   0      2      24.000   4    6           304   41.10   41.00   0.015       0           0   0.1     1     0  1  * FDOT
****************
*** TRIB 2 *****
****************
C1  9826790  826790  826750   0      6       0.000   10   5          4810   27.50    2.64   0.035     3.2         3.2     0     0     0  1  * EM
** TECO POWER LINES ACCESS ROAD
C1  1826800  826800  826790   0      1      12.566   4    4           140   28.00   27.50   0.026       0           0   0.5     1     0  1  * assumed same as
1826900/2826900
C1  2826800  826800  826790   0      1      12.566   4    4           140   28.00   27.50   0.026       0           0   0.5     1     0  1  * assumed same as
1826900/2826900
****************
*** TRIB 3 *****
****************
C1  9826970  826970  826850   0      6       0.000   10   8          1170    8.50    8.27   0.035   1.375       1.375     0     0     0  1  * E,F
C1  9826980  826980  826970   0      6       0.000   10   6          1525   10.00    8.50   0.035    0.75        0.75     0     0     0  1  * E,F
** UNNAMED DIRT ROAD
C1  1826990  826990  826980   0      1      15.904  4.5  4.5          85   10.50   10.00   0.026       0           0   0.5     1     0  4  * E,F
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*****************************************************
***** MISCELLANEOUS SOUTHERN COASTAL BASINS *********
*****************************************************
C1  9829000  829000   82900   0      6       0.000   4    200          500   -1.00   -1.00   0.025       3           3     0     0     0  1  * BOUNDARY
C1  9829100  829100  829000   0      8       0.000   0    0            450    1.70   -1.00   0.035 9829100      0.0061     0     0     0  1  * S#W-43
C1  9829190  829190  829000   0      8       0.000   0    0           1600   -1.00   -1.00   0.035 9829190      0.0001     0     0     0  1  * S#W-40 COPY
** 19TH AVE. NW & 14TH ST. NW
C1  1829200  829200  829190   0      3       7.163  2.4   3.8          100    0.00   -1.00   0.015       0           0   0.1     1     0  1  * E,F
C1  2829200  829200  829190   0      1       3.142   2    2            100    0.00   -1.00   0.015       0           0   0.1     1     0  1  * E,F
C1  9829400  829400   82940   0      6       0.000   7    100          500   -4.00   -4.00   0.02    7.00        7.00     0     0     0  1  * BOUNDARY
C1  9829410  829410  829400   0      6       0.000   10   30          1100   -3.90   -4.00   0.025    3.75       3.75     0     0     0  1  * F, S#W-41 COPY
** 32ND ST NW & SEAGRAPE DR.
C1  1829450  829450  829410   0      2     253.000   11   23           50   -3.81   -3.90   0.015       0           0   0.1     1     0  4  * S#W-41 BR:
LowCH=6.92, Rd=9.44
C1  9829500  829500  829450   0      8       0.000   0    0           1350   -3.50   -3.81   0.035 9829500  0.00032963     0     0     0  1  * F, S#W-41
C1  9829300  829300   82930   0      6       0.000   4    200          500   -1.50   -1.50   0.025       3           3     0     0     0  1  * BOUNDARY
C1  9829501  829500  829300   0      8       0.000   0    0           1400   -1.10   -1.50   0.035 9829501 0.000385714     0     0     0  1  * S#W-40 copy
C1  9829510  829510  829500   0      6       0.000   10   20          1750   -1.00   -1.10   0.035       2           2     0     0     0  1  * EM
** SHELL POINT ROAD @ CEDAR DRIVE
C1  1829600  829600  829510   0      1       4.909  2.5   2.5           65   -0.50   -1.00   0.015       0           0   0.1     1     0  4  * E,F
*===================================
*  IRREGULAR CHANNEL CROSS-SECTIONS
*===================================
**NC    XNL     XNR     XNCH
**X1    SECNO   NUMSTA  STCHL   STCHR   XLOBL   XLOBR   LEN     PXSECR  PSXECE
**GR    EL1     STA1    EL2     STA2    EL3     STA3    EL4     STA4    EL5     STA5
***
* DUG CREEK
***           SURVEY W-1  F.P. ADDED (SWFWMD MAPS)
NC          0.10    0.10    0.025
X1    9821100     11      0      82       0       0    144     0       0
GR     5.8  -200      5       0     4.7      11     1.6      20     0.8      28
GR     -1.1      47       0.4      51     1.9      69       5      74     5.1      82
GR     5.8       1600
***           SURVEY W-1  F.P. ADDED (SWFWMD MAPS)
NC          0.10    0.10    0.03
X1    9821190     11      0      82       0       0   1615     0       0
GR     7.0  -800      5       0     4.7      11     1.6      20     0.8      28
GR     -4.5      47       0.4      51     1.9      69       5      74     5.1      82
GR     6.5     1500
***           SURVEY W-2  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.035
X1    9821290    8         0      49       0       0    1890       0       0
GR    12.5  -400    10.7       0    10.4      10     0.87     20     1.2      29
GR    6.4   39       7.1      49    12.5      750
****
* KITCHEN BRANCH
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW
NC          0.16    0.16    0.04
X1    9822110     8        0      70     0       0     785       0       0
GR     5.0  -480   3.0  -130   1.0    0    -1.1   20    -1.1   50
GR     1.0   70    3.0    100     5.0   420
***           SURVEY W-3  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.04
X1    9822290     9        0     112       0       0    1460    0       0
GR     10  -500      3.1   0      3.4    33     0.8      41    -0.65     56
GR     1     74      5.5   85     5.1    112     10     820
****
* SIMS BRANCH
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW 7/20/00
NC          0.16    0.16    0.04
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X1    9823170     11       0      21.6   0       0     2515       0       0
GR    7.0   -25.0    6.0   -20     5.0    -10     4.0        0     -0.5    7.8
GR    -0.5    13.8   4.0    21.6   5.0    31.6    5.0     622    6.0    662
GR    7.0    665
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW 7/20/00
NC          0.16    0.16    0.04
X1    9823290     13       0      10.0   0       0     1160       0       0
GR    8.0   -250     7.0   -220    6.5    -200    6.5     -100    6.0    -10.0
GR    5.5     0.0    1.4    3.5    1.4     6.5    5.5     10.0   6.0    20.0
GR    7.0    90      7.0    160    8.0    170.0
***             SURVEY W-6  COPY  Rt.Bank ADJUSTED & F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.04
X1    9823380     10       0      81     0       0     1360       0       0
GR    9.0   -1100    8.9     0     8.7     41     4.6      50     3.2      58
GR    3.6      66    8.7    69     8.8     76     8.9      81     9.1   681
***             SURVEY W-6  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.04
X1    9823390     10       0     81       0       0    900    0       0
GR    9.8   -1200    8.9     0     8.7     41     4.6      50     3.3      58
GR    3.6      66    8.7      69   9.9     76     10      81      10.1   1481
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW 7/20/00
NC          0.16    0.16    0.04
X1    9823490      11      0      10.0   0       0     2000       0       0
GR    12.5   -20     10.5  -15.0   10.0  -10      8.0     0      5.0       3
GR     5.0     7     8.0    10.0    9.0    20.0   10     210     10.5    610
GR    12.5   620
***
* NEWMAN BRANCH
***             SURVEY W-13 COPY  R.B. ADJUSTED & F.P. ADDED (SWFWMD MAPS)
******* obstructed by earthen berm at elev 4.8!!!
*NC          0.16    0.16    0.025
*X1    9825600     8          0     131       0    0     1000     0       0
*GR    7.5  -100   4.19     0    -1.8     1    -4.0      51     1.6     101
*GR    5.0   106    5.1     131       5.2     631
***             SURVEY W-13  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9825610     8          0     131       0    0   2550     0       0
GR    7.5  -300   4.19     0    -1.8     1    -3.6      51     1.6     101
GR    5.8   106    5.7     131       5.9     431
***             SURVEY W-16 BRIDGE  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    1825650     9       0     160       0    0    475     0       0
GR    7.7  -450   7.66       0    6.56      25   -1.24    33.6   -4.0    61
GR    0.84  106   6.66     112    6.76     160       6.8  360
***             SURVEY W-13  COPY  R.B. ADJUSTED & F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9825650     8          0     131       0    0     825     0       0
GR    10.0 -500   4.19     0    -1.8     1    -4.0      51     1.6     101
GR    5.8   106    5.7     131       7.0     731
***             SURVEY W-13  COPY (+2.55') F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9825653     8          0     131       0    0    2050     0       0
GR    7.0  -450   4.19     0    0.75     1    -1.05     51     4.15    101
GR    5.8   106    5.7     131       7.0     331
***             SURVEY W-13  COPY (+2.55') F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9825615     8          0     131       0     0    650     0       0
GR    7.0  -450   4.19     0    0.75     1    -1.00     51     4.15    101
GR    5.8   106    5.7     131       7.0     331
***             SURVEY W-13  COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
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X1    9825616     8          0     131       0     0     235      0       0
GR    7.5  -300   4.19     0    -1.8     1    -3.0      51     1.6     101
GR    5.8   106    5.7     131       5.9     431
****           SURVEY W-13  COPY (+2' TO 5.1') F.P. ADDED (SWFWMD MAPS)
*NC          0.16    0.16    0.025
*X1    9825640     8          0     131       0     0    310     0       0
*GR    9.4  -300   9.29     0    3.3      1    1.5     51     6.7     101
*GR    7.8   106    7.7     131       8.2     431
***
* APOLLO BEACH/WILDCAT CREEK
***
***           SURVEY W-17  COPY  R.B. ADJUSTED & F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9826190     10         0     191       0       0    1450       0       0
GR    6  -450    5.0   -350    4.1       0   -1.07       2   -4.00      83
GR    1.33 164    4.81 166      4.63  191     5.0      300      5.5    350
***           SURVEY W-17  COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9826245     8         0     191       0       0    7150       0       0
GR    7.0   -400    4.1       0   -1.07       2   -3.20      83    1.33     164
GR    6.81     166      6.63     191        7.0     400
***           SURVEY W-17  COPY  (+3')R.B. ADJUSTED & F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9826290     8         0     191       0       0    5140       0       0
GR    8.0   -100    7.1    0      2.07       2   0.0      83    4.33     164
GR    6.81     166      7.63     191        8.0     300
***           SURVEY W-17  COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9826500     8         0     191       0       0    2950        0       0
GR    7.0   -100    4.1       0   -1.07       2   -3.50      83    1.33     164
GR    6.81     166      6.63     191        7.0     300
***           SURVEY W-17  COPY (+0.5')R.B. ADJUSTED & F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9826560     8         0     191       0       0    4950        0       0
GR    7.0   -100    4.6       0   -0.57       2   -2.53      83    1.83     164
GR    6.81     166      6.83     191        7.0     300
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW 7/20/00
NC          0.16    0.16    0.04
X1    9826640      9      0      30     0       0     4055       0       0
GR    11    -310    9.5   -300     7.2   0     2.2    5.0     2.2      25
GR    7.2    30     9.0   280     10.0   430    11    450
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW 7/20/00
NC          0.16    0.16    0.04
X1    9826665     12       0      30     0       0     715        0       0
GR    12.0 -510     10.0  -500     9.0   -100    9.0    -20     8.64      0
GR    2.64    9     2.64    21    8.64    30     8.0    80      9.0     130
GR    10.0   230    12     250
***
* COASTAL BASINS
***
***           SURVEY W-43  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.03
X1   9829100     9         0      62       0       0   450       0       0
GR   6.7    -200    3.5       0     3.7      25     2.1      27     1.7      31
GR   2.5    36     2.6      37      3.1      62      6.7    762
***           SURVEY W-40 COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.03
X1  9829190     9         0      80       0       0    1600      0       0
GR    5    -150     1.56     0    1.36      10    0.16      16   -1.00      30
GR    -0.34   44      5.96    55     5.96      80       6    230
***           SURVEY W-41 COPY  F.P. ADDED (SWFWMD MAPS)
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NC          0.16    0.16    0.03
X1  9829500     7       0      75       0       0   1350       0       0
GR      7.59       0    6.45    26.4   -0.41    26.5   -3.50      41   -0.21      57
GR      6.99      64    7.59      75
***           SURVEY W-40 COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.03
X1  9829501     9         0      80       0       0    1400      0       0
GR    6    -100     1.56     0    1.36      10    0.16      16   -1.10      30
GR    -0.34   44      5.96    55     5.96      80       5    2000
*==============================
** Junction Data     TW=2
*==============================
*  (INPUT) (opt. 200)       (INPUT)HBC Model
*    JUN    GRELEV    Z     QINST    Y0             TOB   Yo or Rd Top
**  DUG CREEK
D1    82100      5      -2   0      2       *    3.5     BOUNDARY
D1   821000      7      -2   0      2       *    5
D1   821100      15    -1.1   0      2       *    5
D1   821190    17.6    -4.5   0      2       *    7.6
D1   821200    17.7    -4.5   0      2       *    7.7     7.5
D1   821290      20    0.87   0      2       *    10
D1   821300      20    0.87   0      2       *    10      10.6
D1   821390      25       8   0      8       *    15
D1   821400      25       9   0      9       *    15      14.9
D1   821490      36      19   0      19      *    26
D1   821500      37    20.5   0     20.5     *    27      26.2
** KITCHEN BRANCH
D1    82200       5    -2.5   0      2       *    3.5     BOUNDARY
D1   822000       7    -2.1   0      2       *    4
D1   822050      10     0.5   0      2       *    5       4.5
D1   822100      15    -2.1   0      2       *    5       6.5
D1   822110      15    -1.1   0      2       *    5
D1   822150      15      -2   0      2       *    5
D1   822190      15      -2   0      2       *    5
D1   822200      15      -1   0      2       *    5       6.5
D1   822250      16    -1.1   0      2       *    6       6.08
D1   822290      15   -0.65   0      2       *    5
D1   822300      16   -0.65   0      2       *    6       12
D1   822350      17       0   0      2       *    7
D1   822390      20       1   0      2       *    10
D1   822400      20     1.5   0      2       *    10      12.5
D1   822410      20     2.8   0     2.8      *    10
D1   822420      20       3   0      3       *    10      12.5
D1   822490      20       4   0      4       *    10
D1   822500      20       5   0      5       *    10      15.4
** SIMS BRANCH
D1    82300       5    -2.5   0      2       *    3.5     BOUNDARY
D1   823000       7      -2   0      2       *    6
D1   823100      17      -2   0      2       *    7       6.5
D1   823170      17    -0.5   0      2       *    7
D1   823180      17    1.17   0      2       *    7       6
D1   823190      16    0.09   0      2       *    6       6
D1   823200      16    0.22   0      2       *    6       6
D1   823290      19     1.4   0      2       *    9
D1   823300      19       3   0      3       *    9       9
D1   823380      18     3.2   0     3.2      *    8
D1   823390      20     3.3   0     3.3      *    10
D1   823400      20     3.6   0     3.6      *    10      9.8
D1   823490    20.5       5   0      5       *    10.5
** JACKSON BRANCH
D1    82400       5    -2.6   0      2       *    3.5     BOUNDARY
```

```
D1   824000       7   -2.54   0      2       *    7
D1   824080    16.5   -1.01   0      2       *    6.5      6.5
D1   824085      16     0.3   0      2       *    6
D1   824100      16     0.3   0      2       *    6        Yo=3, 5.5
D1   824110    16.5     3.4   0    3.4       *    6.5
D1   824120      16     1.5   0      2       *    6
D1   824130      18     3.7   0    3.7       *    8
D1   824140      18       5   0      5       *    8
D1   824200      17     3.6   0    3.6       *    7        9.3
D1   824300      18     3.9   0    3.9       *    8        10
D1   824400      21     5.2   0    5.2       *    11       11
D1   824490    17.5    1.15   0      2       *    7.5      7.5
D1   824500      16       2   0      2       *    6
D1   824590      18       3   0      3       *    8
D1   824600      20     3.5   0    3.5       *    10       12.5
D1   824650      20       5   0      5       *    10       Yo=8
** NEWMAN BRANCH
D1   82510        9      -4   0      2       *    BOUNDARY
D1   825100       9      -4   0      2       *    4
D1   825200      15      -4   0      2       *    5        5
D1   825220      20       4   0      4       *    10
D1   825230      20       4   0      4       *    10
D1   825300      22       4   0      4       *    12       12
D1   825390      20       4   0      4       *    10
D1   825400      22     5.5   0    5.5       *    12       15
D1   825410      22     6.1   0    6.1       *    12
D1   825420      22     6.3   0    6.3       *    12       12.8
D1   825429    22.5     8.0   0    8.0       *    12.4
D1   825430    22.5     6.5   0    6.5       *    12.5
D1   825500      23    9.41   0   9.41       *    13       13
D1   825600      11      -4   0      2       *    7
D1   825610      11    -3.6   0      2       *    7
D1   825615      11      -3   0      2       *    7
D1   825620      15     1.2   0      2       *    9
D1   825630      23     1.2   0      2       *    13       13.5
*D1   825640      17     1.5   0      2       *    7
D1   825650      11      -4   0      2       *    5
D1   825653      11   -1.05   0      2       *    6
D1   825655      11   -1.29   0      2       *    6
D1   825700      19       3   0      3       *    9        9.2
D1   825800      23    3.63   0   3.63       *    13       13.5
D1   825900      20       4   0      4       *    10
** APOLLO BEACH/WILDCAT CREEK
D1    82615       5      -4   0      2       *    3.5      BOUNDARY
D1    82620       5    -3.5   0      2       *    3.5      BOUNDARY
D1    82645       5    -3.5   0      2       *    3.5      BOUNDARY
D1   826150       9      -4   0      2       *    8
D1   826190    14.5      -4   0      2       *    4.5
D1   826200       9    -3.5   0      2       *    6
D1   826245      16    -3.2   0      2       *    6
D1   826250      16   -3.17   0      2       *    6        10
D1   826290      20       0   0      2       *    10
D1   826295      23       6   0      6       *    13       14
D1   826300      22       1   0      2       *    12       10
D1   826305      20     1.4   0      2       *    10
D1   826310      20     1.5   0      2       *    10       10
D1   826315      20       2   0      2       *    10
D1   826320      20     2.5   0    2.5       *    10       10.2
D1   826325      20       6   0      6       *    10
D1   826350    21.5    8.12   0   8.12       *    11.5     13
D1   826400      22    8.14   0   8.14       *    12       14
```

```
D1   826450       9    -3.5   0      2       *    7
D1   826500      15    -3.5   0      2       *    5       6
D1   826550      14      -2   0      2       *    4       4
D1   826560      14   -2.53   0      2       *    4
D1   826570      16   -2.62   0      2       *    6       5
D1   826600      15      -1   0      2       *    5
D1   826640      18     2.2   0    2.2       *    8
D1   826650      21     2.2   0    2.2       *    11      11
D1   826665      19    2.64   0   2.64       *    9
D1   826685      22    8.98   0   8.98       *    12
D1   826700      25    9.28   0   9.28       *    15      14
D1   826750      22    2.64   0   2.64       *    12      12
D1   826780      20    8.03   0   8.03       *    10
D1   826790      45    27.5   0   27.5       *    35
D1   826800      44      28   0     28       *    34      34
D1   826850      24    8.27   0   8.27       *    14      14.7
D1   826855      34    17.5   0   17.5       *    24
D1   826860      34      18   0     18       *    24      24
D1   826865      46      29   0     29       *    36
D1   826900      46    29.5   0   29.5       *    36      36
D1   826940      57      41   0     41       *    47
D1   826950      57    41.1   0   41.1       *    47
D1   826970      25     8.5   0    8.5       *    15      15
D1   826980      28      10   0     10       *    18
D1   826990      28    10.5   0   10.5       *    18      18.5
** COASTAL BASINS
D1    82900       5      -1   0      2       *    3.5     BOUNDARY
D1    82930       5    -1.5   0      2       *    3.5     BOUNDARY
D1    82940       5      -4   0      2       *    3.5     BOUNDARY
D1   829000       7      -1   0      2       *    1
D1   829100      12     1.7   0      2       *    2       2
D1   829190      14      -1   0      2       *    4
D1   829200      15       0   0      2       *    5       5
D1   829300       7    -1.5   0      2       *    5
D1   829400       7      -4   0      2       *    1.5
D1   829410    11.5    -3.9   0      2       *    1.5
D1   829450      14   -3.81   0      2       *    4       BR: LC=6.92, RD=9.44
D1   829500      13    -3.5   0      2       *    3
D1   829510      14      -1   0      2       *    4
D1   829600      15    -0.5   0      2       *    5       5
*===================================
* STORAGE NODES - ROAD OVERTOPPING
* (allows non-overlapping pipe connect.s & weirs)
*===================================
** DUG CREEK
E1 821190  18   5000  0
E1 821200  18   -1    4
E2 0.007   -4.5
    2.0     5.0
    21      7.0
    21     17.0
E1 821290  20   5000    0
E1 821390  25   5000    0
E1 821400  25   -1    3
E2  0.005   9.0
    26.5    14.5
    26.5    24.5
E1 821490  36   5000    0
E1 821500  37   5000    0
** KITCHEN BRANCH
E1 822050  15   5000    0
```

```
E1 822000  15   100000  0
E1 822200  15   5000    0
E1 822190  15   5000    0
E1 822250  16   5000    0
E1 822110  15   5000    0
E1 822290  15   5000    0
E1 822400  22   -1   3
E2  0.005   1.5
    17.0    12.0
    17.0    22.0
E1 822390  20   5000    0
E1 822420  22   -1   3
E2  0.005   3.0
    24.0    12.0
    24.0    22.0
E1 822410  20   5000    0
E1 822500  25   -1   3
E2  0.005   5.0
    30.0    14.9
    17.0    24.9
E1 822490  20   5000    0
** SIMS BRANCH
E1 823000  17   5000    0
E1 823100  17   5000    0
E1 823170  17   5000    0
E1 823180  17   -1   3
E2  0.005  1.17
    5.0    5.50
    5.0    15.5
E1 823190  17   -1   3
E2  0.005  0.09
    2.0    5.50
    2.0    15.5
E1 823200  17   5000    0
** storage accounted for in type 8 floodplain
*E1 823200  17   -1   3
*E2  0.005  0.22
*    5.5    5.50
*    5.5    15.5
E1 823290  20   5000    0
E1 823300  20   -1   3
E2  0.005   3.0
    30     8.50
    30     18.5
E1 823380  20   5000    0
E1 823390  20   5000    0
E1 823400  20   5000    0
** storage accounted for in type 8 floodplain
*E1 823400  20   -1   3
*E2  0.005   3.6
*    3.0     9.3
*    3.0     19.3
E1 823490  20   5000    0
** JACKSON BRANCH
E1 824000  16   5000    0
E1 824085  16   5000    0
E1 824080  16   -1   3
E2  0.005  -1.01
    8.0     5.0
    8.0     15.0
E1 824110  16   5000    0
```

```
E1 824130  18   5000    0
E1 824140  18   5000    0
E1 824200  19   -1   3
E2  0.005   3.6
    52.0    8.8
    52.0    18.8
E1 824300  20   -1   3
E2  0.005   3.9
    24.0    9.5
    24.0    19.5
E1 824400  21   5000    0
E1 824490  18   5000    0
E1 824590  18   5000    0
E1 824600  22    -1   3
E2  0.005   3.5
    83.0    12.0
    83.0    22.0
** NEWMAN BRANCH
E1 825100  20   1000000 0
E1 825230  20   5000    0
E1 825300  22    -1   3
E2  0.005   4.0
     3.0    11.5
     3.0    21.5
E1 825390  20   5000    0
E1 825400  25    -1   3
E2  0.005   5.5
    27.0    14.5
    27.0    24.5
E1 825410  20   5000    0
E1 825420  20   5000    0
E1 825429  20   5000    0
E1 825430  20   5000    0
E1 825500  23    -1   4
E2  0.005   9.41
    3.2     10.0
    18.0    13.0
    18.0    23.0
E1 825620  15   5000    0
E1 825630  23    -1   3
E2  0.005   1.2
    2.0    13.0
    2.0    23.0
E1 825653  11   5000    0
E1 825655  11   5000    0
E1 825615  11   52500   0
E1 825700  20    -1   3
E2  0.005   3.0
    21.0    8.7
    21.0    18.7
E1 825800  23    -1   4
E2  0.005   3.63
    6.5     10.0
    21.0    13.0
    21.0    23.0
** APOLLO BEACH/WILDCAT CREEK
E1 826245  21   5000    0
E1 826250  21   5000    0
E1 826290  22   5000    0
E1 826300  22    -1   3
E2  0.005   1.0
```

```
    1.10    9.5
    1.10    19.5
E1 826305  20   5000    0
E1 826310  20   5000    0
E1 826315  20   5000    0
E1 826320  20   5000    0
E1 826325  21.5 5000    0
E1 826350  22.5   -1    3
E2  0.005   8.12
    29.0   12.5
    29.0   22.5
E1 826295  22.0 5000    0
E1 826400  24.0   -1    3
E2  0.005   8.14
    23.0   13.5
    23.0   23.5
E1 826450  15.0 5000    0
E1 826500  16.0   -1    3
E2  0.005   -3.5
    37.0    5.5
    37.0   15.5
E1 826550  14.0   -1    3
E2  0.005   -2.0
    39.0    3.5
    39.0   13.5
E1 826560  16   5000    0
E1 826570  16     -1    3
E2  0.005   -2.62
    0.21    4.5
    0.21   14.5
E1 826640  21   5000    0
E1 826665  22     -1    4
E2  0.005  2.64
    0.55   7.9
    2.5    8.0
    2.5   18.0
E1 826685  25 5000    0
E1 826700  25   -1    3
E2  0.005  9.28
    20.0   13.5
    20.0   23.5
E1 826650  21.0 5000    0
E1 826750  22.0   -1    3
E2  0.005  2.64
    16.4   11.5
    16.4   21.5
E1 826790  44 5000    0
E1 826800  44   -1    3
E2  0.005  28.0
    0.23   33.5
    0.23   43.5
E1 826780  24   5000    0
E1 826850  24.2   -1    3
E2  0.005  8.27
    5.2    14.2
    5.2    24.2
E1 826855  34   5000    0
E1 826860  34   5000    0
E1 826865  46   5000    0
E1 826900  46   5000    0
E1 826970  25     -1    3
```

```
E2  0.005  8.5
    13.7   14.5
    13.7   24.5
E1 826980  28   5000    0
E1 826990  28     -1    3
E2  0.005  10.5
     5.2   18.0
     5.2   28.0
** COASTAL BASINS
E1 829000  12   5000    0
E1 829190  15   5000    0
E1 829200  15     -1    3
E2  0.005  0.0
    33.0    4.5
    33.0   14.5
E1 829510  15   5000    0
E1 829600  15     -1    3
E2  0.005  -0.5
    21.0    4.5
    21.0   14.5
*========================================
* STORAGE DATA (SIGNIFICANT LAKES/WETLANDS)
*========================================
** DUG CREEK
E1 821300 20  -1 4
E2  0.005   0.87
    2.5     5.0
    49.0    10.0
    49.0    20.0
** KITCHEN BRANCH
E1 822100  15   1000000  0
E1 822150  15    313000  0
E1 822300  17    -1   5
E2  0.005   -0.65
    0.5     5.0
    28.0    10.0
    119.0   12.0
    119.0   17.0
** JACKSON BRANCH
E1 824100  17    -1   6
E2  0.005  0.30
    0.005   2.9
    10.5    3.0
    40      5.0
    78      6.0
   100     11.0
E1 824650  20    -1   6
E2  0.005   5.0
    0.005   7.9
    0.75    8.0
    3.0     10.0
    8.8     11.5
    50      16.5
** NEWMAN BRANCH
E1 825200  15    -1   3
E2  0.005   -4.0
    20.0     4.5
    50.0    14.0
** COASTAL BASINS
E1 829100  15  1129250  0
E1 829500  15  3681250  0
```

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*======================
** Weir Data
*======================
* ==============================
*  FLOOD FLOW OVERTOP ROAD PATHS
* ==============================
*        IDWEIR   NJUNC(1) NJUNC(2)  KWEIR   EL.CREST  EL.TOP   WLEN    COEFF
** DUG CREEK
G1      7821200   821200    821190       1      7.50    17.7     100    2.63
G1      7821300   821300    821290       1     10.60      20     100    2.63
G1      7821400   821400    821390       1     14.90      25     100    2.63
G1      7821500   821500    821490       1     26.20      37     100    2.63
** KITCHEN BRANCH
G1      7822050   822050    822000       1      4.50      15     100    2.63
G1      7822100   822100    822000       1      6.50      15     400    2.63
G1      7822200   822200    822190       1      6.50      15     100    2.63
G1      7822250   822250    822110       1      6.08      16     100    2.63
G1      7822300   822300    822290       1     12.00      16     100    2.63
G1      7822400   822400    822390       1     12.50      20     100    2.63
G1      7822420   822420    822410       1     12.50      20     100    2.63
G1      7822500   822500    822490       1     15.40      20     100    2.63
** SIMS BRANCH
G1      7823100   823100    823000       1      6.50      17     100    2.63
G1      7823180   823180    823170       1      6.00      17     100    2.63
G1      7823190   823190    823180       1      6.00      16     100    2.63
G1      7823200   823200    823190       1      6.00      16     100    2.63
G1      7823300   823300    823290       1      9.00      19     100    2.63
G1      7823400   823400    823390       1      9.80      20     100    2.63
** JACKSON BRANCH
G1      7824080   824080    824000       1      6.50    16.5     100    2.63
G1      7824100   824100    824085       1      5.50      16     100    2.63
G1      7824200   824200    824110       1      9.30      17     100    2.63
G1      7824300   824300    824130       1     10.00      18     100    2.63
G1      7824400   824400    824140       1     11.00      21     100    2.63
G1      7824490   824490    824000       1      7.50    17.5     100    2.63
G1      7824600   824600    824590       1     12.50      20     100    2.63
** NEWMAN BRANCH
G1      7825200   825200    825100       1     10.00      15     100    2.63
G1      7825300   825300    825230       1     12.00      22     100    2.63
G1      7825400   825400    825390       1     15.00      22     100    2.63
G1      7825420   825420    825410       1     12.80      22     100    2.63
********* INTERBASIN TRANSFER TO FDOT DITCH  7/10/00
G1      6825430   825430    825429       1     12.40      22      20    2.63
***********
G1      7825500   825500    825430       1     13.00      23     100    2.63
***** 7/25 MODIFICATION earthen berm obstructs flow
G1      6825600   825600    825200       1      4.80      10     100    2.63
**********************
G1      7825630   825630    825620       1     13.50      17     100    2.63
G1      7825655   825655    825653       1      6.80      11     100    2.63
G1      7825700   825700    825615       1      9.20      19     100    2.63
G1      7825800   825800    825630       1     13.50      23     100    2.63
** APOLLO BEACH/WILDCAT CREEK
G1      7826250   826250    826245       1     10.00      16     100    2.63
G1      7826295   826295    826290       1     14.00      23     100    2.63
G1      7826300   826300    826290       1     10.00      22      50    2.63
G1      7826310   826310    826305       1     10.00      20      50    2.63
G1      7826320   826320    826315       1     10.20      20      50    2.63
G1      7826350   826350    826325       1     13.00    21.5     100    2.63
G1      7826400   826400    826295       1     14.00      22     100    2.63
G1      7826500   826500    826450       1      6.00      15     100    2.63
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G1      7826550   826550    826500       1      4.00      14     100    2.63
G1      7826570   826570    826560       1      5.00      16     100    2.63
G1      7826650   826650    826640       1     11.00      21     100    2.63
G1      7826700   826700    826685       1     14.00      25     100    2.63
G1      7826750   826750    826665       1     12.00      22     100    2.63
G1      7826800   826800    826790       1     34.00      44     100    2.63
G1      7826850   826850    826780       1     14.70      24     100    2.63
G1      7826860   826860    826855       1     24.00      34     100    2.63
G1      7826900   826900    826865       1     36.00      46     100    2.63
G1      7826990   826990    826980       1     18.50      28     100    2.63
** COASTAL BASINS
G1      7829100   829100    829000       1      2.00      12     100    2.63
G1      7829200   829200    829190       1      5.00      15     100    2.63
G1      7829600   829600    829510       1      5.00      15     100    2.63
********* Outfall Data ************************************************************
* Tidal (CONSTANT)
*
I1    82100  1
I1    82200  1
I1    82300  1
I1    82400  1
I1    82510  1
I1    82615  1
I1    82620  1
I1    82645  1
I1    82900  1
I1    82930  1
I1    82940  1
J1  2
J2  2.0
$ENDPROGRAM
```

```
* ========================================================================
*                     BULLFROG CREEK/WOLF BRANCH                                  WB-25.WPX
* ========================================================================
*
ID                 WOLF BRANCH 25-YEAR STORM
ID        Dames & Moore for Hillsborough County BOCC--Dept of Stormwater Management
*
*
*   This is a standard HEC-1 file.  RDHEC copies the ID, *, IT, IO, JR,
*       PG, IN, PC, and PR records from this file.  It ignores other records.
*
*FREE
*DIAGRAM
*     -----------------------
*      25-YEAR 24 HOUR STORM
*     -----------------------
*
*   NMIN  DATE     ITIME      NQ  NDDATE   NDTIME
IT    15 26SEP97    0000     250 27SEP97    0000
*
*NOLIST
*   IPRT    IPLT
*   0,1,2         All
*       3         Input Data and Intermediate and Master Summaries
*       4         Input Data and Master Summary
*       5         Job specification and Master Summary Only
*
*            0,1  No Printer Plots--Can be overriden on KO record
*              2  Plot All
*
IO     3       0
*
* ####################################################
JR  PREC    8.0
* ####################################################
*    SCS 24-HR, TYPE II FLORIDA-MODIFIED DISTRIBUTION (30-MIN INCREMENTS)
*    SOURCE: SWFWMD ERP INFORMATION MANUAL TABLE C-1
* GAGE     UDEPTH
PGSCSFLM    1.0
*
*  TSTEP IDATE      ITIME
IN    30 26SEP97       0
PC  .000    .006    .012    .019    .025    .032    .039    .047    .054    .062
PC  .071    .080    .089    .099    .110    .122    .134    .148    .164    .181
PC  .201    .226    .258    .308    .607    .719    .757    .785    .807    .826
PC  .842    .857    .870    .882    .893    .904    .913    .923    .931    .940
PC  .948    .955    .962    .969    .976    .983    .989    .995   1.000   1.000
*
* ========================================================================
*    SCS 24-HR, TYPE II FLORIDA-MODIFIED DISTRIBUTION
PRSCSFLM
* ========================================================================
ZZ
*                                          AMC II
*        BASINID  NJUNC    TC       ACRE     CN       IACOEFF  K        KPRINT
WP       821000   821000   105      214.86   95       0.2      256      0
WP       821100   821100   176      72.13    90       0.2      256      0
WP       821200   821200   168      120.9    84       0.2      256      0
WP       821300   821300   170      189.1    81       0.2      256      0
WP       821400   821400   268      352.13   82       0.2      256      0
WP       821500   821500   173      110.84   81       0.2      256      0
```

WP	822000	822000	127	235.71	82	0.2	256	0
WP	822050	822050	233	97.92	79	0.2	256	0
WP	822100	822100	190	42.06	90	0.2	256	0
WP	822150	822150	338	107.69	80	0.2	256	0
WP	822200	822200	263	77.31	77	0.2	256	0
WP	822250	822250	110	64.71	80	0.2	256	0
WP	822300	822300	349	487	84	0.2	256	0
WP	822350	822350	84	347.15	83	0.2	256	0
WP	822400	822400	238	565.29	84	0.2	256	0
WP	822500	822500	237	386.38	81	0.2	256	0
WP	823000	823000	96	215.07	88	0.2	256	0
WP	823100	823100	377	167.38	84	0.2	256	0
WP	823200	823200	143	26.86	92	0.2	256	0
WP	823300	823300	143	49.07	84	0.2	256	0
WP	823400	823400	163	179.51	81	0.2	256	0
WP	824650	824650	77	8.84	83	0.2	256	0
WP	824000	824000	63	439.81	93	0.2	256	0
WP	824080	824080	265	438.49	86	0.2	256	0
WP	824200	824200	154	58.21	83	0.2	256	0
WP	824300	824300	126	38.92	83	0.2	256	0
WP	824400	824400	131	19.1	82	0.2	256	0
WP	824500	824500	343	88.29	86	0.2	256	0
WP	824600	824600	186	82.87	82	0.2	256	0
WP	825000	825000	1	221.84	99	0.2	256	0
WP	825050	825050	52	44.19	94	0.2	256	0
WP	825100	825100	227	296.6	92	0.2	256	0
WP	825200	825200	428	475.42	86	0.2	256	0
WP	825300	825300	98	23.17	90	0.2	256	0
WP	825400	825400	189	263.51	81	0.2	256	0
WP	825500	825500	188	152.33	83	0.2	256	0
WP	825600	825600	87	210.83	87	0.2	256	0
WP	825700	825700	143	52.88	88	0.2	256	0
WP	825800	825800	321	252.66	83	0.2	256	0
WP	825900	825900	147	55.42	83	0.2	256	0
WP	826000	826000	51	111.8	76	0.2	256	0
WP	826050	826050	61	100.8	91	0.2	256	0
WP	826100	826100	56	218.02	84	0.2	256	0
WP	826150	826150	63	272.26	94	0.2	256	0
WP	826200	826200	19	370.65	93	0.2	256	0
WP	826250	826250	165	296.12	88	0.2	256	0
WP	826300	826300	155	13.16	91	0.2	256	0
WP	826350	826350	31	60.75	82	0.2	256	0
WP	826400	826400	358	559.84	80	0.2	256	0
WP	826450	826450	16	276.05	89	0.2	256	0
WP	826500	826500	17	89.04	89	0.2	256	0
WP	826550	826550	39	173.15	82	0.2	256	0
WP	826600	826600	195	216.14	87	0.2	256	0
WP	826650	826650	189	37.3	95	0.2	256	0
WP	826700	826700	275	140.75	80	0.2	256	0
WP	826750	826750	253	198.16	82	0.2	256	0
WP	826800	826800	217	157.27	83	0.2	256	0
WP	826850	826850	96	111.13	82	0.2	256	0
WP	826900	826900	180	125.24	86	0.2	256	0
WP	826950	826950	296	361.32	84	0.2	256	0
WP	826970	826970	194	57.1	80	0.2	256	0
WP	826990	826990	282	295.16	83	0.2	256	0
WP	827000	827000	65	306.51	98	0.2	256	0
WP	827100	827100	37	190.21	84	0.2	256	0
WP	827150	827150	187	287.47	84	0.2	256	0
WP	827200	827200	109	101.22	87	0.2	256	0
WP	827250	827250	255	220.92	83	0.2	256	0

WP	827300	827300	312	107.04	85	0.2	256	0
WP	827350	827350	205	115.19	85	0.2	256	0
WP	827400	827400	104	208.79	86	0.2	256	0
WP	827450	827450	78	104.1	86	0.2	256	0
WP	827500	827500	145	309.99	83	0.2	256	0
WP	827550	827550	228	97.17	83	0.2	256	0
WP	827600	827600	79	112.76	83	0.2	256	0
WP	827650	827650	274	165.14	83	0.2	256	0
WP	827700	827700	137	89.33	82	0.2	256	0
WP	827750	827750	179	84.22	82	0.2	256	0
WP	827800	827800	103	138.01	85	0.2	256	0
WP	827850	827850	127	178.05	83	0.2	256	0
WP	827890	827890	116	239.72	87	0.2	256	0
WP	828000	828000	38	255.18	86	0.2	256	0
WP	828050	828050	133	38.83	85	0.2	256	0
WP	828100	828100	171	239.83	87	0.2	256	0
WP	828150	828150	183	169.74	85	0.2	256	0
WP	828200	828200	228	109.78	86	0.2	256	0
WP	828250	828250	133	133.56	81	0.2	256	0
WP	828300	828300	299	260.67	82	0.2	256	0
WP	828350	828350	196	294.38	81	0.2	256	0
WP	828400	828400	230	52.12	86	0.2	256	0
WP	828450	828450	92	39.85	88	0.2	256	0
WP	828500	828500	188	283.47	89	0.2	256	0
WP	828550	828550	132	92.73	84	0.2	256	0
WP	829000	829000	90	806.77	98	0.2	256	0
WP	829100	829100	148	179.34	89	0.2	256	0
WP	829200	829200	191	187.95	89	0.2	256	0
WP	829700	829700	247	100.41	93	0.2	256	0
WP	829400	829400	116	158.83	91	0.2	256	0
WP	829600	829600	178	26.9	81	0.2	256	0
WP	829500	829500	357	476.57	89	0.2	256	0
WP	829300	829300	22	439.75	92	0.2	256	0
WP	829800	829800	157	311.6	94	0.2	256	0

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* ========================================================================
*                      BULLFROG CREEK/WOLF BRANCH                                WB-100.WPX
* ========================================================================
*
ID                 WOLF BRANCH 100-YEAR STORM
ID        Dames & Moore for Hillsborough County BOCC--Dept of Stormwater Management
*
*
*   This is a standard HEC-1 file.  RDHEC copies the ID, *, IT, IO, JR,
*       PG, IN, PC, and PR records from this file.  It ignores other records.
*
*FREE
*DIAGRAM
*     ----------------------
*     100-YEAR 24 HOUR STORM
*     ----------------------
*
*   NMIN  DATE     ITIME      NQ  NDDATE   NDTIME
IT    15 26SEP97    0000     250 27SEP97    0000
*
*NOLIST
*   IPRT    IPLT
*   0,1,2         All
*       3         Input Data and Intermediate and Master Summaries
*       4         Input Data and Master Summary
*       5         Job specification and Master Summary Only
*
*            0,1  No Printer Plots--Can be overriden on KO record
*              2  Plot All
*
IO     3       0
*
* ####################################################
JR  PREC   11.0
* ####################################################
*    SCS 24-HR, TYPE II FLORIDA-MODIFIED DISTRIBUTION (30-MIN INCREMENTS)
*    SOURCE: SWFWMD ERP INFORMATION MANUAL TABLE C-1
* GAGE     UDEPTH
PGSCSFLM    1.0
*
*  TSTEP IDATE      ITIME
IN    30 26SEP97       0
PC  .000    .006    .012    .019    .025    .032    .039    .047    .054    .062
PC  .071    .080    .089    .099    .110    .122    .134    .148    .164    .181
PC  .201    .226    .258    .308    .607    .719    .757    .785    .807    .826
PC  .842    .857    .870    .882    .893    .904    .913    .923    .931    .940
PC  .948    .955    .962    .969    .976    .983    .989    .995   1.000   1.000
*
* ========================================================================
*    SCS 24-HR, TYPE II FLORIDA-MODIFIED DISTRIBUTION
PRSCSFLM
* ========================================================================
ZZ
*                                      AMC II
*       BASINID  NJUNC    TC       ACRE     CN IACOEFF       K        KPRINT
WP      821000   821000   93       214.86   95       0.2      256      0
WP      821100   821100   155      72.13    90       0.2      256      0
WP      821200   821200   149      120.9    84       0.2      256      0
WP      821300   821300   150      189.1    81       0.2      256      0
```

WP	821400	821400	236	352.13	82	0.2	256	0
WP	821500	821500	153	110.84	81	0.2	256	0
WP	822000	822000	112	235.71	82	0.2	256	0
WP	822050	822050	206	97.92	79	0.2	256	0
WP	822100	822100	167	42.06	90	0.2	256	0
WP	822150	822150	298	107.69	80	0.2	256	0
WP	822200	822200	232	77.31	77	0.2	256	0
WP	822250	822250	97	64.71	80	0.2	256	0
WP	822300	822300	308	487	84	0.2	256	0
WP	822350	822350	74	347.15	83	0.2	256	0
WP	822400	822400	220	565.29	84	0.2	256	0
WP	822500	822500	217	386.38	81	0.2	256	0
WP	823000	823000	61	215.07	88	0.2	256	0
WP	823100	823100	340	167.38	84	0.2	256	0
WP	823200	823200	126	26.86	92	0.2	256	0
WP	823300	823300	126	49.07	84	0.2	256	0
WP	823400	823400	143	179.51	81	0.2	256	0
WP	824650	824650	68	8.84	83	0.2	256	0
WP	824000	824000	56	439.81	93	0.2	256	0
WP	824080	824080	234	438.49	86	0.2	256	0
WP	824200	824200	136	58.21	83	0.2	256	0
WP	824300	824300	111	38.92	83	0.2	256	0
WP	824400	824400	116	19.1	82	0.2	256	0
WP	824500	824500	322	88.29	86	0.2	256	0
WP	824600	824600	164	82.87	82	0.2	256	0
WP	825000	825000	1	221.84	99	0.2	256	0
WP	825050	825050	46	44.19	94	0.2	256	0
WP	825100	825100	200	296.6	92	0.2	256	0
WP	825200	825200	378	475.42	86	0.2	256	0
WP	825300	825300	87	23.17	90	0.2	256	0
WP	825400	825400	167	263.51	81	0.2	256	0
WP	825500	825500	170	152.33	83	0.2	256	0
WP	825600	825600	76	210.83	87	0.2	256	0
WP	825700	825700	126	52.88	88	0.2	256	0
WP	825800	825800	288	252.66	83	0.2	256	0
WP	825900	825900	135	55.42	83	0.2	256	0
WP	826000	826000	45	111.8	76	0.2	256	0
WP	826050	826050	54	100.8	91	0.2	256	0
WP	826100	826100	33	218.02	84	0.2	256	0
WP	826150	826150	35	272.26	94	0.2	256	0
WP	826200	826200	17	370.65	93	0.2	256	0
WP	826250	826250	145	296.12	88	0.2	256	0
WP	826300	826300	154	13.16	91	0.2	256	0
WP	826350	826350	27	60.75	82	0.2	256	0
WP	826400	826400	326	559.84	80	0.2	256	0
WP	826450	826450	14	276.05	89	0.2	256	0
WP	826500	826500	15	89.04	89	0.2	256	0
WP	826550	826550	34	173.15	82	0.2	256	0
WP	826600	826600	188	216.14	87	0.2	256	0
WP	826650	826650	166	37.3	95	0.2	256	0
WP	826700	826700	252	140.75	80	0.2	256	0
WP	826750	826750	223	198.16	82	0.2	256	0
WP	826800	826800	191	157.27	83	0.2	256	0
WP	826850	826850	85	111.13	82	0.2	256	0
WP	826900	826900	159	125.24	86	0.2	256	0
WP	826950	826950	236	361.32	84	0.2	256	0
WP	826970	826970	171	57.1	80	0.2	256	0
WP	826990	826990	261	295.16	83	0.2	256	0
WP	827000	827000	63	306.51	98	0.2	256	0

WP	827100	827100	33	190.21	84	0.2	256	0
WP	827150	827150	165	287.47	84	0.2	256	0
WP	827200	827200	96	101.22	87	0.2	256	0
WP	827250	827250	225	220.92	83	0.2	256	0
WP	827300	827300	289	107.04	85	0.2	256	0
WP	827350	827350	223	115.19	85	0.2	256	0
WP	827400	827400	92	208.79	86	0.2	256	0
WP	827450	827450	69	104.1	86	0.2	256	0
WP	827500	827500	128	309.99	83	0.2	256	0
WP	827550	827550	202	97.17	83	0.2	256	0
WP	827600	827600	70	112.76	83	0.2	256	0
WP	827650	827650	248	165.14	83	0.2	256	0
WP	827700	827700	121	89.33	82	0.2	256	0
WP	827750	827750	158	84.22	82	0.2	256	0
WP	827800	827800	91	138.01	85	0.2	256	0
WP	827850	827850	116	178.05	83	0.2	256	0
WP	827890	827890	102	239.72	87	0.2	256	0
WP	828000	828000	34	255.18	86	0.2	256	0
WP	828050	828050	121	38.83	85	0.2	256	0
WP	828100	828100	161	239.83	87	0.2	256	0
WP	828150	828150	162	169.74	85	0.2	256	0
WP	828200	828200	210	109.78	86	0.2	256	0
WP	828250	828250	117	133.56	81	0.2	256	0
WP	828300	828300	282	260.67	82	0.2	256	0
WP	828350	828350	188	294.38	81	0.2	256	0
WP	828400	828400	203	52.12	86	0.2	256	0
WP	828450	828450	81	39.85	88	0.2	256	0
WP	828500	828500	166	283.47	89	0.2	256	0
WP	828550	828550	116	92.73	84	0.2	256	0
WP	829000	829000	79	806.77	98	0.2	256	0
WP	829100	829100	145	179.34	89	0.2	256	0
WP	829200	829200	168	187.95	89	0.2	256	0
WP	829700	829700	230	100.41	93	0.2	256	0
WP	829400	829400	102	158.83	91	0.2	256	0
WP	829600	829600	177	26.9	81	0.2	256	0
WP	829500	829500	315	476.57	89	0.2	256	0
WP	829300	829300	20	439.75	92	0.2	256	0
WP	829800	829800	74	311.6	94	0.2	256	0

	JUNC_ID	INVT	Z_MAX	T_MAX	MC-25_ex112010.SMX
ZMAX	82100	-2.00	2.00	0.00	
ZMAX	821000	-2.00	2.16	12.47	
ZMAX	821100	-1.10	2.33	12.65	
ZMAX	821190	-4.50	4.73	18.75	
ZMAX	821200	-4.50	5.15	18.72	
ZMAX	821290	0.87	5.66	18.93	
ZMAX	821300	0.87	6.90	18.82	
ZMAX	821390	8.00	10.96	17.28	
ZMAX	821400	9.00	11.49	17.22	
ZMAX	821490	19.00	20.78	14.97	
ZMAX	821500	20.50	25.87	14.50	
ZMAX	82200	-2.50	2.00	0.00	
ZMAX	822000	-2.10	2.01	16.27	
ZMAX	822050	0.50	3.62	15.57	
ZMAX	822100	-2.10	2.95	17.03	
ZMAX	822110	-1.10	3.31	16.60	
ZMAX	822150	-2.00	2.98	17.12	
ZMAX	822190	-2.00	2.99	17.12	
ZMAX	822200	-1.00	3.09	17.07	
ZMAX	822250	-1.10	3.76	16.30	
ZMAX	822290	-0.65	5.44	15.72	
ZMAX	822300	-0.65	6.31	17.07	
ZMAX	822350	0.00	5.99	15.17	
ZMAX	822390	1.00	6.13	15.57	
ZMAX	822400	1.50	9.31	20.55	
ZMAX	822410	2.80	9.32	20.57	
ZMAX	822420	3.00	10.25	24.60	
ZMAX	822490	4.00	10.30	24.52	
ZMAX	822500	5.00	11.36	22.80	
ZMAX	82300	-2.50	2.00	0.00	
ZMAX	823000	-2.00	2.00	8.03	
ZMAX	823100	-2.00	4.10	22.82	
ZMAX	823170	-0.50	4.21	22.70	
ZMAX	823180	1.17	4.58	22.42	
ZMAX	823190	0.09	4.90	22.15	
ZMAX	823200	0.22	5.27	21.92	
ZMAX	823290	1.40	6.50	21.08	
ZMAX	823300	3.00	6.59	21.12	
ZMAX	823380	3.20	7.23	19.48	
ZMAX	823390	3.30	7.53	18.93	
ZMAX	823400	3.60	9.46	17.80	
ZMAX	823490	5.00	9.46	17.80	
ZMAX	82400	-2.60	2.00	0.00	
ZMAX	824000	-2.54	2.01	6.77	
ZMAX	824080	-1.01	2.28	16.03	
ZMAX	824085	0.30	2.38	16.60	
ZMAX	824100	0.30	3.10	19.63	
ZMAX	824110	3.40	4.33	20.63	
ZMAX	824120	1.50	3.58	16.78	
ZMAX	824130	3.70	4.74	18.15	
ZMAX	824140	5.00	6.10	14.48	
ZMAX	824200	3.60	5.54	20.33	
ZMAX	824300	3.90	6.00	17.90	
ZMAX	824400	5.20	7.51	13.93	
ZMAX	824490	1.15	4.83	21.13	
ZMAX	824500	2.00	5.73	20.90	
ZMAX	824590	3.00	5.91	21.82	
ZMAX	824600	3.50	5.91	21.83	
ZMAX	824650	5.00	5.91	21.85	
ZMAX	82510	-4.00	2.00	0.00	

ZMAX	825100	-4.00	2.00	10.32
ZMAX	825200	-4.00	2.03	20.08
ZMAX	825220	4.00	4.99	20.58
ZMAX	825230	4.00	5.60	16.90
ZMAX	825300	4.00	6.71	16.62
ZMAX	825390	4.00	6.85	20.73
ZMAX	825400	5.50	11.51	20.85
ZMAX	825410	6.10	6.89	19.92
ZMAX	825420	6.30	12.92	19.80
ZMAX	825429	8.00	9.31	19.98
ZMAX	825430	6.50	12.94	19.80
ZMAX	825500	9.41	13.32	19.78
ZMAX	825600	-4.00	2.23	13.23
ZMAX	825610	-3.60	2.25	13.25
ZMAX	825615	-3.00	2.25	13.27
ZMAX	825620	1.20	3.19	16.28
ZMAX	825630	1.20	3.59	16.25
ZMAX	825650	-4.00	2.19	13.17
ZMAX	825653	-1.05	2.20	13.13
ZMAX	825655	-1.29	2.26	13.28
ZMAX	825700	3.00	6.00	19.70
ZMAX	825800	3.63	5.45	16.12
ZMAX	825900	4.00	5.80	15.25
ZMAX	82615	-4.00	2.00	0.00
ZMAX	82620	-3.50	2.00	0.00
ZMAX	82645	-3.50	2.00	0.00
ZMAX	826150	-4.00	2.09	12.58
ZMAX	826190	-4.00	2.13	13.05
ZMAX	826200	-3.50	2.03	12.50
ZMAX	826245	-3.20	2.13	15.78
ZMAX	826250	-3.17	2.42	15.85
ZMAX	826290	0.00	2.45	16.25
ZMAX	826295	6.00	13.88	25.15
ZMAX	826300	1.00	3.04	14.97
ZMAX	826305	1.40	3.43	15.07
ZMAX	826310	1.50	3.74	15.07
ZMAX	826315	2.00	4.02	15.02
ZMAX	826320	2.50	4.80	14.72
ZMAX	826325	6.00	6.87	14.62
ZMAX	826350	8.12	10.35	14.58
ZMAX	826400	8.14	14.50	25.13
ZMAX	826450	-3.50	2.03	12.50
ZMAX	826500	-3.50	2.20	21.32
ZMAX	826550	-2.00	2.21	13.10
ZMAX	826560	-2.53	2.48	21.13
ZMAX	826570	-2.62	4.39	21.03
ZMAX	826600	-1.00	5.63	21.00
ZMAX	826640	2.20	8.74	20.23
ZMAX	826650	2.20	8.84	20.15
ZMAX	826665	2.64	9.66	19.82
ZMAX	826685	8.98	9.80	27.27
ZMAX	826700	9.28	13.73	27.15
ZMAX	826750	2.64	9.74	19.75
ZMAX	826780	8.03	12.44	18.65
ZMAX	826790	27.50	29.75	15.50
ZMAX	826800	28.00	31.84	15.27
ZMAX	826850	8.27	15.63	18.62
ZMAX	826855	17.50	21.53	16.13
ZMAX	826860	18.00	24.82	16.08
ZMAX	826865	29.00	33.73	16.05
ZMAX	826900	29.50	36.43	16.02

ZMAX	826940	41.00	43.02	16.28
ZMAX	826950	41.10	44.68	16.25
ZMAX	826970	8.50	15.79	18.97
ZMAX	826980	10.00	16.37	18.88
ZMAX	826990	10.50	18.72	18.82
ZMAX	82900	-1.00	2.00	0.00
ZMAX	82930	-1.50	2.00	0.00
ZMAX	82940	-4.00	2.00	0.00
ZMAX	829000	-1.00	2.14	13.75
ZMAX	829100	1.70	2.66	15.68
ZMAX	829190	-1.00	2.18	14.78
ZMAX	829200	0.00	3.93	20.37
ZMAX	829300	-1.50	2.10	12.75
ZMAX	829400	-4.00	2.13	16.45
ZMAX	829410	-3.90	2.12	16.42
ZMAX	829450	-3.81	2.14	16.40
ZMAX	829500	-3.50	2.20	18.28
ZMAX	829510	-1.00	2.21	18.33
ZMAX	829600	-0.50	2.39	19.00

	PIPE_ID	FROM	TO	SIZE(INCH)	LENGTH	INV_U	ZMAXU	INV_D	ZMAXD	QMAX	VMAX	TMAX
QMAX	9821000	821000	82100	60.	500.	-2.00	2.16	-2.00	2.00	592.87	1.15	15.40
QMAX	9821100	821100	821000	83.	144.	-1.10	2.33	-2.00	2.16	430.17	4.37	17.95
QMAX	9821190	821100	821190	138.	1615.	-1.10	2.33	-4.50	4.73	-388.71	-2.70	18.72
QMAX	1821200	821200	821190	96.	135.	-4.50	5.15	-4.50	4.73	388.80	4.49	18.62
QMAX	9821290	821290	821200	140.	1890.	0.87	5.66	-4.50	5.15	330.93	0.85	18.93
QMAX	1821300	821300	821290	54.	120.	0.87	6.90	0.87	5.66	110.36	6.83	18.75
QMAX	2821300	821300	821290	54.	120.	0.87	6.90	0.87	5.66	110.36	6.83	18.75
QMAX	3821300	821300	821290	54.	120.	0.87	6.90	0.87	5.66	110.36	6.83	18.75
QMAX	9821390	821390	821300	132.	2790.	8.00	10.96	0.87	6.90	255.98	1.94	17.28
QMAX	1821400	821400	821390	43.	320.	9.00	11.49	8.00	10.96	85.34	6.55	17.18
QMAX	2821400	821400	821390	43.	320.	9.00	11.49	8.00	10.96	85.34	6.55	17.18
QMAX	3821400	821400	821390	43.	320.	9.00	11.49	8.00	10.96	85.34	6.55	17.18
QMAX	9821490	821490	821400	96.	4690.	19.00	20.78	9.00	11.49	83.30	2.32	14.97
QMAX	1821500	821500	821490	24.	320.	21.50	25.87	20.00	20.78	21.78	7.10	14.50
QMAX	2821500	821500	821490	36.	320.	20.50	25.87	19.00	20.78	62.12	10.84	14.77
QMAX	9822000	822000	82200	60.	500.	-2.10	2.01	-2.50	2.00	971.70	0.72	16.28
QMAX	1822100	822100	822000	60.	113.	-2.00	2.95	-2.00	2.01	275.11	6.15	17.03
QMAX	2822100	822100	822000	60.	150.	-2.10	2.95	-2.10	2.01	243.52	5.91	17.03
QMAX	3822100	822100	822000	60.	150.	-2.10	2.95	-2.10	2.01	243.52	5.91	17.03
QMAX	9822150	822150	822100	96.	965.	-2.00	2.98	-2.00	2.95	89.42	0.55	18.10
QMAX	9822190	822190	822150	96.	890.	-2.00	2.99	-2.00	2.98	37.26	0.23	17.17
QMAX	1822200	822200	822190	54.	320.	-1.00	3.09	-2.00	2.99	37.96	2.43	16.02
QMAX	9822110	822110	822100	73.	785.	-1.10	3.31	-2.00	2.95	688.13	1.35	15.75
QMAX	1822250	822250	822110	57.	320.	-1.10	3.76	-1.10	3.31	693.25	5.11	15.68
QMAX	9822290	822290	822250	128.	1460.	-0.65	5.44	-1.10	3.76	649.32	1.94	15.67
QMAX	1822300	822300	822290	48.	105.	-0.65	6.31	-0.65	5.44	76.43	6.06	17.78
QMAX	2822300	822300	822290	48.	105.	-0.65	6.31	-0.65	5.44	76.43	6.06	17.78
QMAX	3822300	822300	822290	48.	105.	-0.65	6.31	-0.65	5.44	76.43	6.06	17.78
QMAX	9822350	822350	822290	96.	1870.	0.00	5.99	-0.65	5.44	492.01	1.89	14.78
QMAX	9822390	822390	822350	96.	2265.	1.00	6.13	0.00	5.99	285.41	1.36	21.27
QMAX	1822400	822400	822390	48.	100.	1.50	9.31	1.00	6.13	142.38	11.20	21.13
QMAX	2822400	822400	822390	48.	100.	1.50	9.31	1.00	6.13	142.38	11.20	21.13
QMAX	9822410	822410	822400	144.	1240.	2.80	9.32	1.50	9.31	131.43	1.25	30.37
QMAX	1822420	822420	822410	24.	260.	3.00	10.25	2.80	9.32	30.81	9.72	30.23
QMAX	2822420	822420	822410	36.	260.	3.00	10.25	2.80	9.32	98.65	8.50	30.42
QMAX	9822490	822490	822420	144.	4100.	4.00	10.30	3.00	10.25	106.85	1.18	20.22
QMAX	1822500	822500	822490	38.	115.	5.00	11.36	4.00	10.30	86.12	6.78	15.75
QMAX	2822500	822500	822490	30.	115.	5.00	11.36	4.00	10.30	29.13	-10.00	19.22
QMAX	1822050	822050	822000	24.	320.	0.50	3.62	-0.50	2.01	20.62	6.55	15.57
QMAX	2822050	822050	822000	24.	320.	0.50	3.62	-0.50	2.01	35.24	7.00	15.57
QMAX	9823000	823000	82300	60.	500.	-2.00	2.00	-2.50	2.00	327.11	0.25	14.00

QMAX	1823100	823100	823000	60.	140.	-2.00	4.10	-2.00	2.00	155.59	8.42	22.82
QMAX	9823170	823170	823100	90.	2515.	-0.50	4.21	-2.00	4.10	96.68	1.06	22.30
QMAX	1823180	823170	823180	60.	320.	1.92	4.21	1.26	4.58	-96.89	-3.49	22.23
QMAX	1823190	823180	823190	48.	320.	1.17	4.58	0.09	4.90	-32.62	-2.68	21.75
QMAX	2823190	823180	823190	48.	320.	1.17	4.58	0.09	4.90	-32.62	-2.68	21.75
QMAX	3823190	823180	823190	48.	320.	1.17	4.58	0.09	4.90	-32.62	-2.68	21.75
QMAX	1823200	823190	823200	48.	320.	1.18	4.90	0.22	5.27	-49.23	-3.98	21.52
QMAX	2823200	823190	823200	48.	320.	1.18	4.90	0.22	5.27	-49.23	-3.98	21.52
QMAX	9823290	823290	823200	79.	1160.	1.40	6.50	0.22	5.27	94.90	1.91	21.42
QMAX	1823300	823300	823290	48.	230.	3.00	6.59	1.40	6.50	94.69	3.17	21.23
QMAX	9823380	823380	823300	71.	1360.	3.20	7.23	3.00	6.59	98.13	2.04	16.90
QMAX	9823390	823390	823380	82.	900.	3.30	7.53	3.20	7.23	98.78	2.24	16.83
QMAX	1823400	823400	823390	52.	380.	3.60	9.46	3.30	7.53	99.02	6.80	16.75
QMAX	9823490	823490	823400	90.	2000.	5.00	9.46	3.60	9.46	-12.91	-0.55	14.23
QMAX	9824000	824000	82400	60.	500.	-2.54	2.01	-2.60	2.00	915.13	0.64	13.50
QMAX	1824080	824080	824000	84.	175.	-1.01	2.28	-2.54	2.01	146.11	4.66	16.00
QMAX	2824080	824080	824000	84.	175.	-1.01	2.28	-2.54	2.01	146.11	4.66	16.00
QMAX	9824085	824085	824080	84.	2125.	0.30	2.38	-1.01	2.28	35.60	0.58	19.88
QMAX	1824100	824100	824085	66.	100.	0.30	3.10	0.30	2.38	35.35	3.52	19.82
QMAX	9824110	824110	824100	84.	1800.	3.40	4.33	1.00	3.10	13.54	0.83	20.63
QMAX	1824200	824200	824110	36.	122.	3.60	5.54	3.40	4.33	13.55	4.06	20.43
QMAX	9824120	824120	824100	84.	1285.	1.50	3.58	1.00	3.10	29.58	1.21	16.47
QMAX	9824130	824130	824120	84.	1490.	3.70	4.74	1.50	3.58	17.20	0.96	18.15
QMAX	1824300	824300	824130	36.	264.	3.90	6.00	3.70	4.74	17.21	4.62	18.00
QMAX	9824140	824140	824120	84.	2615.	5.00	6.10	1.50	3.58	17.98	1.20	14.48
QMAX	1824400	824400	824140	36.	138.	5.20	7.51	5.00	6.10	18.18	4.48	14.20
QMAX	1824490	824000	824490	30.	100.	1.59	2.01	1.15	4.83	-27.33	-5.79	21.13
QMAX	2824490	824000	824490	30.	100.	1.59	2.01	1.15	4.83	-27.33	-5.79	21.13
QMAX	9824500	824500	824490	60.	2550.	2.00	5.73	1.15	4.83	54.72	1.33	20.78
QMAX	9824590	824590	824500	60.	2780.	3.00	5.91	2.00	5.73	22.54	0.89	28.08
QMAX	1824600	824600	824590	48.	110.	3.50	5.91	3.00	5.91	22.04	-1.00	27.87
QMAX	9824650	824650	824600	84.	2250.	5.00	5.91	3.50	5.91	11.41	1.00	13.78
QMAX	9825100	825100	82510	144.	500.	-4.00	2.00	-4.00	2.00	495.09	0.36	16.62
QMAX	1825200	825200	825100	144.	125.	-4.00	2.03	-4.00	2.00	309.94	1.29	20.30
QMAX	9825610	825610	825600	133.	2550.	-3.60	2.25	-4.00	2.23	173.26	0.42	16.32
QMAX	1825650	825650	826190	140.	475.	-4.00	2.19	-4.00	2.13	494.99	1.65	13.38
QMAX	9825650	825650	825600	168.	825.	-4.00	2.19	-4.00	2.23	-459.99	-1.10	13.40
QMAX	9825653	825653	825650	97.	2050.	-1.05	2.20	-4.00	2.19	-53.28	-0.16	13.08
QMAX	1825655	825653	825655	24.	200.	-1.05	2.20	-1.29	2.26	-9.18	-1.67	13.28
QMAX	9825615	825615	825655	96.	650.	-1.00	2.25	-1.29	2.26	16.15	0.09	13.27
QMAX	9825616	825615	825610	126.	235.	-3.00	2.25	-3.60	2.25	171.99	0.44	16.30
QMAX	1825700	825700	825615	24.	150.	3.00	6.00	1.50	2.25	13.98	4.69	19.70
QMAX	9825620	825620	825615	144.	1580.	1.20	3.19	-3.00	2.25	162.57	1.75	16.28
QMAX	1825630	825630	825620	96.	121.	1.20	3.59	1.20	3.19	81.30	3.09	16.22
QMAX	2825630	825630	825620	96.	121.	1.20	3.59	1.20	3.19	81.30	3.09	16.22
QMAX	1825800	825800	825630	72.	320.	3.63	5.45	3.58	3.59	81.38	3.70	16.12
QMAX	2825800	825800	825630	72.	320.	3.63	5.45	3.58	3.59	81.38	3.70	16.12
QMAX	9825900	825900	825800	144.	680.	4.00	5.80	3.63	5.45	49.02	1.48	14.30
QMAX	9825220	825220	825200	120.	5910.	4.00	4.99	-4.00	2.03	48.81	0.25	20.58
QMAX	9825410	825410	825220	120.	810.	6.10	6.89	4.00	4.99	41.61	1.43	19.90
QMAX	1825420	825420	825410	36.	129.	6.30	12.92	6.10	6.89	30.60	7.11	19.90
QMAX	9825430	825430	825420	120.	1170.	6.50	12.94	6.30	12.92	41.62	0.98	19.82
QMAX	9825429	825429	825630	120.	1700.	8.00	9.31	3.50	3.59	20.64	1.93	19.98
QMAX	1825500	825500	825430	30.	125.	9.41	13.32	8.82	12.94	30.95	6.43	16.27
QMAX	9825230	825230	825200	192.	5900.	4.00	5.60	-4.00	2.03	77.74	0.50	16.90
QMAX	1825230	825230	825220	54.	340.	4.00	5.60	4.00	4.99	9.08	2.55	20.78
QMAX	1825300	825300	825230	60.	110.	4.00	6.71	4.00	5.60	86.26	5.01	16.65
QMAX	9825390	825390	825300	192.	845.	4.00	6.85	4.00	6.71	81.31	-0.95	20.97
QMAX	1825400	825400	825390	36.	135.	5.50	11.51	4.00	6.85	81.30	11.58	20.85
QMAX	9826150	826150	82615	84.	500.	-4.00	2.09	-4.00	2.00	1003.02	0.77	13.23
QMAX	9826190	826190	826150	120.	1450.	-4.00	2.13	-4.00	2.09	497.65	0.77	13.33

QMAX	9826200	826200	82620	84.	500.	-3.50	2.03	-3.50	2.00	1350.38	1.13	12.72
QMAX	9826245	826245	826200	122.	7150.	-3.20	2.13	-3.50	2.03	362.83	0.59	15.98
QMAX	1826250	826250	826245	144.	240.	-3.17	2.42	-3.20	2.13	362.59	3.69	15.90
QMAX	9826290	826290	826250	96.	5140.	0.00	2.45	-3.17	2.42	172.77	0.46	25.07
QMAX	1826295	826295	826290	54.	180.	6.00	13.88	3.00	2.45	156.34	10.14	25.15
QMAX	1826400	826400	826295	30.	120.	8.38	14.50	7.59	13.88	39.72	8.05	20.85
QMAX	2826400	826400	826295	42.	120.	8.14	14.50	7.68	13.88	89.45	9.31	21.20
QMAX	1826300	826300	826290	84.	320.	1.00	3.04	0.00	2.45	38.08	3.62	14.97
QMAX	9826305	826305	826300	120.	485.	1.40	3.43	1.00	3.04	25.73	1.51	15.17
QMAX	1826310	826310	826305	72.	120.	1.50	3.74	1.40	3.43	25.72	2.85	15.07
QMAX	9826315	826315	826310	120.	595.	2.00	4.02	1.50	3.74	25.74	1.19	14.90
QMAX	1826320	826320	826315	60.	340.	2.50	4.80	2.20	4.02	25.79	3.88	14.72
QMAX	9826325	826325	826320	120.	260.	6.00	6.87	2.50	4.80	25.80	-1.66	14.62
QMAX	1826350	826350	826325	36.	300.	8.12	10.35	6.88	6.87	25.80	5.37	14.58
QMAX	9826450	826450	82645	78.	500.	-3.50	2.03	-3.50	2.00	1444.01	1.21	12.75
QMAX	9826500	826500	826450	126.	2950.	-3.50	2.20	-3.50	2.03	699.58	1.14	21.40
QMAX	1826550	826550	826500	120.	195.	-2.00	2.21	-3.50	2.20	355.93	1.43	13.27
QMAX	9826560	826560	826500	114.	4950.	-2.53	2.48	-3.50	2.20	669.74	1.09	21.15
QMAX	1826570	826570	826560	72.	100.	-2.02	4.39	-2.53	2.48	239.73	8.81	21.02
QMAX	2826570	826560	826570	72.	100.	-1.99	2.48	-2.62	4.39	-212.99	-8.16	21.03
QMAX	3826570	826560	826570	72.	100.	-2.07	2.48	-2.55	4.39	-217.20	-8.25	21.03
QMAX	9826600	826600	826570	108.	1210.	-1.00	5.63	-2.62	4.39	669.95	3.82	20.98
QMAX	9826640	826640	826600	106.	4055.	2.20	8.74	-1.00	5.63	604.35	2.59	20.23
QMAX	1826650	826650	826640	96.	116.	2.20	8.84	2.20	8.74	204.67	2.64	19.32
QMAX	2826650	826650	826640	96.	116.	2.20	8.84	2.20	8.74	204.67	2.64	19.32
QMAX	3826650	826650	826640	96.	116.	2.20	8.84	2.20	8.74	204.67	2.64	19.32
QMAX	9826665	826665	826650	112.	715.	2.64	9.66	2.20	8.84	599.27	2.91	18.95
QMAX	9826685	826685	826665	96.	650.	8.98	9.80	4.00	9.66	15.84	-2.74	27.27
QMAX	1826700	826700	826685	30.	380.	9.28	13.73	8.98	9.80	15.84	4.99	27.20
QMAX	1826750	826750	826665	96.	340.	2.64	9.74	2.64	9.66	297.48	2.66	18.73
QMAX	2826750	826750	826665	96.	340.	2.64	9.74	2.64	9.66	297.48	2.66	18.73
QMAX	9826780	826780	826750	120.	1460.	8.03	12.44	2.64	9.74	434.68	3.74	18.65
QMAX	1826850	826780	826850	48.	100.	8.68	12.44	8.27	15.63	-99.96	-8.21	17.18
QMAX	2826850	826850	826780	48.	100.	8.31	15.63	8.03	12.44	105.33	8.61	16.25
QMAX	9826855	826855	826850	120.	2120.	17.50	21.53	8.27	15.63	282.64	3.39	16.13
QMAX	1826860	826860	826855	43.	100.	18.00	24.82	17.50	21.53	91.11	9.15	14.53
QMAX	9826865	826865	826860	120.	2080.	29.00	33.73	18.00	24.82	282.71	4.30	16.05
QMAX	1826900	826900	826865	48.	240.	29.50	36.43	29.00	33.73	108.60	8.52	15.12
QMAX	2826900	826900	826865	48.	240.	29.50	36.43	29.00	33.73	108.60	8.52	15.12
QMAX	9826940	826940	826900	180.	1900.	41.00	43.02	29.50	36.43	189.68	1.09	16.28
QMAX	1826950	826950	826940	48.	304.	41.10	44.68	41.00	43.02	94.88	5.65	16.25
QMAX	2826950	826950	826940	48.	304.	41.10	44.68	41.00	43.02	94.88	5.65	16.25
QMAX	9826790	826790	826750	120.	4810.	27.50	29.75	2.64	9.74	103.35	1.88	15.50
QMAX	1826800	826800	826790	48.	140.	28.00	31.84	27.50	29.75	51.79	5.27	15.30
QMAX	2826800	826800	826790	48.	140.	28.00	31.84	27.50	29.75	51.79	5.27	15.30
QMAX	9826970	826970	826850	120.	1170.	8.50	15.79	8.27	15.63	172.14	-1.51	19.58
QMAX	9826980	826980	826970	120.	1525.	10.00	16.37	8.50	15.79	142.36	1.87	18.87
QMAX	1826990	826990	826980	54.	340.	10.50	18.72	10.00	16.37	117.52	7.36	21.85
QMAX	9829000	829000	82900	48.	500.	-1.00	2.14	-1.00	2.00	1264.48	1.97	13.77
QMAX	9829100	829100	829000	60.	450.	1.70	2.66	-1.00	2.14	13.97	0.06	15.68
QMAX	9829190	829190	829000	84.	1600.	-1.00	2.18	-1.00	2.14	72.85	0.73	20.48
QMAX	1829200	829200	829190	29.	100.	0.00	3.93	-1.00	2.18	52.60	7.33	20.38
QMAX	2829200	829200	829190	24.	100.	0.00	3.93	-1.00	2.18	20.23	6.41	20.38
QMAX	9829400	829400	82940	84.	500.	-4.00	2.13	-4.00	2.00	511.88	0.60	16.47
QMAX	9829410	829410	829400	120.	1100.	-3.90	2.12	-4.00	2.13	154.78	0.49	16.43
QMAX	1829450	829450	829410	132.	200.	-3.81	2.14	-3.90	2.12	146.73	1.08	18.95
QMAX	9829500	829500	829450	133.	1350.	-3.50	2.20	-3.81	2.14	141.18	1.08	19.03
QMAX	9829300	829300	82930	48.	500.	-1.50	2.10	-1.50	2.00	1337.16	1.79	12.75
QMAX	9829501	829500	829300	85.	1400.	-1.10	2.20	-1.50	2.10	103.96	0.93	18.37
QMAX	9829510	829510	829500	120.	1750.	-1.00	2.21	-1.10	2.20	12.24	0.14	19.58
QMAX	1829600	829600	829510	30.	260.	-0.50	2.39	-1.00	2.21	12.16	2.42	19.48

	WEIR_ID	FROM	TO	ZCREST	ZU	ZD	ZMAXU	QMAX	ZMAXD	TMAX
QWEIR	7821200	821200	821190	7.50	-4.50	-4.50	5.15	0.00	4.73	0.0
QWEIR	7821300	821300	821290	10.60	0.87	0.87	6.90	0.00	5.66	0.0
QWEIR	7821400	821400	821390	14.90	9.00	8.00	11.49	0.00	10.96	0.0
QWEIR	7821500	821500	821490	26.20	20.50	19.00	25.87	0.00	20.78	0.0
QWEIR	7822050	822050	822000	4.50	0.50	-2.10	3.62	0.00	2.01	0.0
QWEIR	7822100	822100	822000	6.50	-2.10	-2.10	2.95	0.00	2.01	0.0
QWEIR	7822200	822200	822190	6.50	-1.00	-2.00	3.09	0.00	2.99	0.0
QWEIR	7822250	822250	822110	6.08	-1.10	-1.10	3.76	0.00	3.31	0.0
QWEIR	7822300	822300	822290	12.00	-0.65	-0.65	6.31	0.00	5.44	0.0
QWEIR	7822400	822400	822390	12.50	1.50	1.00	9.31	0.00	6.13	0.0
QWEIR	7822420	822420	822410	12.50	3.00	2.80	10.25	0.00	9.32	0.0
QWEIR	7822500	822500	822490	15.40	5.00	4.00	11.36	0.00	10.30	0.0
QWEIR	7823100	823100	823000	6.50	-2.00	-2.00	4.10	0.00	2.00	0.0
QWEIR	7823180	823180	823170	6.00	1.17	-0.50	4.58	0.00	4.21	0.0
QWEIR	7823190	823190	823180	6.00	0.09	1.17	4.90	0.00	4.58	0.0
QWEIR	7823200	823200	823190	6.00	0.22	0.09	5.27	0.00	4.90	0.0
QWEIR	7823300	823300	823290	9.00	3.00	1.40	6.59	0.00	6.50	0.0
QWEIR	7823400	823400	823390	9.80	3.60	3.30	9.46	0.00	7.53	0.0
QWEIR	7824080	824080	824000	6.50	-1.01	-2.54	2.28	0.00	2.01	0.0
QWEIR	7824100	824100	824085	5.50	0.30	0.30	3.10	0.00	2.38	0.0
QWEIR	7824200	824200	824110	9.30	3.60	3.40	5.54	0.00	4.33	0.0
QWEIR	7824300	824300	824130	10.00	3.90	3.70	6.00	0.00	4.74	0.0
QWEIR	7824400	824400	824140	11.00	5.20	5.00	7.51	0.00	6.10	0.0
QWEIR	7824490	824490	824000	7.50	1.15	-2.54	4.83	0.00	2.01	0.0
QWEIR	7824600	824600	824590	12.50	3.50	3.00	5.91	0.00	5.91	0.0
QWEIR	7825200	825200	825100	10.00	-4.00	-4.00	2.03	0.00	2.00	0.0
QWEIR	7825300	825300	825230	12.00	4.00	4.00	6.71	0.00	5.60	0.0
QWEIR	7825400	825400	825390	15.00	5.50	4.00	11.51	0.00	6.85	0.0
QWEIR	7825420	825420	825410	12.80	6.30	6.10	12.92	11.04	6.89	19.8
QWEIR	6825430	825430	825429	12.40	6.50	8.00	12.94	20.69	9.31	19.8
QWEIR	7825500	825500	825430	13.00	9.41	6.50	13.32	47.27	12.94	19.8
QWEIR	6825600	825600	825200	4.80	-4.00	-4.00	2.23	0.00	2.03	0.0
QWEIR	7825630	825630	825620	13.50	1.20	1.20	3.59	0.00	3.19	0.0
QWEIR	7825655	825655	825653	6.80	-1.29	-1.05	2.26	0.00	2.20	0.0
QWEIR	7825700	825700	825615	9.20	3.00	-3.00	6.00	0.00	2.25	0.0
QWEIR	7825800	825800	825630	13.50	3.63	1.20	5.45	0.00	3.59	0.0
QWEIR	7826250	826250	826245	10.00	-3.17	-3.20	2.42	0.00	2.13	0.0
QWEIR	7826295	826295	826290	14.00	6.00	0.00	13.88	0.00	2.45	0.0
QWEIR	7826300	826300	826290	10.00	1.00	0.00	3.04	0.00	2.45	0.0
QWEIR	7826310	826310	826305	10.00	1.50	1.40	3.74	0.00	3.43	0.0
QWEIR	7826320	826320	826315	10.20	2.50	2.00	4.80	0.00	4.02	0.0
QWEIR	7826350	826350	826325	13.00	8.12	6.00	10.35	0.00	6.87	0.0
QWEIR	7826400	826400	826295	14.00	8.14	6.00	14.50	93.81	13.88	25.1
QWEIR	7826500	826500	826450	6.00	-3.50	-3.50	2.20	0.00	2.03	0.0
QWEIR	7826550	826550	826500	4.00	-2.00	-3.50	2.21	0.00	2.20	0.0
QWEIR	7826570	826570	826560	5.00	-2.62	-2.53	4.39	0.00	2.48	0.0
QWEIR	7826650	826650	826640	11.00	2.20	2.20	8.84	0.00	8.74	0.0
QWEIR	7826700	826700	826685	14.00	9.28	8.98	13.73	0.00	9.80	0.0
QWEIR	7826750	826750	826665	12.00	2.64	2.64	9.74	0.00	9.66	0.0
QWEIR	7826800	826800	826790	34.00	28.00	27.50	31.84	0.00	29.75	0.0
QWEIR	7826850	826850	826780	14.70	8.27	8.03	15.63	235.09	12.44	18.6
QWEIR	7826860	826860	826855	24.00	18.00	17.50	24.82	196.82	21.53	16.1
QWEIR	7826900	826900	826865	36.00	29.50	29.00	36.43	72.88	33.73	16.0
QWEIR	7826990	826990	826980	18.50	10.50	10.00	18.72	27.75	16.37	18.8
QWEIR	7829100	829100	829000	2.00	1.70	-1.00	2.66	141.21	2.14	15.7
QWEIR	7829200	829200	829190	5.00	0.00	-1.00	3.93	0.00	2.18	0.0
QWEIR	7829600	829600	829510	5.00	-0.50	-1.00	2.39	0.00	2.21	0.0
QWEIR	90221	82100	0	-2.00	-2.00	0.00	2.00	592.87	0.00	15.4
QWEIR	90222	82200	0	-2.50	-2.50	0.00	2.00	971.70	0.00	16.3
QWEIR	90223	82300	0	-2.50	-2.50	0.00	2.00	327.11	0.00	14.0

QWEIR	90224	82400	0	-2.60	-2.60	0.00	2.00	915.13	0.00	13.5
QWEIR	90225	82510	0	-4.00	-4.00	0.00	2.00	495.09	0.00	16.6
QWEIR	90226	82615	0	-4.00	-4.00	0.00	2.00	1003.02	0.00	13.2
QWEIR	90227	82620	0	-3.50	-3.50	0.00	2.00	1350.38	0.00	12.7
QWEIR	90228	82645	0	-3.50	-3.50	0.00	2.00	1444.01	0.00	12.8
QWEIR	90229	82900	0	-1.00	-1.00	0.00	2.00	1264.48	0.00	13.8
QWEIR	90230	82930	0	-1.50	-1.50	0.00	2.00	1337.16	0.00	12.8
QWEIR	90231	82940	0	-4.00	-4.00	0.00	2.00	511.88	0.00	16.5

	JUNC_ID	INVT	Z_MAX	T_MAX	MC-100_ex112010.SMX
ZMAX	82100	-2.00	2.00	0.00	
ZMAX	821000	-2.00	2.26	13.13	
ZMAX	821100	-1.10	2.44	12.53	
ZMAX	821190	-4.50	5.28	18.28	
ZMAX	821200	-4.50	6.07	18.20	
ZMAX	821290	0.87	6.35	19.85	
ZMAX	821300	0.87	8.46	19.73	
ZMAX	821390	8.00	11.56	17.95	
ZMAX	821400	9.00	12.96	17.92	
ZMAX	821490	19.00	21.36	14.57	
ZMAX	821500	20.50	26.44	14.25	
ZMAX	82200	-2.50	2.00	0.00	
ZMAX	822000	-2.10	2.01	15.72	
ZMAX	822050	0.50	4.69	15.00	
ZMAX	822100	-2.10	3.86	16.75	
ZMAX	822110	-1.10	4.15	16.43	
ZMAX	822150	-2.00	3.91	16.82	
ZMAX	822190	-2.00	3.91	16.82	
ZMAX	822200	-1.00	4.29	16.63	
ZMAX	822250	-1.10	4.86	15.72	
ZMAX	822290	-0.65	6.19	15.25	
ZMAX	822300	-0.65	8.14	18.50	
ZMAX	822350	0.00	6.92	14.58	
ZMAX	822390	1.00	7.02	14.82	
ZMAX	822400	1.50	11.68	20.78	
ZMAX	822410	2.80	11.68	20.82	
ZMAX	822420	3.00	12.51	25.32	
ZMAX	822490	4.00	12.53	25.28	
ZMAX	822500	5.00	13.96	22.90	
ZMAX	82300	-2.50	2.00	0.00	
ZMAX	823000	-2.00	2.06	25.52	
ZMAX	823100	-2.00	5.14	24.78	
ZMAX	823170	-0.50	5.22	24.83	
ZMAX	823180	1.17	5.45	24.08	
ZMAX	823190	0.09	5.96	22.42	
ZMAX	823200	0.22	6.28	21.58	
ZMAX	823290	1.40	6.96	19.57	
ZMAX	823300	3.00	7.25	19.42	
ZMAX	823380	3.20	8.06	17.60	
ZMAX	823390	3.30	8.46	17.35	
ZMAX	823400	3.60	10.20	17.05	
ZMAX	823490	5.00	10.20	17.05	
ZMAX	82400	-2.60	2.00	0.00	
ZMAX	824000	-2.54	2.01	13.00	
ZMAX	824080	-1.01	2.75	15.80	
ZMAX	824085	0.30	2.82	16.15	
ZMAX	824100	0.30	3.51	20.40	
ZMAX	824110	3.40	4.57	19.75	
ZMAX	824120	1.50	4.01	16.47	100 yr. Existing Stage = 4.01 NGVD - 1.97 = 2.04 NAVD
ZMAX	824130	3.70	4.99	17.87	
ZMAX	824140	5.00	6.41	14.25	
ZMAX	824200	3.60	5.97	19.48	
ZMAX	824300	3.90	6.48	17.67	
ZMAX	824400	5.20	8.28	13.85	
ZMAX	824490	1.15	5.95	20.95	
ZMAX	824500	2.00	6.54	20.78	
ZMAX	824590	3.00	6.63	21.48	
ZMAX	824600	3.50	6.63	21.53	
ZMAX	824650	5.00	6.63	21.55	
ZMAX	82510	-4.00	2.00	0.00	

ZMAX	825100	-4.00	2.00	16.75
ZMAX	825200	-4.00	2.09	17.75
ZMAX	825220	4.00	5.52	18.00
ZMAX	825230	4.00	5.80	15.88
ZMAX	825300	4.00	7.06	15.63
ZMAX	825390	4.00	7.16	15.92
ZMAX	825400	5.50	13.67	20.65
ZMAX	825410	6.10	7.35	17.47
ZMAX	825420	6.30	13.14	17.40
ZMAX	825429	8.00	9.66	18.57
ZMAX	825430	6.50	13.22	17.37
ZMAX	825500	9.41	13.60	17.37
ZMAX	825600	-4.00	2.23	13.68
ZMAX	825610	-3.60	2.26	14.00
ZMAX	825615	-3.00	2.26	14.00
ZMAX	825620	1.20	4.05	16.65
ZMAX	825630	1.20	4.52	16.63
ZMAX	825650	-4.00	2.16	13.68
ZMAX	825653	-1.05	2.17	13.58
ZMAX	825655	-1.29	2.26	13.98
ZMAX	825700	3.00	6.79	19.48
ZMAX	825800	3.63	5.97	15.77
ZMAX	825900	4.00	6.30	15.27
ZMAX	82615	-4.00	2.00	0.00
ZMAX	82620	-3.50	2.00	0.00
ZMAX	82645	-3.50	2.00	0.00
ZMAX	826150	-4.00	2.05	11.55
ZMAX	826190	-4.00	2.10	26.63
ZMAX	826200	-3.50	2.05	12.50
ZMAX	826245	-3.20	2.27	15.42
ZMAX	826250	-3.17	2.85	15.38
ZMAX	826290	0.00	2.96	19.42
ZMAX	826295	6.00	14.76	19.93
ZMAX	826300	1.00	3.44	15.13
ZMAX	826305	1.40	3.81	15.15
ZMAX	826310	1.50	4.10	15.13
ZMAX	826315	2.00	4.37	15.07
ZMAX	826320	2.50	5.13	14.65
ZMAX	826325	6.00	7.02	14.57
ZMAX	826350	8.12	10.89	14.53
ZMAX	826400	8.14	15.13	19.93
ZMAX	826450	-3.50	2.06	12.50
ZMAX	826500	-3.50	2.49	20.67
ZMAX	826550	-2.00	2.49	20.68
ZMAX	826560	-2.53	3.06	20.35
ZMAX	826570	-2.62	5.89	20.05
ZMAX	826600	-1.00	7.56	20.02
ZMAX	826640	2.20	9.92	18.85
ZMAX	826650	2.20	10.21	18.65
ZMAX	826665	2.64	10.86	18.20
ZMAX	826685	8.98	11.03	18.25
ZMAX	826700	9.28	14.28	22.32
ZMAX	826750	2.64	11.16	17.98
ZMAX	826780	8.03	14.16	16.62
ZMAX	826790	27.50	30.32	15.00
ZMAX	826800	28.00	34.08	14.75
ZMAX	826850	8.27	16.53	16.58
ZMAX	826855	17.50	22.82	15.37
ZMAX	826860	18.00	25.36	15.33
ZMAX	826865	29.00	35.27	15.32
ZMAX	826900	29.50	37.14	15.28

ZMAX	826940	41.00	43.56	15.37
ZMAX	826950	41.10	47.34	15.25
ZMAX	826970	8.50	16.82	16.92
ZMAX	826980	10.00	17.74	16.75
ZMAX	826990	10.50	19.20	16.48
ZMAX	82900	-1.00	2.00	0.00
ZMAX	82930	-1.50	2.00	0.00
ZMAX	82940	-4.00	2.00	0.00
ZMAX	829000	-1.00	2.29	13.50
ZMAX	829100	1.70	2.86	15.38
ZMAX	829190	-1.00	2.34	13.83
ZMAX	829200	0.00	4.90	20.10
ZMAX	829300	-1.50	2.19	12.75
ZMAX	829400	-4.00	2.02	30.00
ZMAX	829410	-3.90	2.03	18.30
ZMAX	829450	-3.81	2.07	18.57
ZMAX	829500	-3.50	2.35	18.57
ZMAX	829510	-1.00	2.36	18.63
ZMAX	829600	-0.50	2.65	19.53

	PIPE_ID	FROM	TO	SIZE(INCH)	LENGTH	INV_U	ZMAXU	INV_D	ZMAXD	QMAX	VMAX	TMAX
QMAX	9821000	821000	82100	60.	500.	-2.00	2.26	-2.00	2.00	835.15	1.62	14.60
QMAX	9821100	821100	821000	83.	144.	-1.10	2.44	-2.00	2.26	569.14	5.48	17.38
QMAX	9821190	821100	821190	138.	1615.	-1.10	2.44	-4.50	5.28	-507.64	-2.72	18.20
QMAX	1821200	821200	821190	96.	135.	-4.50	6.07	-4.50	5.28	507.79	6.20	18.15
QMAX	9821290	821290	821200	140.	1890.	0.87	6.35	-4.50	6.07	429.86	0.85	19.85
QMAX	1821300	821300	821290	54.	120.	0.87	8.46	0.87	6.35	143.36	8.87	19.60
QMAX	2821300	821300	821290	54.	120.	0.87	8.46	0.87	6.35	143.36	8.87	19.60
QMAX	3821300	821300	821290	54.	120.	0.87	8.46	0.87	6.35	143.36	8.87	19.60
QMAX	9821390	821390	821300	132.	2790.	8.00	11.56	0.87	8.46	368.94	2.10	17.95
QMAX	1821400	821400	821390	43.	320.	9.00	12.96	8.00	11.56	122.99	7.49	17.87
QMAX	2821400	821400	821390	43.	320.	9.00	12.96	8.00	11.56	122.99	7.49	17.87
QMAX	3821400	821400	821390	43.	320.	9.00	12.96	8.00	11.56	122.99	7.49	17.87
QMAX	9821490	821490	821400	96.	4690.	19.00	21.36	9.00	12.96	136.58	2.76	14.57
QMAX	1821500	821500	821490	24.	320.	21.50	26.44	20.00	21.36	23.34	7.56	14.25
QMAX	2821500	821500	821490	36.	320.	20.50	26.44	19.00	21.36	83.70	12.82	14.55
QMAX	9822000	822000	82200	60.	500.	-2.10	2.01	-2.50	2.00	1392.54	1.03	15.92
QMAX	1822100	822100	822000	60.	113.	-2.00	3.86	-2.00	2.01	382.51	8.08	16.77
QMAX	2822100	822100	822000	60.	150.	-2.10	3.86	-2.10	2.01	341.56	7.98	16.77
QMAX	3822100	822100	822000	60.	150.	-2.10	3.86	-2.10	2.01	341.56	7.98	16.77
QMAX	9822150	822150	822100	96.	965.	-2.00	3.91	-2.00	3.86	146.03	0.64	17.58
QMAX	9822190	822190	822150	96.	890.	-2.00	3.91	-2.00	3.91	62.48	0.29	16.53
QMAX	1822200	822200	822190	54.	320.	-1.00	4.29	-2.00	3.91	64.74	3.97	15.52
QMAX	9822110	822110	822100	73.	785.	-1.10	4.15	-2.00	3.86	983.31	1.53	15.05
QMAX	1822250	822250	822110	57.	320.	-1.10	4.86	-1.10	4.15	1002.12	6.80	15.00
QMAX	9822290	822290	822250	128.	1460.	-0.65	6.19	-1.10	4.86	926.12	1.95	15.05
QMAX	1822300	822300	822290	48.	105.	-0.65	8.14	-0.65	6.19	114.70	9.08	18.98
QMAX	2822300	822300	822290	48.	105.	-0.65	8.14	-0.65	6.19	114.70	9.08	18.98
QMAX	3822300	822300	822290	48.	105.	-0.65	8.14	-0.65	6.19	114.70	9.08	18.98
QMAX	9822350	822350	822290	96.	1870.	0.00	6.92	-0.65	6.19	759.83	2.41	14.08
QMAX	9822390	822390	822350	96.	2265.	1.00	7.02	0.00	6.92	347.20	1.52	21.13
QMAX	1822400	822400	822390	48.	100.	1.50	11.68	1.00	7.02	173.21	13.70	21.00
QMAX	2822400	822400	822390	48.	100.	1.50	11.68	1.00	7.02	173.21	13.70	21.00
QMAX	9822410	822410	822400	144.	1240.	2.80	11.68	1.50	11.68	156.41	1.10	31.98
QMAX	1822420	822420	822410	24.	260.	3.00	12.51	2.80	11.68	37.70	11.83	32.00
QMAX	2822420	822420	822410	36.	260.	3.00	12.51	2.80	11.68	115.93	10.20	32.00
QMAX	9822490	822490	822420	144.	4100.	4.00	12.53	3.00	12.51	123.47	1.16	21.08
QMAX	1822500	822500	822490	38.	115.	5.00	13.96	4.00	12.53	106.33	8.43	16.88
QMAX	2822500	822500	822490	30.	115.	5.00	13.96	4.00	12.53	36.24	-10.00	16.88
QMAX	1822050	822050	822000	24.	320.	0.50	4.69	-0.50	2.01	26.56	8.42	15.00
QMAX	2822050	822050	822000	24.	320.	0.50	4.69	-0.50	2.01	45.38	9.00	15.00
QMAX	9823000	823000	82300	60.	500.	-2.00	2.06	-2.50	2.00	592.12	0.45	13.25

QMAX	1823100	823100	823000	60.	140.	-2.00	5.14	-2.00	2.06	190.67	10.42	25.08
QMAX	9823170	823170	823100	90.	2515.	-0.50	5.22	-2.00	5.14	121.62	0.76	26.45
QMAX	1823180	823170	823180	60.	320.	1.92	5.22	1.26	5.45	-131.24	-3.78	20.60
QMAX	1823190	823180	823190	48.	320.	1.17	5.45	0.09	5.96	-45.82	-3.62	20.28
QMAX	2823190	823180	823190	48.	320.	1.17	5.45	0.09	5.96	-45.82	-3.62	20.28
QMAX	3823190	823180	823190	48.	320.	1.17	5.45	0.09	5.96	-45.82	-3.62	20.28
QMAX	1823200	823190	823200	48.	320.	1.18	5.96	0.22	6.28	-64.37	-5.04	18.20
QMAX	2823200	823190	823200	48.	320.	1.18	5.96	0.22	6.28	-64.37	-5.04	18.20
QMAX	9823290	823290	823200	79.	1160.	1.40	6.96	0.22	6.28	137.46	1.70	19.57
QMAX	1823300	823300	823290	48.	230.	3.00	7.25	1.40	6.96	138.05	3.35	19.17
QMAX	9823380	823380	823300	71.	1360.	3.20	8.06	3.00	7.25	160.17	2.12	17.08
QMAX	9823390	823390	823380	82.	900.	3.30	8.46	3.20	8.06	161.17	2.23	17.00
QMAX	1823400	823400	823390	52.	380.	3.60	10.20	3.30	8.46	105.76	7.25	14.85
QMAX	9823490	823490	823400	90.	2000.	5.00	10.20	3.60	10.20	-47.54	-0.42	14.68
QMAX	9824000	824000	82400	60.	500.	-2.54	2.01	-2.60	2.00	1406.58	0.98	13.25
QMAX	1824080	824080	824000	84.	175.	-1.01	2.75	-2.54	2.01	225.17	6.78	15.82
QMAX	2824080	824080	824000	84.	175.	-1.01	2.75	-2.54	2.01	225.17	6.78	15.82
QMAX	9824085	824085	824080	84.	2125.	0.30	2.82	-1.01	2.75	48.12	0.76	20.72
QMAX	1824100	824100	824085	66.	100.	0.30	3.51	0.30	2.82	47.41	4.12	20.75
QMAX	9824110	824110	824100	84.	1800.	3.40	4.57	1.00	3.51	20.00	0.90	19.75
QMAX	1824200	824200	824110	36.	122.	3.60	5.97	3.40	4.57	20.01	4.68	19.58
QMAX	9824120	824120	824100	84.	1285.	1.50	4.01	1.00	3.51	44.08	1.54	15.90
QMAX	9824130	824130	824120	84.	1490.	3.70	4.99	1.50	4.01	24.93	1.11	17.87
QMAX	1824300	824300	824130	36.	264.	3.90	6.48	3.70	4.99	24.94	5.32	17.73
QMAX	9824140	824140	824120	84.	2615.	5.00	6.41	1.50	4.01	27.31	1.33	14.25
QMAX	1824400	824400	824140	36.	138.	5.20	8.28	5.00	6.41	27.60	5.32	14.03
QMAX	1824490	824000	824490	30.	100.	1.59	2.01	1.15	5.95	-37.18	-7.78	20.95
QMAX	2824490	824000	824490	30.	100.	1.59	2.01	1.15	5.95	-37.18	-7.78	20.95
QMAX	9824500	824500	824490	60.	2550.	2.00	6.54	1.15	5.95	74.52	1.39	20.38
QMAX	9824590	824590	824500	60.	2780.	3.00	6.63	2.00	6.54	35.90	1.03	28.93
QMAX	1824600	824600	824590	48.	110.	3.50	6.63	3.00	6.63	35.11	1.19	28.93
QMAX	9824650	824650	824600	84.	2250.	5.00	6.63	3.50	6.63	18.26	-1.12	13.58
QMAX	9825100	825100	82510	144.	500.	-4.00	2.00	-4.00	2.00	785.83	0.57	17.12
QMAX	1825200	825200	825100	144.	125.	-4.00	2.09	-4.00	2.00	504.76	2.09	17.85
QMAX	9825610	825610	825600	133.	2550.	-3.60	2.26	-4.00	2.23	299.94	0.71	16.53
QMAX	1825650	825650	826190	140.	475.	-4.00	2.16	-4.00	2.10	602.47	1.99	14.10
QMAX	9825650	825650	825600	168.	825.	-4.00	2.16	-4.00	2.23	-595.54	-1.40	13.93
QMAX	9825653	825653	825650	97.	2050.	-1.05	2.17	-4.00	2.16	-64.13	-0.20	12.07
QMAX	1825655	825653	825655	24.	200.	-1.05	2.17	-1.29	2.26	-7.86	-1.43	14.52
QMAX	9825615	825615	825655	96.	650.	-1.00	2.26	-1.29	2.26	9.59	0.06	12.25
QMAX	9825616	825615	825610	126.	235.	-3.00	2.26	-3.60	2.26	297.71	0.74	16.55
QMAX	1825700	825700	825615	24.	150.	3.00	6.79	1.50	2.26	15.55	5.25	19.48
QMAX	9825620	825620	825615	144.	1580.	1.20	4.05	-3.00	2.26	288.14	2.73	16.65
QMAX	1825630	825630	825620	96.	121.	1.20	4.52	1.20	4.05	144.09	3.89	16.60
QMAX	2825630	825630	825620	96.	121.	1.20	4.52	1.20	4.05	144.09	3.89	16.60
QMAX	1825800	825800	825630	72.	320.	3.63	5.97	3.58	4.52	131.34	4.54	15.77
QMAX	2825800	825800	825630	72.	320.	3.63	5.97	3.58	4.52	131.34	4.54	15.77
QMAX	9825900	825900	825800	144.	680.	4.00	6.30	3.63	5.97	76.95	1.71	14.25
QMAX	9825220	825220	825200	120.	5910.	4.00	5.52	-4.00	2.09	103.82	0.49	18.00
QMAX	9825410	825410	825220	120.	810.	6.10	7.35	4.00	5.52	96.70	1.98	17.47
QMAX	1825420	825420	825410	36.	129.	6.30	13.14	6.10	7.35	44.10	8.90	17.47
QMAX	9825430	825430	825420	120.	1170.	6.50	13.22	6.30	13.14	96.72	1.00	17.40
QMAX	9825429	825429	825630	120.	1700.	8.00	9.66	3.50	4.52	38.36	2.34	17.52
QMAX	1825500	825500	825430	30.	125.	9.41	13.60	8.82	13.22	33.50	6.95	15.03
QMAX	9825230	825230	825200	192.	5900.	4.00	5.80	-4.00	2.09	95.63	0.60	15.88
QMAX	1825230	825230	825220	54.	340.	4.00	5.80	4.00	5.52	12.04	2.83	16.48
QMAX	1825300	825300	825230	60.	110.	4.00	7.06	4.00	5.80	106.53	5.49	15.68
QMAX	9825390	825390	825300	192.	845.	4.00	7.16	4.00	7.06	95.47	0.99	20.75
QMAX	1825400	825400	825390	36.	135.	5.50	13.67	4.00	7.16	95.46	13.31	20.65
QMAX	9826150	826150	82615	84.	500.	-4.00	2.05	-4.00	2.00	1425.24	1.09	13.08
QMAX	9826190	826190	826150	120.	1450.	-4.00	2.10	-4.00	2.05	604.39	0.94	13.93

Existing 100 yr. Q through ditch section = 4.41 cfs

QMAX	9826200	826200	82620	84.	500.	-3.50	2.05	-3.50	2.00	1990.05	1.66	12.53
QMAX	9826245	826245	826200	122.	7150.	-3.20	2.27	-3.50	2.05	536.23	0.86	15.55
QMAX	1826250	826250	826245	144.	240.	-3.17	2.85	-3.20	2.27	535.85	5.18	15.38
QMAX	9826290	826290	826250	96.	5140.	0.00	2.96	-3.17	2.85	383.77	0.83	20.05
QMAX	1826295	826295	826290	54.	180.	6.00	14.76	3.00	2.96	166.53	10.73	19.93
QMAX	1826400	826400	826295	30.	120.	8.38	15.13	7.59	14.76	39.97	8.10	16.83
QMAX	2826400	826400	826295	42.	120.	8.14	15.13	7.68	14.76	90.04	9.37	16.92
QMAX	1826300	826300	826290	84.	320.	1.00	3.44	0.00	2.96	51.65	3.94	14.82
QMAX	9826305	826305	826300	120.	485.	1.40	3.81	1.00	3.44	34.15	1.64	15.23
QMAX	1826310	826310	826305	72.	120.	1.50	4.10	1.40	3.81	34.15	3.07	15.05
QMAX	9826315	826315	826310	120.	595.	2.00	4.37	1.50	4.10	34.18	1.29	14.88
QMAX	1826320	826320	826315	60.	340.	2.50	5.13	2.20	4.37	34.24	4.28	14.67
QMAX	9826325	826325	826320	120.	260.	6.00	7.02	2.50	5.13	34.24	1.81	14.57
QMAX	1826350	826350	826325	36.	300.	8.12	10.89	6.88	7.02	34.24	5.87	14.53
QMAX	9826450	826450	82645	78.	500.	-3.50	2.06	-3.50	2.00	2061.35	1.72	12.73
QMAX	9826500	826500	826450	126.	2950.	-3.50	2.49	-3.50	2.06	1168.65	1.82	20.73
QMAX	1826550	826550	826500	120.	195.	-2.00	2.49	-3.50	2.49	522.42	1.98	13.27
QMAX	9826560	826560	826500	114.	4950.	-2.53	3.06	-3.50	2.49	1129.95	1.65	20.18
QMAX	1826570	826570	826560	72.	100.	-2.02	5.89	-2.53	3.06	318.09	11.42	19.88
QMAX	2826570	826560	826570	72.	100.	-1.99	3.06	-2.62	5.89	-294.73	-10.97	20.05
QMAX	3826570	826560	826570	72.	100.	-2.07	3.06	-2.55	5.89	-298.84	-11.05	20.05
QMAX	9826600	826600	826570	108.	1210.	-1.00	7.56	-2.62	5.89	1131.98	4.89	20.03
QMAX	9826640	826640	826600	106.	4055.	2.20	9.92	-1.00	7.56	1047.38	2.57	18.85
QMAX	1826650	826650	826640	96.	116.	2.20	10.21	2.20	9.92	362.96	3.93	17.80
QMAX	2826650	826650	826640	96.	116.	2.20	10.21	2.20	9.92	362.96	3.93	17.80
QMAX	3826650	826650	826640	96.	116.	2.20	10.21	2.20	9.92	362.96	3.93	17.80
QMAX	9826665	826665	826650	112.	715.	2.64	10.86	2.20	10.21	1079.96	2.96	17.53
QMAX	9826685	826685	826665	96.	650.	8.98	11.03	4.00	10.86	89.12	-2.74	18.43
QMAX	1826700	826700	826685	30.	380.	9.28	14.28	8.98	11.03	26.90	6.27	19.87
QMAX	1826750	826750	826665	96.	340.	2.64	11.16	2.64	10.86	538.29	4.08	17.23
QMAX	2826750	826750	826665	96.	340.	2.64	11.16	2.64	10.86	538.29	4.08	17.23
QMAX	9826780	826780	826750	120.	1460.	8.03	14.16	2.64	11.16	818.25	5.03	16.62
QMAX	1826850	826780	826850	48.	100.	8.68	14.16	8.27	16.53	-100.42	-8.23	14.68
QMAX	2826850	826850	826780	48.	100.	8.31	16.53	8.03	14.16	105.54	8.64	14.37
QMAX	9826855	826855	826850	120.	2120.	17.50	22.82	8.27	16.53	488.18	4.37	15.37
QMAX	1826860	826860	826855	43.	100.	18.00	25.36	17.50	22.82	91.23	9.16	13.35
QMAX	9826865	826865	826860	120.	2080.	29.00	35.27	18.00	25.36	488.26	5.89	15.32
QMAX	1826900	826900	826865	48.	240.	29.50	37.14	29.00	35.27	109.94	8.60	13.60
QMAX	2826900	826900	826865	48.	240.	29.50	37.14	29.00	35.27	109.94	8.60	13.60
QMAX	9826940	826940	826900	180.	1900.	41.00	43.56	29.50	37.14	335.73	1.09	15.35
QMAX	1826950	826950	826940	48.	304.	41.10	47.34	41.00	43.56	168.02	8.52	15.25
QMAX	2826950	826950	826940	48.	304.	41.10	47.34	41.00	43.56	168.02	8.52	15.25
QMAX	9826790	826790	826750	120.	4810.	27.50	30.32	2.64	11.16	169.23	1.99	15.00
QMAX	1826800	826800	826790	48.	140.	28.00	34.08	27.50	30.32	82.17	7.45	14.90
QMAX	2826800	826800	826790	48.	140.	28.00	34.08	27.50	30.32	82.17	7.45	14.90
QMAX	9826970	826970	826850	120.	1170.	8.50	16.82	8.27	16.53	305.04	-2.08	17.52
QMAX	9826980	826980	826970	120.	1525.	10.00	17.74	8.50	16.82	245.45	2.56	16.43
QMAX	1826990	826990	826980	54.	340.	10.50	19.20	10.00	17.74	117.75	7.38	24.13
QMAX	9829000	829000	82900	48.	500.	-1.00	2.29	-1.00	2.00	1885.89	2.86	13.53
QMAX	9829100	829100	829000	60.	450.	1.70	2.86	-1.00	2.29	21.76	0.09	15.38
QMAX	9829190	829190	829000	84.	1600.	-1.00	2.34	-1.00	2.29	89.45	0.87	20.23
QMAX	1829200	829200	829190	29.	100.	0.00	4.90	-1.00	2.34	64.57	8.99	20.13
QMAX	2829200	829200	829190	24.	100.	0.00	4.90	-1.00	2.34	24.84	7.86	20.13
QMAX	9829400	829400	82940	84.	500.	-4.00	2.02	-4.00	2.00	402.23	0.47	13.95
QMAX	9829410	829410	829400	120.	1100.	-3.90	2.03	-4.00	2.02	222.84	0.71	18.63
QMAX	1829450	829450	829410	132.	200.	-3.81	2.07	-3.90	2.03	222.82	1.64	18.65
QMAX	9829500	829500	829450	133.	1350.	-3.50	2.35	-3.81	2.07	222.80	1.67	18.67
QMAX	9829300	829300	82930	48.	500.	-1.50	2.19	-1.50	2.00	1920.73	2.54	12.75
QMAX	9829501	829500	829300	85.	1400.	-1.10	2.35	-1.50	2.19	143.92	1.24	18.60
QMAX	9829510	829510	829500	120.	1750.	-1.00	2.36	-1.10	2.35	15.96	0.18	20.67
QMAX	1829600	829600	829510	30.	260.	-0.50	2.65	-1.00	2.36	15.74	3.20	20.38

	WEIR_ID	FROM	TO	ZCREST	ZU	ZD	ZMAXU	QMAX	ZMAXD	TMAX
QWEIR	7821200	821200	821190	7.50	-4.50	-4.50	6.07	0.00	5.28	0.0
QWEIR	7821300	821300	821290	10.60	0.87	0.87	8.46	0.00	6.35	0.0
QWEIR	7821400	821400	821390	14.90	9.00	8.00	12.96	0.00	11.56	0.0
QWEIR	7821500	821500	821490	26.20	20.50	19.00	26.44	30.65	21.36	14.2
QWEIR	7822050	822050	822000	4.50	0.50	-2.10	4.69	21.74	2.01	15.0
QWEIR	7822100	822100	822000	6.50	-2.10	-2.10	3.86	0.00	2.01	0.0
QWEIR	7822200	822200	822190	6.50	-1.00	-2.00	4.29	0.00	3.91	0.0
QWEIR	7822250	822250	822110	6.08	-1.10	-1.10	4.86	0.00	4.15	0.0
QWEIR	7822300	822300	822290	12.00	-0.65	-0.65	8.14	0.00	6.19	0.0
QWEIR	7822400	822400	822390	12.50	1.50	1.00	11.68	0.00	7.02	0.0
QWEIR	7822420	822420	822410	12.50	3.00	2.80	12.51	0.47	11.68	25.3
QWEIR	7822500	822500	822490	15.40	5.00	4.00	13.96	0.00	12.53	0.0
QWEIR	7823100	823100	823000	6.50	-2.00	-2.00	5.14	0.00	2.06	0.0
QWEIR	7823180	823180	823170	6.00	1.17	-0.50	5.45	0.00	5.22	0.0
QWEIR	7823190	823190	823180	6.00	0.09	1.17	5.96	0.00	5.45	0.0
QWEIR	7823200	823200	823190	6.00	0.22	0.09	6.28	39.81	5.96	21.6
QWEIR	7823300	823300	823290	9.00	3.00	1.40	7.25	0.00	6.96	0.0
QWEIR	7823400	823400	823390	9.80	3.60	3.30	10.20	66.22	8.46	17.0
QWEIR	7824080	824080	824000	6.50	-1.01	-2.54	2.75	0.00	2.01	0.0
QWEIR	7824100	824100	824085	5.50	0.30	0.30	3.51	0.00	2.82	0.0
QWEIR	7824200	824200	824110	9.30	3.60	3.40	5.97	0.00	4.57	0.0
QWEIR	7824300	824300	824130	10.00	3.90	3.70	6.48	0.00	4.99	0.0
QWEIR	7824400	824400	824140	11.00	5.20	5.00	8.28	0.00	6.41	0.0
QWEIR	7824490	824490	824000	7.50	1.15	-2.54	5.95	0.00	2.01	0.0
QWEIR	7824600	824600	824590	12.50	3.50	3.00	6.63	0.00	6.63	0.0
QWEIR	7825200	825200	825100	10.00	-4.00	-4.00	2.09	0.00	2.00	0.0
QWEIR	7825300	825300	825230	12.00	4.00	4.00	7.06	0.00	5.80	0.0
QWEIR	7825400	825400	825390	15.00	5.50	4.00	13.67	0.00	7.16	0.0
QWEIR	7825420	825420	825410	12.80	6.30	6.10	13.14	52.63	7.35	17.4
QWEIR	6825430	825430	825429	12.40	6.50	8.00	13.22	38.91	9.66	17.4
QWEIR	7825500	825500	825430	13.00	9.41	6.50	13.60	120.56	13.22	17.4
QWEIR	6825600	825600	825200	4.80	-4.00	-4.00	2.23	0.00	2.09	0.0
QWEIR	7825630	825630	825620	13.50	1.20	1.20	4.52	0.00	4.05	0.0
QWEIR	7825655	825655	825653	6.80	-1.29	-1.05	2.26	0.00	2.17	0.0
QWEIR	7825700	825700	825615	9.20	3.00	-3.00	6.79	0.00	2.26	0.0
QWEIR	7825800	825800	825630	13.50	3.63	1.20	5.97	0.00	4.52	0.0
QWEIR	7826250	826250	826245	10.00	-3.17	-3.20	2.85	0.00	2.27	0.0
QWEIR	7826295	826295	826290	14.00	6.00	0.00	14.76	173.26	2.96	19.9
QWEIR	7826300	826300	826290	10.00	1.00	0.00	3.44	0.00	2.96	0.0
QWEIR	7826310	826310	826305	10.00	1.50	1.40	4.10	0.00	3.81	0.0
QWEIR	7826320	826320	826315	10.20	2.50	2.00	5.13	0.00	4.37	0.0
QWEIR	7826350	826350	826325	13.00	8.12	6.00	10.89	0.00	7.02	0.0
QWEIR	7826400	826400	826295	14.00	8.14	6.00	15.13	291.22	14.76	19.9
QWEIR	7826500	826500	826450	6.00	-3.50	-3.50	2.49	0.00	2.06	0.0
QWEIR	7826550	826550	826500	4.00	-2.00	-3.50	2.49	0.00	2.49	0.0
QWEIR	7826570	826570	826560	5.00	-2.62	-2.53	5.89	220.37	3.06	20.0
QWEIR	7826650	826650	826640	11.00	2.20	2.20	10.21	0.00	9.92	0.0
QWEIR	7826700	826700	826685	14.00	9.28	8.98	14.28	39.32	11.03	22.3
QWEIR	7826750	826750	826665	12.00	2.64	2.64	11.16	0.00	10.86	0.0
QWEIR	7826800	826800	826790	34.00	28.00	27.50	34.08	5.68	30.32	14.8
QWEIR	7826850	826850	826780	14.70	8.27	8.03	16.53	651.13	14.16	16.6
QWEIR	7826860	826860	826855	24.00	18.00	17.50	25.36	416.01	22.82	15.3
QWEIR	7826900	826900	826865	36.00	29.50	29.00	37.14	319.25	35.27	15.3
QWEIR	7826990	826990	826980	18.50	10.50	10.00	19.20	155.08	17.74	16.5
QWEIR	7829100	829100	829000	2.00	1.70	-1.00	2.86	209.14	2.29	15.4
QWEIR	7829200	829200	829190	5.00	0.00	-1.00	4.90	0.00	2.34	0.0
QWEIR	7829600	829600	829510	5.00	-0.50	-1.00	2.65	0.00	2.36	0.0
QWEIR	90221	82100	0	-2.00	-2.00	0.00	2.00	835.15	0.00	14.6
QWEIR	90222	82200	0	-2.50	-2.50	0.00	2.00	1392.54	0.00	15.9
QWEIR	90223	82300	0	-2.50	-2.50	0.00	2.00	592.12	0.00	13.2

QWEIR	90224	82400	0	-2.60	-2.60	0.00	2.00	1406.58	0.00	13.2
QWEIR	90225	82510	0	-4.00	-4.00	0.00	2.00	785.83	0.00	17.1
QWEIR	90226	82615	0	-4.00	-4.00	0.00	2.00	1425.24	0.00	13.1
QWEIR	90227	82620	0	-3.50	-3.50	0.00	2.00	1990.05	0.00	12.5
QWEIR	90228	82645	0	-3.50	-3.50	0.00	2.00	2061.35	0.00	12.7
QWEIR	90229	82900	0	-1.00	-1.00	0.00	2.00	1885.89	0.00	13.5
QWEIR	90230	82930	0	-1.50	-1.50	0.00	2.00	1920.73	0.00	12.8
QWEIR	90231	82940	0	-4.00	-4.00	0.00	2.00	402.23	0.00	13.9

APPENDIX C

PROPOSED CONDITIONS MODEL INPUT AND OUTPUT FILES

1. MC-25_PROFGD122011.S4D
2. WB-25_PROFGD122011.WPX
3. WB-100_PROFGD122011.WPX
4. MC-25_PROFGD122011.SMX
5. MC-100PROFGD122011.SMX

```
*   NBLOCKS   INBLK1  OUTBLK1   INBLK2  OUTBLK                                MC-25proFGD122011.S4D
SW    2         8         12      12      14
* NITCH NSCRATCH(1)NSCRATCH(2)NSCRATCH(3)NSCRATCH(4)NSCRATCH(5)NSCRATCH(NTH)
MM    6   10   11   13   14   15   16
* ====================================================================
@     8   'WB-25_proFGD122011.WPX'
@    11   'MC-25_proFGD122011.HOT'
@    12   'MC-25_proFGD122011.INT'
@    15   'MC-25_proFGD122011.SMX'
@    16   'MC-25_proFGD122011.PLT'
* ====================================================================
$COMBINE
A1  11
B1  '  GENERATE HYDROGRAPH FROM INTERNAL SCS METHOD'
B1  '  MAKE SWMM INTERFACE FILE          '
* ====================================================================
$EXTRAN
A1 'WOLF BRANCH BASIN - MISCELLANEOUS COASTAL STREAMS  7/25/00 FINAL'
A1 'EXISTING CONDITIONS 25 YEAR, 24 HOUR EVENT '
**************************************************************************
** 7/10/00  Editted roadway overflow elevation for 825420 from 12.5 to 12.8 *
**               Added interbasin overland connection from 825430 to 825630      *
** 7/20/00  Added floodplain definition (From Type 6 to Type 8) for channels*
**       9823170, 9823290, 9823490, 9826640, 9826665                             *
** 7/25/00  Edited 9825600 to 6825600 to model earthen berm obstruction          *
**               Dropped 825640 and made 825615 linear storage for better model  *
**************************************************************************
*        ISOL     KSUPER   LOSSES
B0       2        0       1
*         JELEV    JDOWN
BB         1        0
*====================*
*====================*                     1 hour    5 min
*      NTCYC    DELT     TZERO   NSTART    INTER     JNTER    JREDO  IDATZ(opt)
B1     57600    2.0       0.0      1       1800      150      0
*    32 HOUR SIMULATION
*      METRIC   NEQUAL   AMEN    ITMAX    SURTOL
B2       0        0     10.0      120    0.0015
*     H-prnt  Q-prnt H-plot Q-plot   NJSW
B3      0       0      142      223     0     0    0
B6         82100   82200   82300   82400   82510   82615   82620   82645   82900   82900
           82930   82940  821000  821100  821190  821200  821290  821300  821390  821400
          821490  821500  822000  822050  822100  822110  822190  822150  822200  822250
          822290  822300  822350  822390  822400  822410  822420  822490  822500  823000
          823100  823170  823180  823190  823200  823290  823300  823380  823390  823400
          823490  824000  824080  824085  824100  824110  824120  824130  824140  824200
          824300  824400  824490  824500  824590  824600  824650  825100  825200  825220
          825230  825300  825390  825400  825410  825420  825430  825500  825600  825610
          825615  825620  825630  825630  825650  825653  825655  825700  825800  825900
          826150  826190  826200  826245  826250  826290  826295  826300  826305  826310
          826315  826320  826325  826350  826400  826450  826500  826550  826560  826570
          826600  826640  826650  826665  826685  826700  826750  826780  826790  826800
          826850  826855  826860  826865  826900  826970  826980  826990  829000  829100
          829190  829200  829300  829400  829410  829450  829500  829510  829600  826940
          826950  825429
B7       9821000 9821100 9821190 1821200 9821290 1821300 2821300 3821300 9821390 1821400
         2821400 3821400 9821490 1821500 2821500 9822000 1822050 2822050 1822100 2822100
         3822100 9822150 9822190 1822200 9822110 1822250 9822290 1822300 2822300 3822300
         9822350 9822390 1822400 2822400 9822410 1822420 2822420 9822490 1822500 2822500
         9823000 1823100 9823170 1823180 1823190 2823190 3823190 1823200 2823200 9823290
         1823300 9823380 9823390 1823400 9823490 9824000 1824080 2824080 9824085 1824100
         9824120 9824140 1824400 9824130 1824300 9824110 1824200 1824490 2824490 9824500
         9824590 1824600 9824650 9825100 1825200 9825610 9825610 1825650 9825650 9825653
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         1825655 9825615 9825616 1825700 1825700 9825620 1825630 2825630 1825800 2825800
         9825900 9825220 9825410 1825420 9825430 1825500 9825230 1825230 1825300 9825390
         1825400 9826150 9826190 9826200 9826245 1826250 9826290 1826295 1826400 2826400
         1826300 9826305 1826310 9826315 1826320 9826325 1826350 9826450 9826500 1826550
         9826560 1826570 2826570 3826570 9826600 9826640 1826650 2826650 3826650 9826665
         9826685 1826700 1826750 2826750 9826790 1826800 2826800 9826780 1826850 2826850
         9826855 1826860 9826865 1826900 2826900 9826970 9826980 1826990 9829000 9829100
         9829190 1829200 2829200 9829400 9829410 1829450 9829500 9829300 9829501 9829510
         1829600 7821200 7821300 7821400 7821500 7822050 7822100 7822200 7822250 7822300
         7822400 7822420 7822500 7823100 7823180 7823190 7823200 7823300 7823400 7824080
         7824100 7824200 7824300 7824400 7824490 7824600 7825200 7825300 7825400 7825420
         7825500 7825630 7825655 7825700 7825800 7826250 7826295 7826300 7826310 7826320
         7826350 7826400 7826500 7826550 7826570 7826650 7826700 7826750 7826800 7826850
         7826860 7826900 7826990 7826990 7829100 7829200 7829600 1826950 2826950 9826940
         6825430 9825429 6825600
*==============================
** Conduit Data
*==============================
*  NCOND   NJUNC(1)NJUNC(2)  Q0    NKLASS AFULL     DEEP    WIDE    LEN    ZP(1)   ZP(2)  ROUGH   STHETA  SPHI      KENT  KEXIT KMIN  STRE *NOTES
*************************
*****  DUG CREEK  *******                                                                                                                  *
*************************
C1  9821000  821000   82100   0      6       0.000   5   100         500   -2.00   -2.00    0.02    7.0         7.0      0     0     0  1  * BOUNDARY
C1  9821100  821100  821000   0      8       0.000   0    0          144   -1.10   -2.00   0.035 9821100     0.00635     0     0     0  1  * S#W-1
C1  9821190  821190  821100   0      8       0.000   0    0         1615   -4.50   -1.10   0.035 9821190 0.002205263     0     0     0  1  * S#W-1 COPY
** US 41
C1  1821200  821200  821190   0      2      80.000   8   10          135   -4.50   -4.50   0.015       0           0   0.1     1     0  1  * FDOT
C1  9821290  821290  821200   0      8       0.000   0    0         1890    0.87   -4.50   0.035 9821290  0.00294127     0     0     0  1  * S#W-2
** CSX R.R.
C1  1821300  821300  821290   0      1      15.904 4.5  4.5          120    0.87    0.87   0.015       0           0   0.1     1     0  1  * FDOT
C1  2821300  821300  821290   0      1      15.904 4.5  4.5          120    0.87    0.87   0.015       0           0   0.1     1     0  1  * FDOT
C1  3821300  821300  821290   0      1      15.904 4.5  4.5          120    0.87    0.87   0.015       0           0   0.1     1     0  1  * FDOT
C1  9821390  821390  821300   0      6       0.000  11   15         2790    8.00    0.87   0.035    3.33        3.33     0     0     0  1  * E,F
** NORTH ST.
C1  1821400  821400  821390   0      3      16.116 3.6  5.7           80    9.00    8.00   0.015       0           0   0.1     1     0  4  * E,F
C1  2821400  821400  821390   0      3      16.116 3.6  5.7           80    9.00    8.00   0.015       0           0   0.1     1     0  4  * E,F
C1  3821400  821400  821390   0      3      16.116 3.6  5.7           80    9.00    8.00   0.015       0           0   0.1     1     0  4  * E,F
C1  9821490  821490  821400   0      6       0.000   8   15         4690   19.00    9.00   0.035   2.083       2.083     0     0     0  1  * E,F
** MESSLER RD.
C1  1821500  821500  821490   0      1       3.142   2    2           80   21.50   20.00   0.026       0           0   0.5     1     0  4  * E,F
C1  2821500  821500  821490   0      1       7.069   3    3           80   20.50   19.00   0.015       0           0   0.1     1     0  4  * E,F
*********************************
*****  KITCHEN BRANCH  *********
*********************************
C1  9822000  822000   82200   0      6       0.000   5   300         500   -2.10   -2.50    0.02       3           3     0     0     0  1  * BOUNDARY
** US 41
C1  1822100  822100  822000   0      2      50.000   5   10          113   -2.00   -2.00   0.015       0           0   0.1     1     0  1  * FDOT
C1  2822100  822100  822000   0      2      45.000   5   9           150   -2.10   -2.10   0.015       0           0   0.1     1     0  1  * FDOT
C1  3822100  822100  822000   0      2      45.000   5   9           150   -2.10   -2.10   0.015       0           0   0.1     1     0  1  * FDOT
***********************
*** KRACKER AVE TRIB **
***********************
C1  9822150  822150  822100   0      6       0.000   8    4          965   -2.00   -2.00   0.035       6           6     0     0     0  1  * EM
C1  9822190  822190  822150   0      6       0.000   8    4          890   -2.00   -2.00   0.035       6           6     0     0     0  1  * E,F&M
** CORNER OF KRACKER AND PHILLIPS
C1  1822200  822200  822190   0      1      15.904 4.5  4.5           80   -1.00   -2.00   0.015       0           0   0.1     1     0  4  * E,F
*********************************
*****  KITCHEN BRANCH CONT'D) **
*********************************
C1  9822110  822110  822100   0      8       0.000   0    0          785   -1.10   -2.00   0.035 9822110 0.001246497     0     0     0  1  * E,F &M
** PHILLIPS LANE
C1  1822250  822250  822110   0      2     142.500 4.75  30           80   -1.10   -1.10   0.015       0           0   0.1     1     0  4  * E,F , S#W-3
C1  9822290  822290  822250   0      8       0.000   0    0         1460   -0.65   -1.10   0.035 9822290 0.000408219     0     0     0  1  * S#W-3
```

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** CSX R.R.
C1  1822300  822300  822290   0      1      12.566   4    4           105   -0.65   -0.65   0.015       0           0   0.1     1     0  1  * FDOT
C1  2822300  822300  822290   0      1      12.566   4    4           105   -0.65   -0.65   0.015       0           0   0.1     1     0  1  * FDOT
C1  3822300  822300  822290   0      1      12.566   4    4           105   -0.65   -0.65   0.015       0           0   0.1     1     0  1  * FDOT
C1  9822350  822350  822290   0      6       0.000   8    20         1870    0.00   -0.65   0.035       4           4     0     0     0  1  * EM (DBL DITCH)
C1  9822390  822390  822350   0      6       0.000   8    20         2265    1.00    0.00   0.035       4           4     0     0     0  1  * EM (DBL DITCH)
**  SIDE DITCH CROSSINGS OF CSX R.R. 4300 FEET SOUTH OF MAIN CSX-KITCHEN CROSSING
C1  1822400  822400  822390   0      1      12.566   4    4           100    1.50    1.00   0.015       0           0   0.1     1     0  1  * E,F
C1  2822400  822400  822390   0      1      12.566   4    4           100    1.50    1.00   0.015       0           0   0.1     1     0  1  * E,F
C1  9822410  822410  822400   0      6       0.000   12   20         1240    2.80    1.50   0.035     2.2         2.2     0     0     0  1  * E,F (DBL DITCH)
** SIDE DITCH CROSSINGS OF CSX R.R. 1.05 MILES SOUTH OF MAIN CSX-KITCHEN CROSSING
C1  1822420  822420  822410   0      1       3.142   2    2            65    3.00    2.80   0.015       0           0   0.1     1     0  4  * FDOT
C1  2822420  822420  822410   0      3      11.310   3    4.8          65    3.00    2.80   0.026       0           0   0.5     1     0  4  * FDOT
C1  9822490  822490  822420   0      6       0.000   12   20         4100    4.00    3.00   0.035     2.2         2.2     0     0     0  1  * E,F, S#W-8
** CR 672/BIG BEND ROAD @ CSX RR
C1  1822500  822500  822490   0      3      12.566  3.2   5           115    5.00    4.00   0.015       0           0   0.1     1     0  1  * E,F, S#W-8
C1  2822500  822500  822490   0      1       4.909  2.5   2.5         115    5.00    4.00   0.015       0           0   0.1     1     0  1  * E,F, S#W-8
*****************************
*** KRACKER AVE OUTFALL******
*****************************
** KRACKER AVE.
C1  1822050  822050  822000   0      1       3.142   2    2            80    0.50   -0.50   0.015       0           0   0.1     1     0  4  * E,F
C1  2822050  822050  822000   0      3       5.027   2    3.2          80    0.50   -0.50   0.015       0           0   0.1     1     0  4  * E,F
***********************************
******  SIMS BRANCH  **************
***********************************
C1  9823000  823000   82300   0      6       0.000   5    300         500   -2.00   -2.50    0.02       3           3     0     0     0  1  * BOUNDARY
** N OF CSX R.R. AT BIG BEND INDUSTRIAL PARK - OUTFALL
C1  1823100  823100  823000   0      1      19.635   5    5           140   -2.00   -2.00   0.015       0           0   0.1     1     0  1  * E,F
*C1  9823170  823170  823100   0      6       0.000   10   6          2515   -0.50   -2.00   0.035    1.75        1.75     0     0     0  1  * E,F
C1  9823170  823170  823100   0      8       0.000   0.0  0.0        2515   -0.50   -2.00   0.035  9823170    0.000596    0     0     0  1  * E,F
** CSX R.R. AT BIG BEND INDUSTRIAL PARK
C1  1823180  823180  823170   0      2      50.000   5    10           80    1.26    1.92   0.015       0           0   0.1     1     0  4  * F, S#W-4
** CSX R.R. AT BIG BEND INDUSTRIAL PARK
C1  1823190  823190  823180   0      1      12.566   4    4            80    0.09    1.17   0.026       0           0   0.5     1     0  4  * F, S#W-4
C1  2823190  823190  823180   0      1      12.566   4    4            80    0.09    1.17   0.026       0           0   0.5     1     0  4  * F, S#W-4
C1  3823190  823190  823180   0      1      12.566   4    4            80    0.09    1.17   0.026       0           0   0.5     1     0  4  * F, S#W-4
** CSX R.R. AT BIG BEND INDUSTRIAL PARK
C1  1823200  823200  823190   0      1      12.566   4    4            80    0.22    1.18   0.015       0           0   0.1     1     0  4  * F, S#W-4
C1  2823200  823200  823190   0      1      12.566   4    4            80    0.22    1.18   0.015       0           0   0.1     1     0  4  * F, S#W-4
*C1  9823290  823290  823200   0      6       0.000   10   3          1160    1.40    0.22   0.035   0.875       0.875     0     0     0  1  * E,F
C1  9823290  823290  823200   0      8       0.000   0.0  0.0        1160    1.40    0.22   0.035 9823290    0.001017    0     0     0  1  * E,F
** US 41
C1  1823300  823300  823290   0      2      40.000   4    10          115    3.00    1.40   0.015       0           0   0.1     1     0  2  * FDOT
C1  9823380  823380  823300   0      8       0.000   0    0          1360    3.20    3.00   0.035 9823380 0.000247059     0     0     0  1  * S#W-6 COPY
C1  9823390  823390  823380   0      8       0.000   0    0           900    3.30    3.20   0.035 9823390 0.000211111     0     0     0  1  * S#W-6
** POWELL RD.
C1  1823400  823400  823390   0      4      21.614  4.3   6.4          95    3.60    3.30   0.026       0           0   0.5     1     0  4  * E,F
*C1  9823490  823490  823400   0      6       0.000   7    4          2000    5.00    3.60   0.035       1           1     0     0     0  1  * E,F
C1  9823490  823490  823400   0      8       0.000   0.0  0.0        2000    5.00    3.60   0.035 9823490 0.000700       0     0     0  1  * E,F
***********************************
*****  JACKSON BRANCH **************
***********************************
C1  9824000  824000   82400   0      6       0.000   5   300         500   -2.54   -2.60    0.02       3           3     0     0     0  1  * BOUNDARY
*********************************
*** BIG BEND INDUSTRIAL DRAINAGE**
*********************************
** WYANDOTTE ROAD
C1  1824080  824080  824000   0      2      56.000   7    8           175   -1.01   -2.54   0.015       0           0   0.1     1     0  1  * S#W-10
C1  2824080  824080  824000   0      2      56.000   7    8           175   -1.01   -2.54   0.015       0           0   0.1     1     0  1  * S#W-10
C1  9824085  824085  824080   0      6       0.000   7    20         2125    0.30   -1.01   0.035    1.25        1.25     0     0     0  1  * E,F
** TECO GRAVEL RD - WETLAND OUTFALL
C1  1824100  824100  824085   0      1      23.758  5.5   5.5         100    0.30    0.30   0.026       0           0   0.5     1     0  1  * E, F, S#W-9
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C1  9824110  824110  824100   0      6       0.000   7    10          1800    3.40    1.00    0.035       1           1     0     0     0  1  * EM
** US 41 - 3150 FEET NORTH OF 672
C1  1824200  824200  824110   0      1       7.069   3    3            122    3.60    3.40    0.015       0           0   0.1     1     0  1  * FDOT
**********************
*** TRIB 1 TO WETLAND *
**********************
C1  9824120  824120  824100   0      6       0.000   7    10          1285    1.50    1.00    0.035       1           1     0     0     0  1  * EM
C1  9824130  824130  824120   0      6       0.000   7    10          1490    3.70    1.50    0.035       1           1     0     0     0  1  * EM
** US 41 - 1530 FEET NORTH OF CR 672
C1  1824300  824300  824130   0      1       7.069   3    3             66    3.90    3.70    0.015       0           0   0.1     1     0  4  * FDOT
**********************
*** TRIB 2 TO WETLAND *
**********************
C1  9824140  824140  824120   0      6       0.000   7    10          2615    5.00    1.50    0.035       1           1     0     0     0  1  * EM
** US 41 - 470 FEET NORTH OF CR 672
C1  1824400  824400  824140   0      1       7.069   3    3            138    5.20    5.00    0.015       0           0   0.1     1     0  1  * FDOT
******************************
***** JACKSON BRANCH MAIN ****
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** BIG BEND/CR 672 OUTFALL @ BEACH RD.
C1  1824490  824490  824000   0      1       4.909  2.5   2.5          100    1.15    1.59    0.015       0           0   0.1     1     0  1  * S#W-11
C1  2824490  824490  824000   0      1       4.909  2.5   2.5          100    1.15    1.59    0.015       0           0   0.1     1     0  1  * S#W-11
C1  9824500  824500  824490   0      6       0.000    5    4         2550    2.00    1.15    0.035       2           2     0     0     0  1  * E,F,S#W-11
C1  9824590  824590  824500   0      6       0.000    5    4         2780    3.00    2.00    0.035       2           2     0     0     0  1  * E,F
** US 41 - 910 FEET SOUTH OF CR 672
C1  1824600  824600  824590   0      2      40.000    4   10          110    3.50    3.00    0.015       0           0   0.1     1     0  1  * E,F
C1  9824650  824650  824600   0      6       0.000    7   15         2250    5.00    3.50    0.035       1           1     0     0     0  1  * EM
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*****  NEWMAN BRANCH MAIN  ***********
**************************************
C1  9825100  825100   82510   0      6       0.000   12  200          500   -4.00   -4.00     0.02       5           5     0     0     0  1  * BOUNDARY
** DICKMAN DR.
C1  1825200  825200  825100   0      2     480.000   12   40          125   -4.00   -4.00    0.015       0           0   0.1     1     0  1  * E,F BRIDGE
*C1  9825600  825600  825200   0      8       0.000    0    0         1000   -4.00   -4.00    0.035 9825600      0.0001     0     0     0  1  * S#W-13 COPY
C1  9825610  825610  825600   0      8       0.000    0    0         2550   -3.60   -4.00    0.035 9825610 0.000256863     0     0     0  1  * S#W-13
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*****  NEWMAN BRANCH SOUTHERN OUTFALL ***
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** DICKMAN DRIVE
C1  1825650  825650  826190   0      8       0.000    0    0          475   -4.00   -4.00    0.015 1825650      0.0001     0     0     0  1  * S#W-16 BR:
LowCh=9.29, Rd=11.55
C1  9825650  825650  825600   0      8       0.000    0    0          825   -4.00   -4.00    0.035 9825650      0.0001     0     0     0  1  * S#W-13 COPY
C1  9825653  825653  825650   0      8       0.000    0    0         2050   -1.05   -4.00    0.035 9825653 0.001539024     0     0     0  1  * S#W-13 COPY
** PIERRES WAY
C1  1825655  825655  825653   0      3       5.498    2  3.5           50   -1.29   -1.05    0.026       0           0   0.5     1     0  4  * S#W-14
C1  9825615  825615  825655   0      8       0.000    0    0          650   -1.00   -1.29    0.035 9825615 0.000546154     0     0     0  1  * S#W-13 COPY
C1  9825616  825615  825610   0      8       0.000    0    0          235   -3.00   -3.60    0.035 9825616 0.002653191     0     0     0  1  * S#W-13 COPY
** changed 825615 to storage 700 ft x 70 ft 7/25/00
** ELLSBERRY RD.
C1  1825700  825700  825615   0      1       3.142    2    2          150    3.00    1.50    0.026       0           0   0.5     1     0  1  * E,F
**************************************
*****  NEWMAN BRANCH MAIN (CONT'D)****
**************************************
C1  9825620  825620  825615   0      6       0.000   12   25         1580    1.20   -3.00    0.035   0.313       0.313     0     0     0  1  * E,F
** US 41
C1  1825630  825630  825620   0      2      96.000    8   12          121    1.20    1.20    0.015       0           0   0.1     1     0  1  * FDOT
C1  2825630  825630  825620   0      2      96.000    8   12          121    1.20    1.20    0.015       0           0   0.1     1     0  1  * FDOT
** CSX R.R.
C1  1825800  825800  825630   0      2      96.000    6   16           80    3.63    3.58    0.015       0           0   0.1     1     0  4  * FDOT
C1  2825800  825800  825630   0      2      96.000    6   16           80    3.63    3.58    0.015       0           0   0.1     1     0  4  * FDOT
C1  9825900  825900  825800   0      6       0.000   12   15          680    4.00    3.63    0.035       3           3     0     0     0  1  * EM
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*****  NEWMAN BRANCH TECO DITCH OUTFALL**
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** TECO SOUTH DITCH TO DICKMAN ROAD
C1  9825220  825220  825200   0      6       0.000   10   30          5910    4.00   -4.00   0.035       5           5     0     0     0  1  * E,F
C1  9825410  825410  825220   0      6       0.000   10   25           810    6.10    4.00   0.035      10          10     0     0     0  1  * EM
** US 41
C1  1825420  825420  825410   0      1       7.069    3    3           129    6.30    6.10   0.015       0           0   0.1     1     0  1  * FDOT
C1  9825430  825430  825420   0      6       0.000   10   10          1170    6.50    6.30   0.035       1           1     0     0     0  1  * EM
*****************
***** EXISTING INTERBASIN CONNECTION
C1  9825429  825429  825630   0      6       0.000   10   10          1700     8.0    3.50   0.035       2           2     0     0     0  1  * EM
** CSX R.R. UNDER POWER LINES
C1  1825500  825500  825430   0      1       4.909  2.5  2.5           125    9.41    8.82   0.015       0           0   0.1     1     0  1  * FDOT
** TECO NORTH DITCH TO DICKMAN ROAD
C1  9825230  825230  825200   0      6       0.000   16   20          5900    4.00   -4.00   0.035       4           4     0     0     0  1  * E,F
C1  1825230  825230  825220   0      1      15.904  4.5  4.5           85    4.00    4.00   0.026       0           0   0.5     1     0  4  * E,F
** US 41
C1  1825300  825300  825230   0      2      40.000    5    8           110    4.00    4.00   0.015       0           0   0.1     1     0  1  * FDOT
C1  9825390  825390  825300   0      6       0.000   16   20           845    4.00    4.00   0.035       4           4     0     0     0  1  * E,F
** CSX R.R.
C1  1825400  825400  825390   0      1       7.069    3    3           135    5.50    4.00   0.015       0           0   0.1     1     0  1  * E,F
*********************************************
**********  APOLLO BEACH **********************
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C1  9826150  826150   82615   0      6       0.000    7  200           500   -4.00   -4.00   0.025       3           3     0     0     0  1  * BOUNDARY
C1  9826190  826190  826150   0      8       0.000    0    0          1450   -4.00   -4.00   0.035 9826190      0.0001     0     0     0  1  * S#W-17 copy
C1  9826200  826200   82620   0      6       0.000    7  200           500   -3.50   -3.50   0.025       3           3     0     0     0  1  * BOUNDARY
C1  9826245  826245  826200   0      8       0.000    0    0          7150   -3.20   -3.50   0.035 9826245 0.000141958     0     0     0  1  * S#W-17 copy
** FAIRWAY BLVD.
C1  1826250  826250  826245   0      2     216.000   12   18            60   -3.17   -3.20   0.015       0           0   0.1     1     0  4  * F ,  S#W-17
C1  9826290  826290  826250   0      8       0.000    0    0          5140    0.00   -3.17   0.035 9826290 0.000716732     0     0     0  1  * S#W-17 copy
** US 41
C1  1826295  826295  826290   0      1      15.904  4.5  4.5           180    6.00    3.00   0.026       0           0   0.5     1     0  1  * E,F
** CSX R.R.
C1  1826400  826400  826295   0      1       4.909  2.5  2.5           120    8.38    7.59   0.015       0           0   0.1     1     0  1  * FDOT
C1  2826400  826400  826295   0      1       9.621  3.5  3.5           120    8.14    7.68   0.015       0           0   0.1     1     0  1  * FDOT
***************
*** TRIB 1 ****
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** US 41 DRIVEWAY CULVERT
C1  1826300  826300  826290   0      1      38.485    7    7            80    1.00    0.00   0.026       0           0   0.5     1     0  4  * E,F
C1  9826305  826305  826300   0      6       0.000   10    6           485    1.40    1.00   0.035   1.183       1.183     0     0     0  1  * E,F
** US 41 DRIVEWAY CULVERT
C1  1826310  826310  826305   0      1      28.274    6    6           120    1.50    1.40   0.015       0           0   0.1     1     0  1  * E,F
C1  9826315  826315  826310   0      6       0.000   10    6           595    2.00    1.50   0.035       2           2     0     0     0  1  * E,F
** US 41 DRIVEWAY CULVERT
C1  1826320  826320  826315   0      1      19.635    5    5           340    2.50    2.20   0.015       0           0   0.1     1     0  1  * E,F
C1  9826325  826325  826320   0      6       0.000   10    6           260    6.00    2.50   0.035       2           2     0     0     0  1  * E,F
** CSX R.R. & US 41
C1  1826350  826350  826325   0      1       7.069    3    3           300    8.12    6.88   0.015       0           0   0.1     1     0  1  * FDOT
*********************************************
**********  WILDCAT CREEK *********************
*********************************************
C1  9826450  826450   82645   0      6       0.000  6.5  200           500   -3.50   -3.50   0.025       3           3     0     0     0  1  * BOUNDARY
C1  9826500  826500  826450   0      8       0.000    0    0          2950   -3.50   -3.50   0.035 9826500      0.0001     0     0     0  1  * S#W-17 copy
** GOLF COURSE PATH
C1  1826550  826550  826500   0      6       0.000   10   20           195   -2.00   -3.50   0.035       6           6     0     0     0  1  * EM-Golf Cart
path not modeled
C1  9826560  826560  826500   0      8       0.000    0    0          4950   -2.53   -3.50   0.035 9826560  0.00029596     0     0     0  1  * S#W-17 COPY
** GOLF & SEA BLVD. @ MILLER MAC RD.
C1  1826570  826570  826560   0      1      28.274    6    6           100   -2.02   -2.53   0.015       0           0   0.1     1     0  1  * F, S#W-18
C1  2826570  826570  826560   0      1      28.274    6    6           100   -2.62   -1.99   0.015       0           0   0.1     1     0  1  * F, S#W-18
C1  3826570  826570  826560   0      1      28.274    6    6           100   -2.55   -2.07   0.015       0           0   0.1     1     0  1  * F, S#W-18
C1  9826600  826600  826570   0      6       0.000    9   20          1210   -1.00   -2.62   0.035   0.833       0.833     0     0     0  1  * E,F
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*C1  9826640  826640  826600   0      6       0.000   8   20          4055    2.20   -1.00   0.035       1          1     0     0     0  1  * E,F
C1  9826640  826640  826600   0      8       0.000   0.0  0.0        4055    2.20   -1.00   0.035  9826640  0.000789     0     0     0  1  * E,F
** US 41
C1  1826650  826650  826640   0      2      96.000   8    12          116    2.20    2.20   0.015       0          0   0.1     1     0  1  * FDOT
C1  2826650  826650  826640   0      2      96.000   8    12          116    2.20    2.20   0.015       0          0   0.1     1     0  1  * FDOT
C1  3826650  826650  826640   0      2      96.000   8    12          116    2.20    2.20   0.015       0          0   0.1     1     0  1  * FDOT
*C1  9826665  826665  826650   0      6       0.000   10   12          715    2.64    2.20   0.035     1.5        1.5     0     0     0  1  * E,F
C1  9826665  826665  826650   0      8       0.000   0.0  0.0        715    2.64    2.20   0.035  9826665  0.000615     0     0     0  1  * E,F
****************
*** TRIB 1 *****
****************
C1  9826685  826685  826665   0      6       0.000   8    4          650    8.98    4.00   0.035     4.5        4.5     0     0     0  1  * EM
** CSX R.R AT RUSKIN VEGETABLE CORP.
C1  1826700  826700  826685   0      1       4.909  2.5   2.5        380    9.28    8.98   0.015       0          0   0.1     1     0  1  * FDOT
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**********  WILDCAT CREEK (CONT'D)**************
************************************************
** CSX R.R
C1  1826750  826750  826665   0      2     128.000   8    16          85    2.64    2.64   0.015       0          0   0.1     1     0  4  * FDOT
C1  2826750  826750  826665   0      2     128.000   8    16          85    2.64    2.64   0.015       0          0   0.1     1     0  4  * FDOT
C1  9826780  826780  826750   0      6       0.000   10   12         1460    8.03    2.64   0.035     1.5        1.5     0     0     0  1  * E,F
** SAND FIELD DRIVE
C1  1826850  826850  826780   0      1      12.566   4    4          100    8.27    8.68   0.026       0          0   0.5     1     0  1  * F, S#W-19
C1  2826850  826850  826780   0      1      12.566   4    4          100    8.31    8.03   0.026       0          0   0.5     1     0  1  * F, S#W-19
C1  9826855  826855  826850   0      6       0.000   10   8         2120   17.50    8.27   0.035   1.375      1.375     0     0     0  1  * E,F
** UNNAMED DIRT ROAD (SECTION 27)
C1  1826860  826860  826855   0      4      15.268  3.6   5.4        100   18.00   17.50   0.026       0          0   0.5     1     0  1  * E,F
C1  9826865  826865  826860   0      6       0.000   10   6         2080   29.00   18.00   0.035     0.9        0.9     0     0     0  1  * E,F
** TECO POWER LINE ACCESS ROAD
C1  1826900  826900  826865   0      1      12.566   4    4           60   29.50   29.00   0.026       0          0   0.5     1     0  4  * E,F
C1  2826900  826900  826865   0      1      12.566   4    4           60   29.50   29.00   0.026       0          0   0.5     1     0  4  * E,F
C1  9826940  826940  826900   0      6       0.000   15   6         1900   41.00   29.50   0.035      10         10     0     0     0  1  * EM
** I-75
C1  1826950  826950  826940   0      2      24.000   4    6          304   41.10   41.00   0.015       0          0   0.1     1     0  1  * FDOT
C1  2826950  826950  826940   0      2      24.000   4    6          304   41.10   41.00   0.015       0          0   0.1     1     0  1  * FDOT
****************
*** TRIB 2 *****
****************
C1  9826790  826790  826750   0      6       0.000   10   5         4810   27.50    2.64   0.035     3.2        3.2     0     0     0  1  * EM
** TECO POWER LINES ACCESS ROAD
C1  1826800  826800  826790   0      1      12.566   4    4          140   28.00   27.50   0.026       0          0   0.5     1     0  1  * assumed same as
1826900/2826900
C1  2826800  826800  826790   0      1      12.566   4    4          140   28.00   27.50   0.026       0          0   0.5     1     0  1  * assumed same as
1826900/2826900
****************
*** TRIB 3 *****
****************
C1  9826970  826970  826850   0      6       0.000   10   8         1170    8.50    8.27   0.035   1.375      1.375     0     0     0  1  * E,F
C1  9826980  826980  826970   0      6       0.000   10   6         1525   10.00    8.50   0.035    0.75       0.75     0     0     0  1  * E,F
** UNNAMED DIRT ROAD
C1  1826990  826990  826980   0      1      15.904  4.5   4.5         85   10.50   10.00   0.026       0          0   0.5     1     0  4  * E,F
****************************************************
***** MISCELLANEOUS SOUTHERN COASTAL BASINS *********
****************************************************
C1  9829000  829000   82900   0      6       0.000   4    200         500   -1.00   -1.00   0.025       3          3     0     0     0  1  * BOUNDARY
C1  9829100  829100  829000   0      8       0.000   0    0           450    1.70   -1.00   0.035 9829100     0.0061     0     0     0  1  * S#W-43
C1  9829190  829190  829000   0      8       0.000   0    0          1600   -1.00   -1.00   0.035 9829190     0.0001     0     0     0  1  * S#W-40 COPY
** 19TH AVE. NW & 14TH ST. NW
C1  1829200  829200  829190   0      3       7.163  2.4   3.8        100    0.00   -1.00   0.015       0          0   0.1     1     0  1  * E,F
C1  2829200  829200  829190   0      1       3.142   2    2          100    0.00   -1.00   0.015       0          0   0.1     1     0  1  * E,F
C1  9829400  829400   82940   0      6       0.000   7    100        500   -4.00   -4.00   0.02     7.00       7.00     0     0     0  1  * BOUNDARY
C1  9829410  829410  829400   0      6       0.000   10   30         1100   -3.90   -4.00   0.025    3.75       3.75     0     0     0  1  * F, S#W-41 COPY
** 32ND ST NW & SEAGRAPE DR.
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C1  1829450  829450  829410   0      2     253.000   11   23            50   -3.81   -3.90   0.015       0           0   0.1     1     0  4  * S#W-41 BR:
LowCH=6.92, Rd=9.44
C1  9829500  829500  829450   0      8       0.000   0    0           1350   -3.50   -3.81   0.035 9829500  0.00032963     0     0     0  1  * F, S#W-41
C1  9829300  829300   82930   0      6       0.000   4    200          500   -1.50   -1.50   0.025       3           3     0     0     0  1  * BOUNDARY
C1  9829501  829500  829300   0      8       0.000   0    0           1400   -1.10   -1.50   0.035 9829501 0.000385714     0     0     0  1  * S#W-40 copy
C1  9829510  829510  829500   0      6       0.000   10   20          1750   -1.00   -1.10   0.035       2           2     0     0     0  1  * EM
** SHELL POINT ROAD @ CEDAR DRIVE
C1  1829600  829600  829510   0      1       4.909  2.5   2.5           65   -0.50   -1.00   0.015       0           0   0.1     1     0  4  * E,F
*===================================
*  IRREGULAR CHANNEL CROSS-SECTIONS
*===================================
**NC    XNL     XNR     XNCH
**X1    SECNO   NUMSTA  STCHL   STCHR   XLOBL   XLOBR   LEN     PXSECR  PSXECE
**GR    EL1     STA1    EL2     STA2    EL3     STA3    EL4     STA4    EL5     STA5
***
* DUG CREEK
***           SURVEY W-1  F.P. ADDED (SWFWMD MAPS)
NC          0.10    0.10    0.025
X1    9821100     11      0       82       0       0    144     0       0
GR     5.8  -200      5       0     4.7      11     1.6      20     0.8      28
GR     -1.1      47       0.4      51     1.9      69       5      74     5.1      82
GR     5.8       1600
***           SURVEY W-1  F.P. ADDED (SWFWMD MAPS)
NC          0.10    0.10    0.03
X1    9821190     11      0       82       0       0   1615     0       0
GR     7.0  -800      5       0     4.7      11     1.6      20     0.8      28
GR     -4.5      47       0.4      51     1.9      69       5      74     5.1      82
GR     6.5     1500
***           SURVEY W-2  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.035
X1    9821290    8         0      49       0       0    1890       0       0
GR    12.5  -400    10.7       0    10.4      10     0.87     20     1.2      29
GR    6.4   39       7.1      49    12.5      750
****
* KITCHEN BRANCH
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW
NC          0.16    0.16    0.04
X1    9822110     8         0      70     0       0     785       0       0
GR     5.0  -480   3.0  -130   1.0    0    -1.1   20    -1.1   50
GR     1.0   70    3.0    100     5.0   420
***           SURVEY W-3  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.04
X1    9822290     9       0     112       0       0    1460    0       0
GR     10  -500      3.1   0      3.4    33     0.8      41    -0.65     56
GR     1     74      5.5   85     5.1    112     10     820
****
* SIMS BRANCH
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW 7/20/00
NC          0.16    0.16    0.04
X1    9823170     11        0      21.6   0       0     2515       0       0
GR    7.0   -25.0    6.0   -20     5.0    -10     4.0       0     -0.5    7.8
GR    -0.5    13.8   4.0    21.6   5.0    31.6    5.0     622    6.0    662
GR    7.0    665
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW 7/20/00
NC          0.16    0.16    0.04
X1    9823290     13        0      10.0   0       0     1160       0       0
GR    8.0   -250     7.0   -220    6.5    -200    6.5     -100    6.0    -10.0
GR    5.5     0.0    1.4    3.5    1.4     6.5    5.5     10.0   6.0    20.0
GR    7.0    90      7.0    160    8.0    170.0
***           SURVEY W-6  COPY  Rt.Bank ADJUSTED & F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.04
X1    9823380     10        0      81     0       0     1360       0       0
GR    9.0   -1100    8.9     0     8.7     41     4.6      50     3.2      58
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GR    3.6      66    8.7    69     8.8     76     8.9      81     9.1   681
***           SURVEY W-6  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.04
X1    9823390     10       0     81       0       0    900    0       0
GR    9.8   -1200    8.9     0     8.7     41     4.6      50     3.3      58
GR    3.6      66    8.7      69   9.9     76     10       81     10.1   1481
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW 7/20/00
NC          0.16    0.16    0.04
X1    9823490      11      0      10.0   0       0     2000       0       0
GR    12.5   -20     10.5  -15.0   10.0  -10      8.0     0      5.0       3
GR     5.0     7     8.0    10.0    9.0    20.0   10     210     10.5    610
GR    12.5   620
***
* NEWMAN BRANCH
***           SURVEY W-13 COPY  R.B. ADJUSTED & F.P. ADDED (SWFWMD MAPS)
******* obstructed by earthen berm at elev 4.8!!!
*NC          0.16    0.16    0.025
*X1    9825600     8          0     131       0    0     1000     0       0
*GR    7.5  -100   4.19     0    -1.8     1    -4.0      51     1.6     101
*GR    5.0   106    5.1     131       5.2     631
***           SURVEY W-13  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9825610     8          0     131       0    0   2550     0       0
GR    7.5  -300   4.19     0    -1.8     1    -3.6      51     1.6     101
GR    5.8   106    5.7     131       5.9     431
***           SURVEY W-16 BRIDGE  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    1825650     9       0     160       0    0    475     0       0
GR    7.7  -450   7.66       0    6.56      25   -1.24    33.6   -4.0    61
GR    0.84  106   6.66     112    6.76     160        6.8  360
***           SURVEY W-13  COPY  R.B. ADJUSTED & F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9825650     8          0     131       0    0     825     0       0
GR    10.0 -500   4.19     0    -1.8     1    -4.0      51     1.6     101
GR    5.8   106    5.7     131       7.0     731
***           SURVEY W-13  COPY (+2.55') F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9825653     8          0     131       0    0    2050     0       0
GR    7.0  -450   4.19     0    0.75     1    -1.05     51     4.15    101
GR    5.8   106    5.7     131       7.0     331
***           SURVEY W-13  COPY (+2.55') F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9825615     8          0     131       0     0    650     0       0
GR    7.0  -450   4.19     0    0.75     1    -1.00     51     4.15    101
GR    5.8   106    5.7     131       7.0     331
***           SURVEY W-13  COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9825616     8          0     131       0     0     235     0       0
GR    7.5  -300   4.19     0    -1.8     1    -3.0      51     1.6     101
GR    5.8   106    5.7     131       5.9     431
****          SURVEY W-13  COPY (+2' TO 5.1') F.P. ADDED (SWFWMD MAPS)
*NC          0.16    0.16    0.025
*X1    9825640     8          0     131       0     0    310     0       0
*GR    9.4  -300   9.29     0    3.3      1    1.5     51     6.7     101
*GR    7.8   106    7.7     131       8.2     431
***
* APOLLO BEACH/WILDCAT CREEK
***
***           SURVEY W-17  COPY  R.B. ADJUSTED & F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9826190     10         0     191       0       0    1450       0       0
GR    6  -450    5.0   -350    4.1       0   -1.07       2   -4.00      83
GR    1.33 164    4.81 166      4.63  191     5.0      300      5.5    350
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***           SURVEY W-17  COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9826245     8         0     191       0       0    7150       0       0
GR    7.0   -400    4.1       0   -1.07       2   -3.20      83    1.33     164
GR    6.81     166      6.63     191        7.0     400
***           SURVEY W-17  COPY  (+3')R.B. ADJUSTED & F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9826290     8         0     191       0       0    5140       0       0
GR    8.0   -100    7.1    0      2.07       2   0.0      83    4.33     164
GR    6.81     166      7.63     191        8.0     300
***           SURVEY W-17  COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9826500     8         0     191       0       0    2950        0       0
GR    7.0   -100    4.1       0   -1.07       2   -3.50      83    1.33     164
GR    6.81     166      6.63     191        7.0     300
***           SURVEY W-17  COPY (+0.5')R.B. ADJUSTED & F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.025
X1    9826560     8         0     191       0       0    4950        0       0
GR    7.0   -100    4.6       0   -0.57       2   -2.53      83    1.83     164
GR    6.81     166      6.83     191        7.0     300
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW 7/20/00
NC          0.16    0.16    0.04
X1    9826640      9       0      30     0       0     4055       0       0
GR    11    -310    9.5   -300     7.2   0     2.2    5.0     2.2      25
GR    7.2    30     9.0   280     10.0   430    11    450
***     CROSS-SECTION TAKEN FROM SWFWMD MAPPING AND FIELD REVIEW 7/20/00
NC          0.16    0.16    0.04
X1    9826665     12        0      30     0       0     715        0       0
GR    12.0 -510     10.0  -500     9.0   -100    9.0    -20     8.64      0
GR    2.64    9     2.64    21    8.64    30     8.0    80      9.0     130
GR    10.0   230    12     250
***
* COASTAL BASINS
***
***           SURVEY W-43  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.03
X1   9829100     9         0      62       0       0   450       0       0
GR   6.7    -200    3.5       0     3.7      25     2.1      27     1.7      31
GR   2.5    36     2.6      37      3.1      62      6.7    762
***           SURVEY W-40 COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.03
X1  9829190     9         0      80       0       0    1600       0       0
GR    5    -150     1.56     0    1.36      10    0.16      16   -1.00      30
GR    -0.34   44      5.96    55     5.96      80       6    230
***           SURVEY W-41 COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.03
X1  9829500     7         0      75       0       0   1350       0       0
GR      7.59       0    6.45    26.4   -0.41    26.5   -3.50      41   -0.21      57
GR      6.99      64    7.59      75
***           SURVEY W-40 COPY  F.P. ADDED (SWFWMD MAPS)
NC          0.16    0.16    0.03
X1  9829501     9         0      80       0       0    1400       0       0
GR    6    -100     1.56     0    1.36      10    0.16      16   -1.10      30
GR    -0.34   44      5.96    55     5.96      80       5    2000
*==============================
** Junction Data     TW=2
*==============================
*  (INPUT) (opt. 200)      (INPUT)HBC Model
*    JUN    GRELEV    Z     QINST    Y0             TOB   Yo or Rd Top
**  DUG CREEK
D1    82100      5      -2   0      2       *    3.5     BOUNDARY
D1   821000      7      -2   0      2       *    5
D1   821100      15    -1.1   0      2       *    5
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D1   821190    17.6    -4.5   0      2       *    7.6
D1   821200    17.7    -4.5   0      2       *    7.7      7.5
D1   821290      20    0.87   0      2       *    10
D1   821300      20    0.87   0      2       *    10       10.6
D1   821390      25       8   0      8       *    15
D1   821400      25       9   0      9       *    15       14.9
D1   821490      36      19   0     19       *    26
D1   821500      37    20.5   0   20.5       *    27       26.2
** KITCHEN BRANCH
D1    82200       5    -2.5   0      2       *    3.5      BOUNDARY
D1   822000       7    -2.1   0      2       *    4
D1   822050      10     0.5   0      2       *    5        4.5
D1   822100      15    -2.1   0      2       *    5        6.5
D1   822110      15    -1.1   0      2       *    5
D1   822150      15      -2   0      2       *    5
D1   822190      15      -2   0      2       *    5
D1   822200      15      -1   0      2       *    5        6.5
D1   822250      16    -1.1   0      2       *    6        6.08
D1   822290      15   -0.65   0      2       *    5
D1   822300      16   -0.65   0      2       *    6        12
D1   822350      17       0   0      2       *    7
D1   822390      20       1   0      2       *    10
D1   822400      20     1.5   0      2       *    10       12.5
D1   822410      20     2.8   0    2.8       *    10
D1   822420      20       3   0      3       *    10       12.5
D1   822490      20       4   0      4       *    10
D1   822500      20       5   0      5       *    10       15.4
** SIMS BRANCH
D1    82300       5    -2.5   0      2       *    3.5      BOUNDARY
D1   823000       7      -2   0      2       *    6
D1   823100      17      -2   0      2       *    7        6.5
D1   823170      17    -0.5   0      2       *    7
D1   823180      17    1.17   0      2       *    7        6
D1   823190      16    0.09   0      2       *    6        6
D1   823200      16    0.22   0      2       *    6        6
D1   823290      19     1.4   0      2       *    9
D1   823300      19       3   0      3       *    9        9
D1   823380      18     3.2   0    3.2       *    8
D1   823390      20     3.3   0    3.3       *    10
D1   823400      20     3.6   0    3.6       *    10       9.8
D1   823490    20.5       5   0      5       *    10.5
** JACKSON BRANCH
D1    82400       5    -2.6   0      2       *    3.5      BOUNDARY
D1   824000       7   -2.54   0      2       *    7
D1   824080    16.5   -1.01   0      2       *    6.5      6.5
D1   824085      16     0.3   0      2       *    6
D1   824100      16     0.3   0      2       *    6        Yo=3, 5.5
D1   824110    16.5     3.4   0    3.4       *    6.5
D1   824120      16     1.5   0      2       *    6
D1   824130      18     3.7   0    3.7       *    8
D1   824140      18       5   0      5       *    8
D1   824200      17     3.6   0    3.6       *    7        9.3
D1   824300      18     3.9   0    3.9       *    8        10
D1   824400      21     5.2   0    5.2       *    11       11
D1   824490    17.5    1.15   0      2       *    7.5      7.5
D1   824500      16       2   0      2       *    6
D1   824590      18       3   0      3       *    8
D1   824600      20     3.5   0    3.5       *    10       12.5
D1   824650      20       5   0      5       *    10       Yo=8
** NEWMAN BRANCH
D1   82510        9      -4   0      2       *    BOUNDARY
D1   825100       9      -4   0      2       *    4
D1   825200      15      -4   0      2       *    5        5
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D1	825220	20	4	0	4	*	10		
D1	825230	20	4	0	4	*	10		
D1	825300	22	4	0	4	*	12	12	
D1	825390	20	4	0	4	*	10		
D1	825400	22	5.5	0	5.5	*	12	15	
D1	825410	22	6.1	0	6.1	*	12		
D1	825420	22	6.3	0	6.3	*	12	12.8	
D1	825429	22.5	8.0	0	8.0	*	12.4		
D1	825430	22.5	6.5	0	6.5	*	12.5		
D1	825500	23	9.41	0	9.41	*	13	13	
D1	825600	11	-4	0	2	*	7		
D1	825610	11	-3.6	0	2	*	7		
D1	825615	11	-3	0	2	*	7		
D1	825620	15	1.2	0	2	*	9		
D1	825630	23	1.2	0	2	*	13	13.5	
*D1	825640	17	1.5	0	2	*	7		
D1	825650	11	-4	0	2	*	5		
D1	825653	11	-1.05	0	2	*	6		
D1	825655	11	-1.29	0	2	*	6		
D1	825700	19	3	0	3	*	9	9.2	
D1	825800	23	3.63	0	3.63	*	13	13.5	
D1	825900	20	4	0	4	*	10		
** APOLLO BEACH/WILDCAT CREEK									
D1	82615	5	-4	0	2	*	3.5	BOUNDARY	
D1	82620	5	-3.5	0	2	*	3.5	BOUNDARY	
D1	82645	5	-3.5	0	2	*	3.5	BOUNDARY	
D1	826150	9	-4	0	2	*	8		
D1	826190	14.5	-4	0	2	*	4.5		
D1	826200	9	-3.5	0	2	*	6		
D1	826245	16	-3.2	0	2	*	6		
D1	826250	16	-3.17	0	2	*	6	10	
D1	826290	20	0	0	2	*	10		
D1	826295	23	6	0	6	*	13	14	
D1	826300	22	1	0	2	*	12	10	
D1	826305	20	1.4	0	2	*	10		
D1	826310	20	1.5	0	2	*	10	10	
D1	826315	20	2	0	2	*	10		
D1	826320	20	2.5	0	2.5	*	10	10.2	
D1	826325	20	6	0	6	*	10		
D1	826350	21.5	8.12	0	8.12	*	11.5	13	
D1	826400	22	8.14	0	8.14	*	12	14	
D1	826450	9	-3.5	0	2	*	7		
D1	826500	15	-3.5	0	2	*	5	6	
D1	826550	14	-2	0	2	*	4	4	
D1	826560	14	-2.53	0	2	*	4		
D1	826570	16	-2.62	0	2	*	6	5	
D1	826600	15	-1	0	2	*	5		
D1	826640	18	2.2	0	2.2	*	8		
D1	826650	21	2.2	0	2.2	*	11	11	
D1	826665	19	2.64	0	2.64	*	9		
D1	826685	22	8.98	0	8.98	*	12		
D1	826700	25	9.28	0	9.28	*	15	14	
D1	826750	22	2.64	0	2.64	*	12	12	
D1	826780	20	8.03	0	8.03	*	10		
D1	826790	45	27.5	0	27.5	*	35		
D1	826800	44	28	0	28	*	34	34	
D1	826850	24	8.27	0	8.27	*	14	14.7	
D1	826855	34	17.5	0	17.5	*	24		
D1	826860	34	18	0	18	*	24	24	
D1	826865	46	29	0	29	*	36		
D1	826900	46	29.5	0	29.5	*	36	36	
D1	826940	57	41	0	41	*	47		
D1	826950	57	41.1	0	41.1	*	47		

```
D1   826970      25     8.5   0     8.5      *    15      15
D1   826980      28      10   0      10      *    18
D1   826990      28    10.5   0    10.5      *    18      18.5
** COASTAL BASINS
D1    82900      5       -1   0      2       *    3.5     BOUNDARY
D1    82930      5     -1.5   0      2       *    3.5     BOUNDARY
D1    82940      5       -4   0      2       *    3.5     BOUNDARY
D1   829000      7       -1   0      2       *    1
D1   829100      12     1.7   0      2       *    2       2
D1   829190      14      -1   0      2       *    4
D1   829200      15       0   0      2       *    5       5
D1   829300       7    -1.5   0      2       *    5
D1   829400       7      -4   0      2       *    1.5
D1   829410    11.5    -3.9   0      2       *    1.5
D1   829450      14   -3.81   0      2       *    4       BR: LC=6.92, RD=9.44
D1   829500      13    -3.5   0      2       *    3
D1   829510      14      -1   0      2       *    4
D1   829600      15    -0.5   0      2       *    5       5
*==================================
* STORAGE NODES - ROAD OVERTOPPING
* (allows non-overlapping pipe connect.s & weirs)
*==================================
** DUG CREEK
E1 821190  18   5000  0
E1 821200  18   -1    4
E2 0.007   -4.5
    2.0     5.0
    21      7.0
    21     17.0
E1 821290  20   5000    0
E1 821390  25   5000    0
E1 821400  25   -1    3
E2  0.005   9.0
    26.5    14.5
    26.5    24.5
E1 821490  36   5000    0
E1 821500  37   5000    0
** KITCHEN BRANCH
E1 822050  15   5000    0
E1 822000  15   100000  0
E1 822200  15   5000    0
E1 822190  15   5000    0
E1 822250  16   5000    0
E1 822110  15   5000    0
E1 822290  15   5000    0
E1 822400  22   -1   3
E2  0.005   1.5
    17.0    12.0
    17.0    22.0
E1 822390  20   5000    0
E1 822420  22   -1   3
E2  0.005   3.0
    24.0    12.0
    24.0    22.0
E1 822410  20   5000    0
E1 822500  25   -1   3
E2  0.005   5.0
    30.0    14.9
    17.0    24.9
E1 822490  20   5000    0
** SIMS BRANCH
E1 823000  17   5000    0
E1 823100  17   5000    0
```

```
E1 823170  17   5000    0
E1 823180  17   -1   3
E2  0.005  1.17
    5.0    5.50
    5.0    15.5
E1 823190  17   -1   3
E2  0.005  0.09
    2.0    5.50
    2.0    15.5
E1 823200  17   5000    0
** storage accounted for in type 8 floodplain
*E1 823200  17   -1   3
*E2  0.005  0.22
*    5.5    5.50
*    5.5    15.5
E1 823290  20   5000    0
E1 823300  20   -1   3
E2  0.005   3.0
    30     8.50
    30     18.5
E1 823380  20   5000    0
E1 823390  20   5000    0
E1 823400  20   5000    0
** storage accounted for in type 8 floodplain
*E1 823400  20   -1   3
*E2  0.005   3.6
*    3.0     9.3
*    3.0     19.3
E1 823490  20   5000    0
** JACKSON BRANCH
E1 824000  16   5000    0
E1 824085  16   5000    0
E1 824080  16   -1   3
E2  0.005  -1.01
    8.0     5.0
    8.0     15.0
E1 824110  16   5000    0
E1 824130  18   5000    0
E1 824140  18   5000    0
E1 824200  19   -1   3
E2  0.005   3.6
    52.0    8.8
    52.0    18.8
E1 824300  20   -1   3
E2  0.005   3.9
    24.0    9.5
    24.0    19.5
E1 824400  21   5000    0
E1 824490  18   5000    0
E1 824590  18   5000    0
E1 824600  22    -1   3
E2  0.005   3.5
    83.0    12.0
    83.0    22.0
** NEWMAN BRANCH
E1 825100  20   1000000 0
E1 825230  20   5000    0
E1 825300  22    -1   3
E2  0.005   4.0
     3.0    11.5
     3.0    21.5
E1 825390  20   5000    0
E1 825400  25    -1   3
```

```
E2  0.005   5.5
    27.0    14.5
    27.0    24.5
E1 825410  20   5000    0
E1 825420  20   5000    0
E1 825429  20   5000    0
E1 825430  20   5000    0
E1 825500  23    -1   4
E2  0.005   9.41
    3.2     10.0
    18.0    13.0
    18.0    23.0
E1 825620  15   5000    0
E1 825630  23    -1   3
E2  0.005   1.2
    2.0     13.0
    2.0     23.0
E1 825653  11   5000    0
E1 825655  11   5000    0
E1 825615  11   52500   0
E1 825700  20    -1   3
E2  0.005   3.0
    21.0    8.7
    21.0    18.7
E1 825800  23    -1   4
E2  0.005   3.63
    6.5     10.0
    21.0    13.0
    21.0    23.0
** APOLLO BEACH/WILDCAT CREEK
E1 826245  21   5000    0
E1 826250  21   5000    0
E1 826290  22   5000    0
E1 826300  22    -1   3
E2  0.005   1.0
    1.10    9.5
    1.10    19.5
E1 826305  20   5000    0
E1 826310  20   5000    0
E1 826315  20   5000    0
E1 826320  20   5000    0
E1 826325  21.5 5000    0
E1 826350  22.5   -1    3
E2  0.005   8.12
    29.0   12.5
    29.0   22.5
E1 826295  22.0 5000    0
E1 826400  24.0   -1    3
E2  0.005   8.14
    23.0   13.5
    23.0   23.5
E1 826450  15.0 5000    0
E1 826500  16.0   -1    3
E2  0.005   -3.5
    37.0    5.5
    37.0   15.5
E1 826550  14.0   -1    3
E2  0.005   -2.0
    39.0    3.5
    39.0   13.5
E1 826560  16   5000    0
E1 826570  16     -1    3
E2  0.005   -2.62
```

```
    0.21    4.5
    0.21   14.5
E1 826640  21   5000    0
E1 826665  22     -1    4
E2  0.005  2.64
    0.55   7.9
    2.5    8.0
    2.5   18.0
E1 826685  25 5000    0
E1 826700  25   -1    3
E2  0.005  9.28
    20.0   13.5
    20.0   23.5
E1 826650  21.0 5000    0
E1 826750  22.0   -1    3
E2  0.005  2.64
    16.4   11.5
    16.4   21.5
E1 826790  44 5000    0
E1 826800  44   -1    3
E2  0.005  28.0
    0.23   33.5
    0.23   43.5
E1 826780  24   5000    0
E1 826850  24.2   -1    3
E2  0.005  8.27
    5.2    14.2
    5.2    24.2
E1 826855  34   5000    0
E1 826860  34   5000    0
E1 826865  46   5000    0
E1 826900  46   5000    0
E1 826970  25     -1    3
E2  0.005  8.5
    13.7   14.5
    13.7   24.5
E1 826980  28   5000    0
E1 826990  28     -1    3
E2  0.005  10.5
     5.2   18.0
     5.2   28.0
** COASTAL BASINS
E1 829000  12   5000    0
E1 829190  15   5000    0
E1 829200  15     -1    3
E2  0.005  0.0
    33.0    4.5
    33.0   14.5
E1 829510  15   5000    0
E1 829600  15     -1    3
E2  0.005  -0.5
    21.0    4.5
    21.0   14.5
*=========================================
* STORAGE DATA (SIGNIFICANT LAKES/WETLANDS)
*=========================================
** DUG CREEK
E1 821300 20  -1 4
E2  0.005   0.87
    2.5     5.0
    49.0    10.0
    49.0    20.0
** KITCHEN BRANCH
```

```
E1 822100  15   1000000  0
E1 822150  15    313000  0
E1 822300  17    -1   5
E2  0.005   -0.65
    0.5     5.0
    28.0    10.0
    119.0   12.0
    119.0   17.0
** JACKSON BRANCH
E1 824100  17    -1   6
E2  0.005  0.30
    0.005   2.9
    10.5    3.0
    40      5.0
    78      6.0
   100     11.0
E1 824650  20    -1   6
E2  0.005   5.0
    0.005   7.9
    0.75    8.0
    3.0     10.0
    8.8     11.5
    50      16.5
** NEWMAN BRANCH
E1 825200  15    -1   3
E2  0.005   -4.0
    20.0     4.5
    50.0    14.0
** COASTAL BASINS
E1 829100  15  1129250  0
E1 829500  15  3681250  0
*======================
** Weir Data
*======================
* ================================
*  FLOOD FLOW OVERTOP ROAD PATHS
* ================================
*        IDWEIR   NJUNC(1) NJUNC(2)  KWEIR   EL.CREST  EL.TOP   WLEN    COEFF
** DUG CREEK
G1      7821200   821200    821190       1      7.50    17.7     100    2.63
G1      7821300   821300    821290       1     10.60      20     100    2.63
G1      7821400   821400    821390       1     14.90      25     100    2.63
G1      7821500   821500    821490       1     26.20      37     100    2.63
** KITCHEN BRANCH
G1      7822050   822050    822000       1      4.50      15     100    2.63
G1      7822100   822100    822000       1      6.50      15     400    2.63
G1      7822200   822200    822190       1      6.50      15     100    2.63
G1      7822250   822250    822110       1      6.08      16     100    2.63
G1      7822300   822300    822290       1     12.00      16     100    2.63
G1      7822400   822400    822390       1     12.50      20     100    2.63
G1      7822420   822420    822410       1     12.50      20     100    2.63
G1      7822500   822500    822490       1     15.40      20     100    2.63
** SIMS BRANCH
G1      7823100   823100    823000       1      6.50      17     100    2.63
G1      7823180   823180    823170       1      6.00      17     100    2.63
G1      7823190   823190    823180       1      6.00      16     100    2.63
G1      7823200   823200    823190       1      6.00      16     100    2.63
G1      7823300   823300    823290       1      9.00      19     100    2.63
G1      7823400   823400    823390       1      9.80      20     100    2.63
** JACKSON BRANCH
G1      7824080   824080    824000       1      6.50    16.5     100    2.63
G1      7824100   824100    824085       1      5.50      16     100    2.63
G1      7824200   824200    824110       1      9.30      17     100    2.63
```

```
G1      7824300   824300    824130       1     10.00      18     100    2.63
G1      7824400   824400    824140       1     11.00      21     100    2.63
G1      7824490   824490    824000       1      7.50    17.5     100    2.63
G1      7824600   824600    824590       1     12.50      20     100    2.63
** NEWMAN BRANCH
G1      7825200   825200    825100       1     10.00      15     100    2.63
G1      7825300   825300    825230       1     12.00      22     100    2.63
G1      7825400   825400    825390       1     15.00      22     100    2.63
G1      7825420   825420    825410       1     12.80      22     100    2.63
********* INTERBASIN TRANSFER TO FDOT DITCH  7/10/00
G1      6825430   825430    825429       1     12.40      22     20     2.63
***********
G1      7825500   825500    825430       1     13.00      23     100    2.63
***** 7/25 MODIFICATION earthen berm obstructs flow
G1      6825600   825600    825200       1      4.80      10     100    2.63
**********************
G1      7825630   825630    825620       1     13.50      17     100    2.63
G1      7825655   825655    825653       1      6.80      11     100    2.63
G1      7825700   825700    825615       1      9.20      19     100    2.63
G1      7825800   825800    825630       1     13.50      23     100    2.63
** APOLLO BEACH/WILDCAT CREEK
G1      7826250   826250    826245       1     10.00      16     100    2.63
G1      7826295   826295    826290       1     14.00      23     100    2.63
G1      7826300   826300    826290       1     10.00      22      50    2.63
G1      7826310   826310    826305       1     10.00      20      50    2.63
G1      7826320   826320    826315       1     10.20      20      50    2.63
G1      7826350   826350    826325       1     13.00    21.5     100    2.63
G1      7826400   826400    826295       1     14.00      22     100    2.63
G1      7826500   826500    826450       1      6.00      15     100    2.63
G1      7826550   826550    826500       1      4.00      14     100    2.63
G1      7826570   826570    826560       1      5.00      16     100    2.63
G1      7826650   826650    826640       1     11.00      21     100    2.63
G1      7826700   826700    826685       1     14.00      25     100    2.63
G1      7826750   826750    826665       1     12.00      22     100    2.63
G1      7826800   826800    826790       1     34.00      44     100    2.63
G1      7826850   826850    826780       1     14.70      24     100    2.63
G1      7826860   826860    826855       1     24.00      34     100    2.63
G1      7826900   826900    826865       1     36.00      46     100    2.63
G1      7826990   826990    826980       1     18.50      28     100    2.63
** COASTAL BASINS
G1      7829100   829100    829000       1      2.00      12     100    2.63
G1      7829200   829200    829190       1      5.00      15     100    2.63
G1      7829600   829600    829510       1      5.00      15     100    2.63
********* Outfall Data ************************************************************
* Tidal (CONSTANT)
*
I1    82100  1
I1    82200  1
I1    82300  1
I1    82400  1
I1    82510  1
I1    82615  1
I1    82620  1
I1    82645  1
I1    82900  1
I1    82930  1
I1    82940  1
J1  2
J2  2.0
$ENDPROGRAM
```

```
* ============================================================================
*                      BULLFROG CREEK/WOLF BRANCH                              WB-25proFGD122011.WPX
* ============================================================================
*
ID                 WOLF BRANCH 25-YEAR STORM
ID        Dames & Moore for Hillsborough County BOCC--Dept of Stormwater Management
*
*
*   This is a standard HEC-1 file.  RDHEC copies the ID, *, IT, IO, JR,
*       PG, IN, PC, and PR records from this file.  It ignores other records.
*
*FREE
*DIAGRAM
*     -----------------------
*      25-YEAR 24 HOUR STORM
*     -----------------------
*
*   NMIN  DATE     ITIME      NQ  NDDATE   NDTIME
IT    15 26SEP97    0000     250 27SEP97    0000
*
*NOLIST
*   IPRT    IPLT
*   0,1,2         All
*       3         Input Data and Intermediate and Master Summaries
*       4         Input Data and Master Summary
*       5         Job specification and Master Summary Only
*
*            0,1  No Printer Plots--Can be overriden on KO record
*              2  Plot All
*
IO     3       0
*
* ####################################################
JR  PREC    8.0
* ####################################################
*    SCS 24-HR, TYPE II FLORIDA-MODIFIED DISTRIBUTION (30-MIN INCREMENTS)
*    SOURCE: SWFWMD ERP INFORMATION MANUAL TABLE C-1
* GAGE     UDEPTH
PGSCSFLM    1.0
*
*  TSTEP IDATE      ITIME
IN    30 26SEP97       0
PC  .000    .006    .012    .019    .025    .032    .039    .047    .054    .062
PC  .071    .080    .089    .099    .110    .122    .134    .148    .164    .181
PC  .201    .226    .258    .308    .607    .719    .757    .785    .807    .826
PC  .842    .857    .870    .882    .893    .904    .913    .923    .931    .940
PC  .948    .955    .962    .969    .976    .983    .989    .995   1.000   1.000
*
* ============================================================================
*    SCS 24-HR, TYPE II FLORIDA-MODIFIED DISTRIBUTION
PRSCSFLM
* ============================================================================
ZZ
*                                          AMC II
*        BASINID  NJUNC            TC       ACRE             CN  IACOEFF      K        KPRINT
WP       821000   821000   105     214.86   95       0.2     256      0
WP       821100   821100   176     72.13            90       0.2      256      0
WP       821200   821200   168     120.9            84       0.2      256      0
WP       821300   821300   170     189.1            81       0.2      256      0
WP       821400   821400   268     352.13   82       0.2     256      0
WP       821500   821500   173     110.84   81       0.2     256      0
```

WP	822000	822000	127	235.71	82	0.2	256	0	
WP	822050	822050	233	97.92		79	0.2	256	0
WP	822100	822100	190	42.06		90	0.2	256	0
WP	822150	822150	338	107.69	80	0.2	256	0	
WP	822200	822200	263	77.31		77	0.2	256	0
WP	822250	822250	110	64.71		80	0.2	256	0
WP	822300	822300	349	487		84	0.2	256	0
WP	822350	822350	84	347.15	83	0.2	256	0	
WP	822400	822400	238	565.29	84	0.2	256	0	
WP	822500	822500	237	386.38	81	0.2	256	0	
WP	823000	823000	96	215.07	88	0.2	256	0	
WP	823100	823100	377	167.38	84	0.2	256	0	
WP	823200	823200	143	26.86		92	0.2	256	0
WP	823300	823300	143	49.07		84	0.2	256	0
WP	823400	823400	163	179.51	81	0.2	256	0	
WP	824650	824650	77	8.84		83	0.2	256	0
WP	824000	824000	63	439.81	93	0.2	256	0	
WP	824080	824080	265	410.24	86	0.2	256	0	
WP	824200	824200	154	58.21		83	0.2	256	0
WP	824300	824300	126	38.92		83	0.2	256	0
WP	824400	824400	131	19.1		82	0.2	256	0
WP	824500	824500	343	88.29		86	0.2	256	0
WP	824600	824600	186	82.87		82	0.2	256	0
WP	825000	825000	1	221.84	99	0.2	256	0	
WP	825050	825050	52	44.19		94	0.2	256	0
WP	825100	825100	227	296.6		92	0.2	256	0
WP	825200	825200	428	475.42	86	0.2	256	0	
WP	825300	825300	98	23.17		90	0.2	256	0
WP	825400	825400	189	263.51	81	0.2	256	0	
WP	825500	825500	188	152.33	83	0.2	256	0	
WP	825600	825600	87	210.83	87	0.2	256	0	
WP	825700	825700	143	52.88		88	0.2	256	0
WP	825800	825800	321	252.66	83	0.2	256	0	
WP	825900	825900	147	55.42		83	0.2	256	0
WP	826000	826000	51	111.8		76	0.2	256	0
WP	826050	826050	61	100.8		91	0.2	256	0
WP	826100	826100	56	218.02	84	0.2	256	0	
WP	826150	826150	63	272.26	94	0.2	256	0	
WP	826200	826200	19	370.65	93	0.2	256	0	
WP	826250	826250	165	296.12	88	0.2	256	0	
WP	826300	826300	155	13.16		91	0.2	256	0
WP	826350	826350	31	60.75		82	0.2	256	0
WP	826400	826400	358	559.84	80	0.2	256	0	
WP	826450	826450	16	276.05	89	0.2	256	0	
WP	826500	826500	17	89.04		89	0.2	256	0
WP	826550	826550	39	173.15	82	0.2	256	0	
WP	826600	826600	195	216.14	87	0.2	256	0	
WP	826650	826650	189	37.3		95	0.2	256	0
WP	826700	826700	275	140.75	80	0.2	256	0	
WP	826750	826750	253	198.16	82	0.2	256	0	
WP	826800	826800	217	157.27	83	0.2	256	0	
WP	826850	826850	96	111.13	82	0.2	256	0	
WP	826900	826900	180	125.24	86	0.2	256	0	
WP	826950	826950	296	361.32	84	0.2	256	0	
WP	826970	826970	194	57.1		80	0.2	256	0
WP	826990	826990	282	295.16	83	0.2	256	0	
WP	827000	827000	65	306.51	98	0.2	256	0	
WP	827100	827100	37	190.21	84	0.2	256	0	
WP	827150	827150	187	287.47	84	0.2	256	0	
WP	827200	827200	109	101.22	87	0.2	256	0	
WP	827250	827250	255	220.92	83	0.2	256	0	

WP	827300	827300	312	107.04	85	0.2	256	0	
WP	827350	827350	205	115.19	85	0.2	256	0	
WP	827400	827400	104	208.79	86	0.2	256	0	
WP	827450	827450	78	104.1		86	0.2	256	0
WP	827500	827500	145	309.99	83	0.2	256	0	
WP	827550	827550	228	97.17		83	0.2	256	0
WP	827600	827600	79	112.76	83	0.2	256	0	
WP	827650	827650	274	165.14	83	0.2	256	0	
WP	827700	827700	137	89.33		82	0.2	256	0
WP	827750	827750	179	84.22		82	0.2	256	0
WP	827800	827800	103	138.01	85	0.2	256	0	
WP	827850	827850	127	178.05	83	0.2	256	0	
WP	827890	827890	116	239.72	87	0.2	256	0	
WP	828000	828000	38	255.18	86	0.2	256	0	
WP	828050	828050	133	38.83		85	0.2	256	0
WP	828100	828100	171	239.83	87	0.2	256	0	
WP	828150	828150	183	169.74	85	0.2	256	0	
WP	828200	828200	228	109.78	86	0.2	256	0	
WP	828250	828250	133	133.56	81	0.2	256	0	
WP	828300	828300	299	260.67	82	0.2	256	0	
WP	828350	828350	196	294.38	81	0.2	256	0	
WP	828400	828400	230	52.12		86	0.2	256	0
WP	828450	828450	92	39.85		88	0.2	256	0
WP	828500	828500	188	283.47	89	0.2	256	0	
WP	828550	828550	132	92.73		84	0.2	256	0
WP	829000	829000	90	806.77	98	0.2	256	0	
WP	829100	829100	148	179.34	89	0.2	256	0	
WP	829200	829200	191	187.95	89	0.2	256	0	
WP	829700	829700	247	100.41	93	0.2	256	0	
WP	829400	829400	116	158.83	91	0.2	256	0	
WP	829600	829600	178	26.9		81	0.2	256	0
WP	829500	829500	357	476.57	89	0.2	256	0	
WP	829300	829300	22	439.75	92	0.2	256	0	
WP	829800	829800	157	311.6		94	0.2	256	0

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* ========================================================================
*                     BULLFROG CREEK/WOLF BRANCH                          WB-100proFGD122011.WPX
* ========================================================================
*
ID                 WOLF BRANCH 100-YEAR STORM
ID        Dames & Moore for Hillsborough County BOCC--Dept of Stormwater Management
*
*
*   This is a standard HEC-1 file.  RDHEC copies the ID, *, IT, IO, JR,
*       PG, IN, PC, and PR records from this file.  It ignores other records.
*
*FREE
*DIAGRAM
*     ----------------------
*     100-YEAR 24 HOUR STORM
*     ----------------------
*
*   NMIN  DATE     ITIME      NQ  NDDATE   NDTIME
IT    15 26SEP97    0000     250 27SEP97    0000
*
*NOLIST
*   IPRT    IPLT
*   0,1,2         All
*       3         Input Data and Intermediate and Master Summaries
*       4         Input Data and Master Summary
*       5         Job specification and Master Summary Only
*
*            0,1  No Printer Plots--Can be overriden on KO record
*              2  Plot All
*
IO     3       0
*
* ####################################################
JR  PREC   11.0
* ####################################################
*    SCS 24-HR, TYPE II FLORIDA-MODIFIED DISTRIBUTION (30-MIN INCREMENTS)
*    SOURCE: SWFWMD ERP INFORMATION MANUAL TABLE C-1
* GAGE     UDEPTH
PGSCSFLM    1.0
*
*  TSTEP IDATE      ITIME
IN    30 26SEP97       0
PC  .000    .006    .012    .019    .025    .032    .039    .047    .054    .062
PC  .071    .080    .089    .099    .110    .122    .134    .148    .164    .181
PC  .201    .226    .258    .308    .607    .719    .757    .785    .807    .826
PC  .842    .857    .870    .882    .893    .904    .913    .923    .931    .940
PC  .948    .955    .962    .969    .976    .983    .989    .995   1.000   1.000
*
* ========================================================================
*    SCS 24-HR, TYPE II FLORIDA-MODIFIED DISTRIBUTION
PRSCSFLM
* ========================================================================
ZZ
*                                      AMC II
*        BASINID  NJUNC            TC       ACRE            CN IACOEFF       K        KPRINT
WP       821000   821000   93      214.86   95      0.2     256      0
WP       821100   821100   155     72.13            90      0.2      256      0
WP       821200   821200   149     120.9            84      0.2      256      0
WP       821300   821300   150     189.1            81      0.2      256      0
WP       821400   821400   236     352.13   82      0.2      256      0
WP       821500   821500   153     110.84   81      0.2      256      0
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WP	822000	822000	112	235.71	82	0.2	256	0	
WP	822050	822050	206	97.92		79	0.2	256	0
WP	822100	822100	167	42.06		90	0.2	256	0
WP	822150	822150	298	107.69	80	0.2	256	0	
WP	822200	822200	232	77.31		77	0.2	256	0
WP	822250	822250	97	64.71		80	0.2	256	0
WP	822300	822300	308	487		84	0.2	256	0
WP	822350	822350	74	347.15	83	0.2	256	0	
WP	822400	822400	220	565.29	84	0.2	256	0	
WP	822500	822500	217	386.38	81	0.2	256	0	
WP	823000	823000	61	215.07	88	0.2	256	0	
WP	823100	823100	340	167.38	84	0.2	256	0	
WP	823200	823200	126	26.86		92	0.2	256	0
WP	823300	823300	126	49.07		84	0.2	256	0
WP	823400	823400	143	179.51	81	0.2	256	0	
WP	824650	824650	68	8.84		83	0.2	256	0
WP	824000	824000	56	439.81	93	0.2	256	0	
WP	824080	824080	234	410.24	86	0.2	256	0	
WP	824200	824200	136	58.21		83	0.2	256	0
WP	824300	824300	111	38.92		83	0.2	256	0
WP	824400	824400	116	19.1		82	0.2	256	0
WP	824500	824500	322	88.29		86	0.2	256	0
WP	824600	824600	164	82.87		82	0.2	256	0
WP	825000	825000	1	221.84	99	0.2	256	0	
WP	825050	825050	46	44.19		94	0.2	256	0
WP	825100	825100	200	296.6		92	0.2	256	0
WP	825200	825200	378	475.42	86	0.2	256	0	
WP	825300	825300	87	23.17		90	0.2	256	0
WP	825400	825400	167	263.51	81	0.2	256	0	
WP	825500	825500	170	152.33	83	0.2	256	0	
WP	825600	825600	76	210.83	87	0.2	256	0	
WP	825700	825700	126	52.88		88	0.2	256	0
WP	825800	825800	288	252.66	83	0.2	256	0	
WP	825900	825900	135	55.42		83	0.2	256	0
WP	826000	826000	45	111.8		76	0.2	256	0
WP	826050	826050	54	100.8		91	0.2	256	0
WP	826100	826100	33	218.02	84	0.2	256	0	
WP	826150	826150	35	272.26	94	0.2	256	0	
WP	826200	826200	17	370.65	93	0.2	256	0	
WP	826250	826250	145	296.12	88	0.2	256	0	
WP	826300	826300	154	13.16		91	0.2	256	0
WP	826350	826350	27	60.75		82	0.2	256	0
WP	826400	826400	326	559.84	80	0.2	256	0	
WP	826450	826450	14	276.05	89	0.2	256	0	
WP	826500	826500	15	89.04		89	0.2	256	0
WP	826550	826550	34	173.15	82	0.2	256	0	
WP	826600	826600	188	216.14	87	0.2	256	0	
WP	826650	826650	166	37.3		95	0.2	256	0
WP	826700	826700	252	140.75	80	0.2	256	0	
WP	826750	826750	223	198.16	82	0.2	256	0	
WP	826800	826800	191	157.27	83	0.2	256	0	
WP	826850	826850	85	111.13	82	0.2	256	0	
WP	826900	826900	159	125.24	86	0.2	256	0	
WP	826950	826950	236	361.32	84	0.2	256	0	
WP	826970	826970	171	57.1		80	0.2	256	0
WP	826990	826990	261	295.16	83	0.2	256	0	
WP	827000	827000	63	306.51	98	0.2	256	0	
WP	827100	827100	33	190.21	84	0.2	256	0	
WP	827150	827150	165	287.47	84	0.2	256	0	
WP	827200	827200	96	101.22	87	0.2	256	0	
WP	827250	827250	225	220.92	83	0.2	256	0	

WP	827300	827300	289	107.04	85	0.2	256	0	
WP	827350	827350	223	115.19	85	0.2	256	0	
WP	827400	827400	92	208.79	86	0.2	256	0	
WP	827450	827450	69	104.1		86	0.2	256	0
WP	827500	827500	128	309.99	83	0.2	256	0	
WP	827550	827550	202	97.17		83	0.2	256	0
WP	827600	827600	70	112.76	83	0.2	256	0	
WP	827650	827650	248	165.14	83	0.2	256	0	
WP	827700	827700	121	89.33		82	0.2	256	0
WP	827750	827750	158	84.22		82	0.2	256	0
WP	827800	827800	91	138.01	85	0.2	256	0	
WP	827850	827850	116	178.05	83	0.2	256	0	
WP	827890	827890	102	239.72	87	0.2	256	0	
WP	828000	828000	34	255.18	86	0.2	256	0	
WP	828050	828050	121	38.83		85	0.2	256	0
WP	828100	828100	161	239.83	87	0.2	256	0	
WP	828150	828150	162	169.74	85	0.2	256	0	
WP	828200	828200	210	109.78	86	0.2	256	0	
WP	828250	828250	117	133.56	81	0.2	256	0	
WP	828300	828300	282	260.67	82	0.2	256	0	
WP	828350	828350	188	294.38	81	0.2	256	0	
WP	828400	828400	203	52.12		86	0.2	256	0
WP	828450	828450	81	39.85		88	0.2	256	0
WP	828500	828500	166	283.47	89	0.2	256	0	
WP	828550	828550	116	92.73		84	0.2	256	0
WP	829000	829000	79	806.77	98	0.2	256	0	
WP	829100	829100	145	179.34	89	0.2	256	0	
WP	829200	829200	168	187.95	89	0.2	256	0	
WP	829700	829700	230	100.41		93	0.2	256	0
WP	829400	829400	102	158.83	91	0.2	256	0	
WP	829600	829600	177	26.9		81	0.2	256	0
WP	829500	829500	315	476.57	89	0.2	256	0	
WP	829300	829300	20	439.75	92	0.2	256	0	
WP	829800	829800	74	311.6	94	0.2	256	0	

	JUNC_ID	INVT	Z_MAX	T_MAX
ZMAX	82100	-2.00	2.00	0.00
ZMAX	821000	-2.00	2.55	14.35
ZMAX	821100	-1.10	2.50	14.43
ZMAX	821190	-4.50	4.72	18.75
ZMAX	821200	-4.50	5.15	18.72
ZMAX	821290	0.87	5.66	18.93
ZMAX	821300	0.87	6.90	18.83
ZMAX	821390	8.00	10.96	17.28
ZMAX	821400	9.00	11.49	17.22
ZMAX	821490	19.00	20.78	14.97
ZMAX	821500	20.50	25.87	14.50
ZMAX	82200	-2.50	2.00	0.00
ZMAX	822000	-2.10	2.01	16.27
ZMAX	822050	0.50	3.62	15.57
ZMAX	822100	-2.10	2.95	17.03
ZMAX	822110	-1.10	3.31	16.60
ZMAX	822150	-2.00	2.98	17.12
ZMAX	822190	-2.00	2.99	17.12
ZMAX	822200	-1.00	3.09	17.07
ZMAX	822250	-1.10	3.76	16.30
ZMAX	822290	-0.65	5.44	15.72
ZMAX	822300	-0.65	6.31	17.07
ZMAX	822350	0.00	5.99	15.17
ZMAX	822390	1.00	6.13	15.57
ZMAX	822400	1.50	9.31	20.55
ZMAX	822410	2.80	9.31	20.57
ZMAX	822420	3.00	10.25	24.60
ZMAX	822490	4.00	10.30	24.52
ZMAX	822500	5.00	11.36	22.80
ZMAX	82300	-2.50	2.00	0.00
ZMAX	823000	-2.00	2.00	8.47
ZMAX	823100	-2.00	4.10	22.80
ZMAX	823170	-0.50	4.20	22.68
ZMAX	823180	1.17	4.58	22.42
ZMAX	823190	0.09	4.90	22.15
ZMAX	823200	0.22	5.27	21.93
ZMAX	823290	1.40	6.50	21.10
ZMAX	823300	3.00	6.59	21.12
ZMAX	823380	3.20	7.23	19.48
ZMAX	823390	3.30	7.53	18.93
ZMAX	823400	3.60	9.46	17.80
ZMAX	823490	5.00	9.46	17.80
ZMAX	82400	-2.60	2.00	0.00
ZMAX	824000	-2.54	2.01	6.77
ZMAX	824080	-1.01	2.25	16.03
ZMAX	824085	0.30	2.36	16.65
ZMAX	824100	0.30	3.10	19.65
ZMAX	824110	3.40	4.33	20.63
ZMAX	824120	1.50	3.58	16.77
ZMAX	824130	3.70	4.74	18.15
ZMAX	824140	5.00	6.10	14.48
ZMAX	824200	3.60	5.54	20.33
ZMAX	824300	3.90	6.00	17.90
ZMAX	824400	5.20	7.51	13.95
ZMAX	824490	1.15	4.83	21.13
ZMAX	824500	2.00	5.73	20.90
ZMAX	824590	3.00	5.91	21.82
ZMAX	824600	3.50	5.91	21.85
ZMAX	824650	5.00	5.91	21.85
ZMAX	82510	-4.00	2.00	0.00
ZMAX	825100	-4.00	2.00	10.28
ZMAX	825200	-4.00	2.03	20.05

ZMAX	825220	4.00	4.99	20.58
ZMAX	825230	4.00	5.60	16.90
ZMAX	825300	4.00	6.71	16.62
ZMAX	825390	4.00	6.85	20.73
ZMAX	825400	5.50	11.51	20.85
ZMAX	825410	6.10	6.89	19.92
ZMAX	825420	6.30	12.92	19.82
ZMAX	825429	8.00	9.31	19.98
ZMAX	825430	6.50	12.94	19.80
ZMAX	825500	9.41	13.32	19.78
ZMAX	825600	-4.00	2.14	12.37
ZMAX	825610	-3.60	2.11	14.17
ZMAX	825615	-3.00	2.11	14.18
ZMAX	825620	1.20	3.19	16.28
ZMAX	825630	1.20	3.59	16.25
ZMAX	825650	-4.00	2.12	12.45
ZMAX	825653	-1.05	2.12	12.37
ZMAX	825655	-1.29	2.12	12.55
ZMAX	825700	3.00	6.00	19.70
ZMAX	825800	3.63	5.45	16.12
ZMAX	825900	4.00	5.80	15.27
ZMAX	82615	-4.00	2.00	0.00
ZMAX	82620	-3.50	2.00	0.00
ZMAX	82645	-3.50	2.00	0.00
ZMAX	826150	-4.00	2.07	12.32
ZMAX	826190	-4.00	2.09	12.42
ZMAX	826200	-3.50	2.03	12.50
ZMAX	826245	-3.20	2.13	15.78
ZMAX	826250	-3.17	2.42	15.85
ZMAX	826290	0.00	2.45	16.25
ZMAX	826295	6.00	13.88	25.15
ZMAX	826300	1.00	3.04	14.97
ZMAX	826305	1.40	3.43	15.07
ZMAX	826310	1.50	3.74	15.07
ZMAX	826315	2.00	4.02	15.02
ZMAX	826320	2.50	4.80	14.72
ZMAX	826325	6.00	6.87	14.62
ZMAX	826350	8.12	10.35	14.58
ZMAX	826400	8.14	14.50	25.13
ZMAX	826450	-3.50	2.03	11.67
ZMAX	826500	-3.50	2.20	21.25
ZMAX	826550	-2.00	2.21	13.12
ZMAX	826560	-2.53	2.48	21.15
ZMAX	826570	-2.62	4.39	21.03
ZMAX	826600	-1.00	5.63	21.00
ZMAX	826640	2.20	8.74	20.23
ZMAX	826650	2.20	8.84	20.15
ZMAX	826665	2.64	9.66	19.82
ZMAX	826685	8.98	9.80	27.27
ZMAX	826700	9.28	13.73	27.15
ZMAX	826750	2.64	9.74	19.75
ZMAX	826780	8.03	12.44	18.65
ZMAX	826790	27.50	29.75	15.50
ZMAX	826800	28.00	31.84	15.27
ZMAX	826850	8.27	15.63	18.62
ZMAX	826855	17.50	21.53	16.13
ZMAX	826860	18.00	24.82	16.08
ZMAX	826865	29.00	33.73	16.05
ZMAX	826900	29.50	36.43	16.02
ZMAX	826940	41.00	43.02	16.28
ZMAX	826950	41.10	44.68	16.25
ZMAX	826970	8.50	15.79	18.97
ZMAX	826980	10.00	16.37	18.88

ZMAX	826990	10.50	18.72	18.83
ZMAX	82900	-1.00	2.00	0.00
ZMAX	82930	-1.50	2.00	0.00
ZMAX	82940	-4.00	2.00	0.00
ZMAX	829000	-1.00	2.14	13.75
ZMAX	829100	1.70	2.66	15.70
ZMAX	829190	-1.00	2.18	14.78
ZMAX	829200	0.00	3.93	20.37
ZMAX	829300	-1.50	2.09	12.75
ZMAX	829400	-4.00	2.12	16.37
ZMAX	829410	-3.90	2.12	14.03
ZMAX	829450	-3.81	2.12	14.28
ZMAX	829500	-3.50	2.20	18.35
ZMAX	829510	-1.00	2.21	18.38
ZMAX	829600	-0.50	2.38	19.07

	PIPE_ID	FROM	TO	SIZE(INCH)	LENGTH	INV_U	ZMAXU	INV_D	ZMAXD	QMAX	VMAX	TMAX
QMAX	9821000	821000	82100	60.	500.	-2.00	2.55	-2.00	2.00	1035.75	1.99	14.37
QMAX	9821100	821100	821000	83.	144.	-1.10	2.50	-2.00	2.55	513.57	4.69	14.43
QMAX	9821190	821100	821190	138.	1615.	-1.10	2.50	-4.50	4.72	-388.66	-2.70	18.72
QMAX	1821200	821200	821190	96.	135.	-4.50	5.15	-4.50	4.72	388.75	4.49	18.62
QMAX	9821290	821290	821200	140.	1890.	0.87	5.66	-4.50	5.15	330.87	0.83	18.93
QMAX	1821300	821300	821290	54.	120.	0.87	6.90	0.87	5.66	110.34	6.83	18.75
QMAX	2821300	821300	821290	54.	120.	0.87	6.90	0.87	5.66	110.34	6.83	18.75
QMAX	3821300	821300	821290	54.	120.	0.87	6.90	0.87	5.66	110.34	6.83	18.75
QMAX	9821390	821390	821300	132.	2790.	8.00	10.96	0.87	6.90	255.96	1.94	17.28
QMAX	1821400	821400	821390	43.	320.	9.00	11.49	8.00	10.96	85.34	6.55	17.18
QMAX	2821400	821400	821390	43.	320.	9.00	11.49	8.00	10.96	85.34	6.55	17.18
QMAX	3821400	821400	821390	43.	320.	9.00	11.49	8.00	10.96	85.34	6.55	17.18
QMAX	9821490	821490	821400	96.	4690.	19.00	20.78	9.00	11.49	83.30	2.32	14.97
QMAX	1821500	821500	821490	24.	320.	21.50	25.87	20.00	20.78	21.79	7.11	14.50
QMAX	2821500	821500	821490	36.	320.	20.50	25.87	19.00	20.78	62.12	10.84	14.77
QMAX	9822000	822000	82200	60.	500.	-2.10	2.01	-2.50	2.00	971.45	0.72	16.28
QMAX	1822100	822100	822000	60.	113.	-2.00	2.95	-2.00	2.01	275.06	6.14	17.03
QMAX	2822100	822100	822000	60.	150.	-2.10	2.95	-2.10	2.01	243.46	5.91	17.03
QMAX	3822100	822100	822000	60.	150.	-2.10	2.95	-2.10	2.01	243.46	5.91	17.03
QMAX	9822150	822150	822100	96.	965.	-2.00	2.98	-2.00	2.95	89.40	0.55	18.10
QMAX	9822190	822190	822150	96.	890.	-2.00	2.99	-2.00	2.98	37.26	0.23	17.17
QMAX	1822200	822200	822190	54.	320.	-1.00	3.09	-2.00	2.99	37.96	2.43	16.00
QMAX	9822110	822110	822100	73.	785.	-1.10	3.31	-2.00	2.95	687.98	1.35	15.75
QMAX	1822250	822250	822110	57.	320.	-1.10	3.76	-1.10	3.31	693.10	5.11	15.67
QMAX	9822290	822290	822250	128.	1460.	-0.65	5.44	-1.10	3.76	649.18	1.94	15.67
QMAX	1822300	822300	822290	48.	105.	-0.65	6.31	-0.65	5.44	76.43	6.06	17.78
QMAX	2822300	822300	822290	48.	105.	-0.65	6.31	-0.65	5.44	76.43	6.06	17.78
QMAX	3822300	822300	822290	48.	105.	-0.65	6.31	-0.65	5.44	76.43	6.06	17.78
QMAX	9822350	822350	822290	96.	1870.	0.00	5.99	-0.65	5.44	491.78	1.89	14.82
QMAX	9822390	822390	822350	96.	2265.	1.00	6.13	0.00	5.99	285.38	1.36	21.25
QMAX	1822400	822400	822390	48.	100.	1.50	9.31	1.00	6.13	142.37	11.20	21.13
QMAX	2822400	822400	822390	48.	100.	1.50	9.31	1.00	6.13	142.37	11.20	21.13
QMAX	9822410	822410	822400	144.	1240.	2.80	9.31	1.50	9.31	131.35	1.25	30.35
QMAX	1822420	822420	822410	24.	260.	3.00	10.25	2.80	9.31	30.81	9.71	30.27
QMAX	2822420	822420	822410	36.	260.	3.00	10.25	2.80	9.31	98.65	8.50	30.47
QMAX	9822490	822490	822420	144.	4100.	4.00	10.30	3.00	10.25	106.85	1.18	20.22
QMAX	1822500	822500	822490	38.	115.	5.00	11.36	4.00	10.30	86.11	6.78	15.75
QMAX	2822500	822500	822490	30.	115.	5.00	11.36	4.00	10.30	29.13	-10.00	19.22
QMAX	1822050	822050	822000	24.	320.	0.50	3.62	-0.50	2.01	20.62	6.55	15.57
QMAX	2822050	822050	822000	24.	320.	0.50	3.62	-0.50	2.01	35.24	7.00	15.57
QMAX	9823000	823000	82300	60.	500.	-2.00	2.00	-2.50	2.00	327.11	0.25	14.00
QMAX	1823100	823100	823000	60.	140.	-2.00	4.10	-2.00	2.00	155.56	8.41	22.82
QMAX	9823170	823170	823100	90.	2515.	-0.50	4.20	-2.00	4.10	96.63	1.06	22.33
QMAX	1823180	823170	823180	60.	320.	1.92	4.20	1.26	4.58	-96.85	-3.49	22.22
QMAX	1823190	823180	823190	48.	320.	1.17	4.58	0.09	4.90	-32.61	-2.67	21.75
QMAX	2823190	823180	823190	48.	320.	1.17	4.58	0.09	4.90	-32.61	-2.67	21.75
QMAX	3823190	823180	823190	48.	320.	1.17	4.58	0.09	4.90	-32.61	-2.67	21.75

QMAX	1823200	823190	823200	48.	320.	1.18	4.90	0.22	5.27	-49.20	-3.98	21.50
QMAX	2823200	823190	823200	48.	320.	1.18	4.90	0.22	5.27	-49.20	-3.98	21.50
QMAX	9823290	823290	823200	79.	1160.	1.40	6.50	0.22	5.27	94.84	1.91	21.42
QMAX	1823300	823300	823290	48.	230.	3.00	6.59	1.40	6.50	94.62	3.17	21.25
QMAX	9823380	823380	823300	71.	1360.	3.20	7.23	3.00	6.59	98.12	2.04	16.90
QMAX	9823390	823390	823380	82.	900.	3.30	7.53	3.20	7.23	98.77	2.24	16.82
QMAX	1823400	823400	823390	52.	380.	3.60	9.46	3.30	7.53	99.01	6.80	16.77
QMAX	9823490	823490	823400	90.	2000.	5.00	9.46	3.60	9.46	-12.95	-0.55	14.23
QMAX	9824000	824000	82400	60.	500.	-2.54	2.01	-2.60	2.00	906.38	0.63	13.50
QMAX	1824080	824080	824000	84.	175.	-1.01	2.25	-2.54	2.01	137.80	4.42	16.00
QMAX	2824080	824080	824000	84.	175.	-1.01	2.25	-2.54	2.01	137.80	4.42	16.00
QMAX	9824085	824085	824080	84.	2125.	0.30	2.36	-1.01	2.25	35.53	0.59	19.88
QMAX	1824100	824100	824085	66.	100.	0.30	3.10	0.30	2.36	35.32	3.53	19.82
QMAX	9824110	824110	824100	84.	1800.	3.40	4.33	1.00	3.10	13.54	0.83	20.63
QMAX	1824200	824200	824110	36.	122.	3.60	5.54	3.40	4.33	13.54	4.05	20.43
QMAX	9824120	824120	824100	84.	1285.	1.50	3.58	1.00	3.10	29.57	1.21	16.45
QMAX	9824130	824130	824120	84.	1490.	3.70	4.74	1.50	3.58	17.20	0.96	18.15
QMAX	1824300	824300	824130	36.	264.	3.90	6.00	3.70	4.74	17.21	4.62	18.00
QMAX	9824140	824140	824120	84.	2615.	5.00	6.10	1.50	3.58	17.98	1.20	14.48
QMAX	1824400	824400	824140	36.	138.	5.20	7.51	5.00	6.10	18.18	4.48	14.20
QMAX	1824490	824000	824490	30.	100.	1.59	2.01	1.15	4.83	-27.33	-5.79	21.13
QMAX	2824490	824000	824490	30.	100.	1.59	2.01	1.15	4.83	-27.33	-5.79	21.13
QMAX	9824500	824500	824490	60.	2550.	2.00	5.73	1.15	4.83	54.71	1.33	20.78
QMAX	9824590	824590	824500	60.	2780.	3.00	5.91	2.00	5.73	22.54	0.89	28.10
QMAX	1824600	824600	824590	48.	110.	3.50	5.91	3.00	5.91	22.04	-1.00	28.10
QMAX	9824650	824650	824600	84.	2250.	5.00	5.91	3.50	5.91	11.41	1.00	13.78
QMAX	9825100	825100	82510	144.	500.	-4.00	2.00	-4.00	2.00	495.05	0.36	16.62
QMAX	1825200	825200	825100	144.	125.	-4.00	2.03	-4.00	2.00	309.88	1.29	20.30
QMAX	9825610	825610	825600	133.	2550.	-3.60	2.11	-4.00	2.14	173.00	0.42	16.30
QMAX	1825650	825650	826190	140.	475.	-4.00	2.12	-4.00	2.09	384.54	1.29	14.27
QMAX	9825650	825650	825600	168.	825.	-4.00	2.12	-4.00	2.14	-379.28	-0.91	14.30
QMAX	9825653	825653	825650	97.	2050.	-1.05	2.12	-4.00	2.12	37.58	0.12	26.92
QMAX	1825655	825653	825655	24.	200.	-1.05	2.12	-1.29	2.12	-5.88	-1.07	26.50
QMAX	9825615	825615	825655	96.	650.	-1.00	2.11	-1.29	2.12	7.74	0.05	12.53
QMAX	9825616	825615	825610	126.	235.	-3.00	2.11	-3.60	2.11	171.86	0.44	16.28
QMAX	1825700	825700	825615	24.	150.	3.00	6.00	1.50	2.11	13.98	4.69	19.70
QMAX	9825620	825620	825615	144.	1580.	1.20	3.19	-3.00	2.11	162.57	1.75	16.28
QMAX	1825630	825630	825620	96.	121.	1.20	3.59	1.20	3.19	81.30	3.09	16.22
QMAX	2825630	825630	825620	96.	121.	1.20	3.59	1.20	3.19	81.30	3.09	16.22
QMAX	1825800	825800	825630	72.	320.	3.63	5.45	3.58	3.59	81.38	3.70	16.12
QMAX	2825800	825800	825630	72.	320.	3.63	5.45	3.58	3.59	81.38	3.70	16.12
QMAX	9825900	825900	825800	144.	680.	4.00	5.80	3.63	5.45	49.01	1.48	14.30
QMAX	9825220	825220	825200	120.	5910.	4.00	4.99	-4.00	2.03	48.77	0.25	20.58
QMAX	9825410	825410	825220	120.	810.	6.10	6.89	4.00	4.99	41.57	1.43	19.92
QMAX	1825420	825420	825410	36.	129.	6.30	12.92	6.10	6.89	30.59	7.10	19.92
QMAX	9825430	825430	825420	120.	1170.	6.50	12.94	6.30	12.92	41.59	0.98	19.82
QMAX	9825429	825429	825630	120.	1700.	8.00	9.31	3.50	3.59	20.63	1.92	19.98
QMAX	1825500	825500	825430	30.	125.	9.41	13.32	8.82	12.94	30.95	6.43	16.27
QMAX	9825230	825230	825200	192.	5900.	4.00	5.60	-4.00	2.03	77.72	0.50	16.90
QMAX	1825230	825230	825220	54.	340.	4.00	5.60	4.00	4.99	9.08	2.55	20.80
QMAX	1825300	825300	825230	60.	110.	4.00	6.71	4.00	5.60	86.23	5.01	16.65
QMAX	9825390	825390	825300	192.	845.	4.00	6.85	4.00	6.71	81.30	-0.95	20.98
QMAX	1825400	825400	825390	36.	135.	5.50	11.51	4.00	6.85	81.29	11.57	20.85
QMAX	9826150	826150	82615	84.	500.	-4.00	2.07	-4.00	2.00	832.94	0.64	13.52
QMAX	9826190	826190	826150	120.	1450.	-4.00	2.09	-4.00	2.07	385.36	0.60	14.30
QMAX	9826200	826200	82620	84.	500.	-3.50	2.03	-3.50	2.00	1349.81	1.13	12.70
QMAX	9826245	826245	826200	122.	7150.	-3.20	2.13	-3.50	2.03	362.82	0.59	15.97
QMAX	1826250	826250	826245	144.	240.	-3.17	2.42	-3.20	2.13	362.58	3.69	15.90
QMAX	9826290	826290	826250	96.	5140.	0.00	2.45	-3.17	2.42	172.77	0.46	25.07
QMAX	1826295	826295	826290	54.	180.	6.00	13.88	3.00	2.45	156.33	10.14	25.15
QMAX	1826400	826400	826295	30.	120.	8.38	14.50	7.59	13.88	39.72	8.05	20.85
QMAX	2826400	826400	826295	42.	120.	8.14	14.50	7.68	13.88	89.45	9.31	21.20
QMAX	1826300	826300	826290	84.	320.	1.00	3.04	0.00	2.45	38.13	3.62	14.97

QMAX	9826305	826305	826300	120.	485.	1.40	3.43	1.00	3.04	25.77	1.52	15.20
QMAX	1826310	826310	826305	72.	120.	1.50	3.74	1.40	3.43	25.76	2.85	15.07
QMAX	9826315	826315	826310	120.	595.	2.00	4.02	1.50	3.74	25.78	1.19	14.88
QMAX	1826320	826320	826315	60.	340.	2.50	4.80	2.20	4.02	25.84	3.88	14.72
QMAX	9826325	826325	826320	120.	260.	6.00	6.87	2.50	4.80	25.85	-1.66	14.62
QMAX	1826350	826350	826325	36.	300.	8.12	10.35	6.88	6.87	25.85	5.38	14.58
QMAX	9826450	826450	82645	78.	500.	-3.50	2.03	-3.50	2.00	1436.60	1.20	12.75
QMAX	9826500	826500	826450	126.	2950.	-3.50	2.20	-3.50	2.03	699.42	1.14	21.42
QMAX	1826550	826550	826500	120.	195.	-2.00	2.21	-3.50	2.20	352.21	1.42	13.28
QMAX	9826560	826560	826500	114.	4950.	-2.53	2.48	-3.50	2.20	669.60	1.09	21.15
QMAX	1826570	826570	826560	72.	100.	-2.02	4.39	-2.53	2.48	239.68	8.81	21.03
QMAX	2826570	826560	826570	72.	100.	-1.99	2.48	-2.62	4.39	-212.94	-8.16	21.03
QMAX	3826570	826560	826570	72.	100.	-2.07	2.48	-2.55	4.39	-217.16	-8.25	21.03
QMAX	9826600	826600	826570	108.	1210.	-1.00	5.63	-2.62	4.39	669.81	3.82	20.97
QMAX	9826640	826640	826600	106.	4055.	2.20	8.74	-1.00	5.63	604.24	2.58	20.23
QMAX	1826650	826650	826640	96.	116.	2.20	8.84	2.20	8.74	204.62	2.64	19.35
QMAX	2826650	826650	826640	96.	116.	2.20	8.84	2.20	8.74	204.62	2.64	19.35
QMAX	3826650	826650	826640	96.	116.	2.20	8.84	2.20	8.74	204.62	2.64	19.35
QMAX	9826665	826665	826650	112.	715.	2.64	9.66	2.20	8.84	599.16	2.91	18.93
QMAX	9826685	826685	826665	96.	650.	8.98	9.80	4.00	9.66	15.84	-2.74	27.27
QMAX	1826700	826700	826685	30.	380.	9.28	13.73	8.98	9.80	15.84	4.99	27.22
QMAX	1826750	826750	826665	96.	340.	2.64	9.74	2.64	9.66	297.42	2.66	18.72
QMAX	2826750	826750	826665	96.	340.	2.64	9.74	2.64	9.66	297.42	2.66	18.72
QMAX	9826780	826780	826750	120.	1460.	8.03	12.44	2.64	9.74	434.58	3.74	18.65
QMAX	1826850	826780	826850	48.	100.	8.68	12.44	8.27	15.63	-99.96	-8.27	17.18
QMAX	2826850	826850	826780	48.	100.	8.31	15.63	8.03	12.44	105.33	8.61	16.25
QMAX	9826855	826855	826850	120.	2120.	17.50	21.53	8.27	15.63	282.63	3.39	16.13
QMAX	1826860	826860	826855	43.	100.	18.00	24.82	17.50	21.53	91.11	9.15	14.53
QMAX	9826865	826865	826860	120.	2080.	29.00	33.73	18.00	24.82	282.71	4.30	16.05
QMAX	1826900	826900	826865	48.	240.	29.50	36.43	29.00	33.73	108.60	8.52	15.12
QMAX	2826900	826900	826865	48.	240.	29.50	36.43	29.00	33.73	108.60	8.52	15.12
QMAX	9826940	826940	826900	180.	1900.	41.00	43.02	29.50	36.43	189.68	1.09	16.28
QMAX	1826950	826950	826940	48.	304.	41.10	44.68	41.00	43.02	94.88	5.65	16.25
QMAX	2826950	826950	826940	48.	304.	41.10	44.68	41.00	43.02	94.88	5.65	16.25
QMAX	9826790	826790	826750	120.	4810.	27.50	29.75	2.64	9.74	103.35	1.87	15.50
QMAX	1826800	826800	826790	48.	140.	28.00	31.84	27.50	29.75	51.79	5.27	15.30
QMAX	2826800	826800	826790	48.	140.	28.00	31.84	27.50	29.75	51.79	5.27	15.30
QMAX	9826970	826970	826850	120.	1170.	8.50	15.79	8.27	15.63	172.11	-1.51	19.58
QMAX	9826980	826980	826970	120.	1525.	10.00	16.37	8.50	15.79	142.34	1.87	18.87
QMAX	1826990	826990	826980	54.	340.	10.50	18.72	10.00	16.37	117.52	7.36	21.85
QMAX	9829000	829000	82900	48.	500.	-1.00	2.14	-1.00	2.00	1264.66	1.97	13.77
QMAX	9829100	829100	829000	60.	450.	1.70	2.66	-1.00	2.14	13.97	0.06	15.70
QMAX	9829190	829190	829000	84.	1600.	-1.00	2.18	-1.00	2.14	72.84	0.73	20.48
QMAX	1829200	829200	829190	29.	100.	0.00	3.93	-1.00	2.18	52.59	7.33	20.38
QMAX	2829200	829200	829190	24.	100.	0.00	3.93	-1.00	2.18	20.23	6.41	20.38
QMAX	9829400	829400	82940	84.	500.	-4.00	2.12	-4.00	2.00	488.06	0.57	16.35
QMAX	9829410	829410	829400	120.	1100.	-3.90	2.12	-4.00	2.12	150.15	0.48	18.80
QMAX	1829450	829450	829410	132.	200.	-3.81	2.12	-3.90	2.12	146.45	1.07	18.97
QMAX	9829500	829500	829450	133.	1350.	-3.50	2.20	-3.81	2.12	140.92	1.07	19.10
QMAX	9829300	829300	82930	48.	500.	-1.50	2.09	-1.50	2.00	1334.19	1.79	12.75
QMAX	9829501	829500	829300	85.	1400.	-1.10	2.20	-1.50	2.09	103.70	0.93	18.38
QMAX	9829510	829510	829500	120.	1750.	-1.00	2.21	-1.10	2.20	12.07	0.14	19.73
QMAX	1829600	829600	829510	30.	260.	-0.50	2.38	-1.00	2.21	11.99	2.38	19.57

	WEIR_ID	FROM	TO	ZCREST	ZU	ZD	ZMAXU	QMAX	ZMAXD	TMAX
QWEIR	7821200	821200	821190	7.50	-4.50	-4.50	5.15	0.00	4.72	0.0
QWEIR	7821300	821300	821290	10.60	0.87	0.87	6.90	0.00	5.66	0.0
QWEIR	7821400	821400	821390	14.90	9.00	8.00	11.49	0.00	10.96	0.0
QWEIR	7821500	821500	821490	26.20	20.50	19.00	25.87	0.00	20.78	0.0
QWEIR	7822050	822050	822000	4.50	0.50	-2.10	3.62	0.00	2.01	0.0
QWEIR	7822100	822100	822000	6.50	-2.10	-2.10	2.95	0.00	2.01	0.0
QWEIR	7822200	822200	822190	6.50	-1.00	-2.00	3.09	0.00	2.99	0.0
QWEIR	7822250	822250	822110	6.08	-1.10	-1.10	3.76	0.00	3.31	0.0
QWEIR	7822300	822300	822290	12.00	-0.65	-0.65	6.31	0.00	5.44	0.0

QWEIR	7822400	822400	822390	12.50	1.50	1.00	9.31	0.00	6.13	0.0
QWEIR	7822420	822420	822410	12.50	3.00	2.80	10.25	0.00	9.31	0.0
QWEIR	7822500	822500	822490	15.40	5.00	4.00	11.36	0.00	10.30	0.0
QWEIR	7823100	823100	823000	6.50	-2.00	-2.00	4.10	0.00	2.00	0.0
QWEIR	7823180	823180	823170	6.00	1.17	-0.50	4.58	0.00	4.20	0.0
QWEIR	7823190	823190	823180	6.00	0.09	1.17	4.90	0.00	4.58	0.0
QWEIR	7823200	823200	823190	6.00	0.22	0.09	5.27	0.00	4.90	0.0
QWEIR	7823300	823300	823290	9.00	3.00	1.40	6.59	0.00	6.50	0.0
QWEIR	7823400	823400	823390	9.80	3.60	3.30	9.46	0.00	7.53	0.0
QWEIR	7824080	824080	824000	6.50	-1.01	-2.54	2.25	0.00	2.01	0.0
QWEIR	7824100	824100	824085	5.50	0.30	0.30	3.10	0.00	2.36	0.0
QWEIR	7824200	824200	824110	9.30	3.60	3.40	5.54	0.00	4.33	0.0
QWEIR	7824300	824300	824130	10.00	3.90	3.70	6.00	0.00	4.74	0.0
QWEIR	7824400	824400	824140	11.00	5.20	5.00	7.51	0.00	6.10	0.0
QWEIR	7824490	824490	824000	7.50	1.15	-2.54	4.83	0.00	2.01	0.0
QWEIR	7824600	824600	824590	12.50	3.50	3.00	5.91	0.00	5.91	0.0
QWEIR	7825200	825200	825100	10.00	-4.00	-4.00	2.03	0.00	2.00	0.0
QWEIR	7825300	825300	825230	12.00	4.00	4.00	6.71	0.00	5.60	0.0
QWEIR	7825400	825400	825390	15.00	5.50	4.00	11.51	0.00	6.85	0.0
QWEIR	7825420	825420	825410	12.80	6.30	6.10	12.92	11.01	6.89	19.8
QWEIR	6825430	825430	825429	12.40	6.50	8.00	12.94	20.68	9.31	19.8
QWEIR	7825500	825500	825430	13.00	9.41	6.50	13.32	47.22	12.94	19.8
QWEIR	6825600	825600	825200	4.80	-4.00	-4.00	2.14	0.00	2.03	0.0
QWEIR	7825630	825630	825620	13.50	1.20	1.20	3.59	0.00	3.19	0.0
QWEIR	7825655	825655	825653	6.80	-1.29	-1.05	2.12	0.00	2.12	0.0
QWEIR	7825700	825700	825615	9.20	3.00	-3.00	6.00	0.00	2.11	0.0
QWEIR	7825800	825800	825630	13.50	3.63	1.20	5.45	0.00	3.59	0.0
QWEIR	7826250	826250	826245	10.00	-3.17	-3.20	2.42	0.00	2.13	0.0
QWEIR	7826295	826295	826290	14.00	6.00	0.00	13.88	0.00	2.45	0.0
QWEIR	7826300	826300	826290	10.00	1.00	0.00	3.04	0.00	2.45	0.0
QWEIR	7826310	826310	826305	10.00	1.50	1.40	3.74	0.00	3.43	0.0
QWEIR	7826320	826320	826315	10.20	2.50	2.00	4.80	0.00	4.02	0.0
QWEIR	7826350	826350	826325	13.00	8.12	6.00	10.35	0.00	6.87	0.0
QWEIR	7826400	826400	826295	14.00	8.14	6.00	14.50	93.74	13.88	25.1
QWEIR	7826500	826500	826450	6.00	-3.50	-3.50	2.20	0.00	2.03	0.0
QWEIR	7826550	826550	826500	4.00	-2.00	-3.50	2.21	0.00	2.20	0.0
QWEIR	7826570	826570	826560	5.00	-2.62	-2.53	4.39	0.00	2.48	0.0
QWEIR	7826650	826650	826640	11.00	2.20	2.20	8.84	0.00	8.74	0.0
QWEIR	7826700	826700	826685	14.00	9.28	8.98	13.73	0.00	9.80	0.0
QWEIR	7826750	826750	826665	12.00	2.64	2.64	9.74	0.00	9.66	0.0
QWEIR	7826800	826800	826790	34.00	28.00	27.50	31.84	0.00	29.75	0.0
QWEIR	7826850	826850	826780	14.70	8.27	8.03	15.63	234.98	12.44	18.6
QWEIR	7826860	826860	826855	24.00	18.00	17.50	24.82	196.82	21.53	16.1
QWEIR	7826900	826900	826865	36.00	29.50	29.00	36.43	72.87	33.73	16.0
QWEIR	7826990	826990	826980	18.50	10.50	10.00	18.72	27.72	16.37	18.8
QWEIR	7829100	829100	829000	2.00	1.70	-1.00	2.66	141.16	2.14	15.7
QWEIR	7829200	829200	829190	5.00	0.00	-1.00	3.93	0.00	2.18	0.0
QWEIR	7829600	829600	829510	5.00	-0.50	-1.00	2.38	0.00	2.21	0.0
QWEIR	90221	82100	0	-2.00	-2.00	0.00	2.00	1035.75	0.00	14.4
QWEIR	90222	82200	0	-2.50	-2.50	0.00	2.00	971.45	0.00	16.3
QWEIR	90223	82300	0	-2.50	-2.50	0.00	2.00	327.11	0.00	14.0
QWEIR	90224	82400	0	-2.60	-2.60	0.00	2.00	906.38	0.00	13.5
QWEIR	90225	82510	0	-4.00	-4.00	0.00	2.00	495.05	0.00	16.6
QWEIR	90226	82615	0	-4.00	-4.00	0.00	2.00	832.94	0.00	13.5
QWEIR	90227	82620	0	-3.50	-3.50	0.00	2.00	1349.81	0.00	12.7
QWEIR	90228	82645	0	-3.50	-3.50	0.00	2.00	1436.60	0.00	12.8
QWEIR	90229	82900	0	-1.00	-1.00	0.00	2.00	1264.66	0.00	13.8
QWEIR	90230	82930	0	-1.50	-1.50	0.00	2.00	1334.19	0.00	12.8
QWEIR	90231	82940	0	-4.00	-4.00	0.00	2.00	488.06	0.00	16.4

	JUNC_ID	INVT	Z_MAX	T_MAX	MC-100proFGD122011.SMX
ZMAX	82100	-2.00	2.00	0.00	
ZMAX	821000	-2.00	2.19	12.23	
ZMAX	821100	-1.10	2.39	12.30	
ZMAX	821190	-4.50	5.28	18.30	
ZMAX	821200	-4.50	6.07	18.22	
ZMAX	821290	0.87	6.35	19.85	
ZMAX	821300	0.87	8.46	19.73	
ZMAX	821390	8.00	11.56	17.95	
ZMAX	821400	9.00	12.96	17.92	
ZMAX	821490	19.00	21.36	14.57	
ZMAX	821500	20.50	26.44	14.25	
ZMAX	82200	-2.50	2.00	0.00	
ZMAX	822000	-2.10	2.01	15.75	
ZMAX	822050	0.50	4.69	15.00	
ZMAX	822100	-2.10	3.86	16.75	
ZMAX	822110	-1.10	4.15	16.43	
ZMAX	822150	-2.00	3.91	16.82	
ZMAX	822190	-2.00	3.91	16.82	
ZMAX	822200	-1.00	4.29	16.63	
ZMAX	822250	-1.10	4.86	15.72	
ZMAX	822290	-0.65	6.19	15.25	
ZMAX	822300	-0.65	8.14	18.50	
ZMAX	822350	0.00	6.92	14.58	
ZMAX	822390	1.00	7.02	14.82	
ZMAX	822400	1.50	11.68	20.78	
ZMAX	822410	2.80	11.68	20.82	
ZMAX	822420	3.00	12.51	25.32	
ZMAX	822490	4.00	12.53	25.28	
ZMAX	822500	5.00	13.96	22.90	
ZMAX	82300	-2.50	2.00	0.00	
ZMAX	823000	-2.00	2.00	12.97	
ZMAX	823100	-2.00	5.14	24.77	
ZMAX	823170	-0.50	5.22	24.82	
ZMAX	823180	1.17	5.45	24.08	
ZMAX	823190	0.09	5.96	22.43	
ZMAX	823200	0.22	6.28	21.58	
ZMAX	823290	1.40	6.96	19.57	
ZMAX	823300	3.00	7.25	19.42	
ZMAX	823380	3.20	8.06	17.62	
ZMAX	823390	3.30	8.46	17.35	
ZMAX	823400	3.60	10.20	17.05	
ZMAX	823490	5.00	10.20	17.05	
ZMAX	82400	-2.60	2.00	0.00	
ZMAX	824000	-2.54	2.01	13.00	
ZMAX	824080	-1.01	2.66	15.77	
ZMAX	824085	0.30	2.74	16.17	
ZMAX	824100	0.30	3.49	20.50	
ZMAX	824110	3.40	4.57	19.75	
ZMAX	824120	1.50	4.01	16.42	100 yr. Proposed Stage = 4.01 NGVD - 1.97 = 2.04 NAVD
ZMAX	824130	3.70	4.99	17.87	
ZMAX	824140	5.00	6.41	14.25	
ZMAX	824200	3.60	5.97	19.48	
ZMAX	824300	3.90	6.48	17.67	
ZMAX	824400	5.20	8.28	13.85	
ZMAX	824490	1.15	5.95	20.95	
ZMAX	824500	2.00	6.54	20.78	
ZMAX	824590	3.00	6.63	21.48	
ZMAX	824600	3.50	6.63	21.53	
ZMAX	824650	5.00	6.63	21.55	
ZMAX	82510	-4.00	2.00	0.00	

ZMAX	825100	-4.00	2.00	10.02
ZMAX	825200	-4.00	2.09	17.75
ZMAX	825220	4.00	5.52	18.00
ZMAX	825230	4.00	5.80	15.88
ZMAX	825300	4.00	7.06	15.63
ZMAX	825390	4.00	7.16	15.92
ZMAX	825400	5.50	13.67	20.65
ZMAX	825410	6.10	7.35	17.47
ZMAX	825420	6.30	13.14	17.40
ZMAX	825429	8.00	9.66	18.57
ZMAX	825430	6.50	13.22	17.38
ZMAX	825500	9.41	13.60	17.37
ZMAX	825600	-4.00	2.23	13.68
ZMAX	825610	-3.60	2.26	13.98
ZMAX	825615	-3.00	2.26	14.00
ZMAX	825620	1.20	4.05	16.65
ZMAX	825630	1.20	4.52	16.63
ZMAX	825650	-4.00	2.16	13.67
ZMAX	825653	-1.05	2.17	13.57
ZMAX	825655	-1.29	2.26	13.97
ZMAX	825700	3.00	6.79	19.48
ZMAX	825800	3.63	5.97	15.77
ZMAX	825900	4.00	6.30	15.27
ZMAX	82615	-4.00	2.00	0.00
ZMAX	82620	-3.50	2.00	0.00
ZMAX	82645	-3.50	2.00	0.00
ZMAX	826150	-4.00	2.07	11.20
ZMAX	826190	-4.00	2.09	11.25
ZMAX	826200	-3.50	2.05	12.50
ZMAX	826245	-3.20	2.27	15.43
ZMAX	826250	-3.17	2.85	15.38
ZMAX	826290	0.00	2.96	19.43
ZMAX	826295	6.00	14.76	19.93
ZMAX	826300	1.00	3.44	15.13
ZMAX	826305	1.40	3.81	15.15
ZMAX	826310	1.50	4.10	15.13
ZMAX	826315	2.00	4.37	15.07
ZMAX	826320	2.50	5.13	14.65
ZMAX	826325	6.00	7.02	14.57
ZMAX	826350	8.12	10.89	14.53
ZMAX	826400	8.14	15.13	19.93
ZMAX	826450	-3.50	2.07	12.15
ZMAX	826500	-3.50	2.49	20.67
ZMAX	826550	-2.00	2.49	20.68
ZMAX	826560	-2.53	3.06	20.35
ZMAX	826570	-2.62	5.89	20.05
ZMAX	826600	-1.00	7.56	20.03
ZMAX	826640	2.20	9.92	18.85
ZMAX	826650	2.20	10.21	18.65
ZMAX	826665	2.64	10.86	18.20
ZMAX	826685	8.98	11.02	18.33
ZMAX	826700	9.28	14.28	22.32
ZMAX	826750	2.64	11.16	17.98
ZMAX	826780	8.03	14.16	16.62
ZMAX	826790	27.50	30.32	15.00
ZMAX	826800	28.00	34.08	14.75
ZMAX	826850	8.27	16.53	16.58
ZMAX	826855	17.50	22.82	15.37
ZMAX	826860	18.00	25.36	15.33
ZMAX	826865	29.00	35.27	15.32
ZMAX	826900	29.50	37.14	15.28

ZMAX	826940	41.00	43.56	15.37
ZMAX	826950	41.10	47.34	15.25
ZMAX	826970	8.50	16.82	16.92
ZMAX	826980	10.00	17.74	16.75
ZMAX	826990	10.50	19.20	16.48
ZMAX	82900	-1.00	2.00	0.00
ZMAX	82930	-1.50	2.00	0.00
ZMAX	82940	-4.00	2.00	0.00
ZMAX	829000	-1.00	2.29	13.50
ZMAX	829100	1.70	2.86	15.38
ZMAX	829190	-1.00	2.34	13.83
ZMAX	829200	0.00	4.90	20.10
ZMAX	829300	-1.50	2.19	12.75
ZMAX	829400	-4.00	2.19	14.10
ZMAX	829410	-3.90	2.17	14.08
ZMAX	829450	-3.81	2.17	14.07
ZMAX	829500	-3.50	2.40	18.27
ZMAX	829510	-1.00	2.40	18.32
ZMAX	829600	-0.50	2.69	19.55

	PIPE_ID	FROM	TO	SIZE(INCH)	LENGTH	INV_U	ZMAXU	INV_D	ZMAXD	QMAX	VMAX	TMAX
QMAX	9821000	821000	82100	60.	500.	-2.00	2.19	-2.00	2.00	835.11	1.62	14.62
QMAX	9821100	821100	821000	83.	144.	-1.10	2.39	-2.00	2.19	568.88	5.48	17.38
QMAX	9821190	821100	821190	138.	1615.	-1.10	2.39	-4.50	5.28	-507.45	-2.73	18.23
QMAX	1821200	821200	821190	96.	135.	-4.50	6.07	-4.50	5.28	507.63	6.20	18.15
QMAX	9821290	821290	821200	140.	1890.	0.87	6.35	-4.50	6.07	429.85	0.86	19.85
QMAX	1821300	821300	821290	54.	120.	0.87	8.46	0.87	6.35	143.35	8.87	19.60
QMAX	2821300	821300	821290	54.	120.	0.87	8.46	0.87	6.35	143.35	8.87	19.60
QMAX	3821300	821300	821290	54.	120.	0.87	8.46	0.87	6.35	143.35	8.87	19.60
QMAX	9821390	821390	821300	132.	2790.	8.00	11.56	0.87	8.46	368.91	2.10	17.95
QMAX	1821400	821400	821390	43.	320.	9.00	12.96	8.00	11.56	122.98	7.49	17.87
QMAX	2821400	821400	821390	43.	320.	9.00	12.96	8.00	11.56	122.98	7.49	17.87
QMAX	3821400	821400	821390	43.	320.	9.00	12.96	8.00	11.56	122.98	7.49	17.87
QMAX	9821490	821490	821400	96.	4690.	19.00	21.36	9.00	12.96	136.57	2.76	14.57
QMAX	1821500	821500	821490	24.	320.	21.50	26.44	20.00	21.36	23.34	7.56	14.25
QMAX	2821500	821500	821490	36.	320.	20.50	26.44	19.00	21.36	83.70	12.82	14.55
QMAX	9822000	822000	82200	60.	500.	-2.10	2.01	-2.50	2.00	1392.44	1.03	15.87
QMAX	1822100	822100	822000	60.	113.	-2.00	3.86	-2.00	2.01	382.45	8.08	16.77
QMAX	2822100	822100	822000	60.	150.	-2.10	3.86	-2.10	2.01	341.51	7.98	16.77
QMAX	3822100	822100	822000	60.	150.	-2.10	3.86	-2.10	2.01	341.51	7.98	16.77
QMAX	9822150	822150	822100	96.	965.	-2.00	3.91	-2.00	3.86	145.96	0.64	17.57
QMAX	9822190	822190	822150	96.	890.	-2.00	3.91	-2.00	3.91	62.47	0.29	16.53
QMAX	1822200	822200	822190	54.	320.	-1.00	4.29	-2.00	3.91	64.74	3.97	15.52
QMAX	9822110	822110	822100	73.	785.	-1.10	4.15	-2.00	3.86	982.72	1.53	15.03
QMAX	1822250	822250	822110	57.	320.	-1.10	4.86	-1.10	4.15	1002.02	6.79	15.00
QMAX	9822290	822290	822250	128.	1460.	-0.65	6.19	-1.10	4.86	926.01	1.95	15.00
QMAX	1822300	822300	822290	48.	105.	-0.65	8.14	-0.65	6.19	114.69	9.07	18.98
QMAX	2822300	822300	822290	48.	105.	-0.65	8.14	-0.65	6.19	114.69	9.07	18.98
QMAX	3822300	822300	822290	48.	105.	-0.65	8.14	-0.65	6.19	114.69	9.07	18.98
QMAX	9822350	822350	822290	96.	1870.	0.00	6.92	-0.65	6.19	759.91	2.41	14.08
QMAX	9822390	822390	822350	96.	2265.	1.00	7.02	0.00	6.92	347.19	1.52	21.13
QMAX	1822400	822400	822390	48.	100.	1.50	11.68	1.00	7.02	173.20	13.70	21.00
QMAX	2822400	822400	822390	48.	100.	1.50	11.68	1.00	7.02	173.20	13.70	21.00
QMAX	9822410	822410	822400	144.	1240.	2.80	11.68	1.50	11.68	156.36	1.10	31.98
QMAX	1822420	822420	822410	24.	260.	3.00	12.51	2.80	11.68	37.70	11.83	32.00
QMAX	2822420	822420	822410	36.	260.	3.00	12.51	2.80	11.68	115.92	10.20	32.00
QMAX	9822490	822490	822420	144.	4100.	4.00	12.53	3.00	12.51	123.45	1.16	21.08
QMAX	1822500	822500	822490	38.	115.	5.00	13.96	4.00	12.53	106.35	8.43	16.85
QMAX	2822500	822500	822490	30.	115.	5.00	13.96	4.00	12.53	36.25	-10.00	16.90
QMAX	1822050	822050	822000	24.	320.	0.50	4.69	-0.50	2.01	26.56	8.42	15.00
QMAX	2822050	822050	822000	24.	320.	0.50	4.69	-0.50	2.01	45.38	9.00	15.00
QMAX	9823000	823000	82300	60.	500.	-2.00	2.00	-2.50	2.00	592.08	0.45	13.25

QMAX	1823100	823100	823000	60.	140.	-2.00	5.14	-2.00	2.00	190.12	10.41	24.77	
QMAX	9823170	823170	823100	90.	2515.	-0.50	5.22	-2.00	5.14	121.69	0.76	26.52	
QMAX	1823180	823170	823180	60.	320.	1.92	5.22	1.26	5.45	-131.21	-3.78	20.57	
QMAX	1823190	823180	823190	48.	320.	1.17	5.45	0.09	5.96	-45.79	-3.62	20.30	
QMAX	2823190	823180	823190	48.	320.	1.17	5.45	0.09	5.96	-45.79	-3.62	20.30	
QMAX	3823190	823180	823190	48.	320.	1.17	5.45	0.09	5.96	-45.79	-3.62	20.30	
QMAX	1823200	823190	823200	48.	320.	1.18	5.96	0.22	6.28	-64.37	-5.05	18.18	
QMAX	2823200	823190	823200	48.	320.	1.18	5.96	0.22	6.28	-64.37	-5.05	18.18	
QMAX	9823290	823290	823200	79.	1160.	1.40	6.96	0.22	6.28	137.40	1.70	19.57	
QMAX	1823300	823300	823290	48.	230.	3.00	7.25	1.40	6.96	137.98	3.35	19.18	
QMAX	9823380	823380	823300	71.	1360.	3.20	8.06	3.00	7.25	160.13	2.12	17.08	
QMAX	9823390	823390	823380	82.	900.	3.30	8.46	3.20	8.06	161.15	2.23	16.98	
QMAX	1823400	823400	823390	52.	380.	3.60	10.20	3.30	8.46	105.78	7.26	14.85	
QMAX	9823490	823490	823400	90.	2000.	5.00	10.20	3.60	10.20	-47.51	-0.42	14.67	
QMAX	9824000	824000	82400	60.	500.	-2.54	2.01	-2.60	2.00	1393.63	0.97	13.25	
QMAX	1824080	824080	824000	84.	175.	-1.01	2.66	-2.54	2.01	212.50	6.47	15.75	
QMAX	2824080	824080	824000	84.	175.	-1.01	2.66	-2.54	2.01	212.50	6.47	15.75	
QMAX	9824085	824085	824080	84.	2125.	0.30	2.74	-1.01	2.66	47.65	0.76	20.60	
QMAX	1824100	824100	824085	66.	100.	0.30	3.49	0.30	2.74	47.04	4.12	20.72	
QMAX	9824110	824110	824100	84.	1800.	3.40	4.57	1.00	3.49	20.00	0.91	19.75	
QMAX	1824200	824200	824110	36.	122.	3.60	5.97	3.40	4.57	20.01	4.68	19.58	
QMAX	9824120	824120	824100	84.	1285.	1.50	4.01	1.00	3.49	44.10	1.54	15.88	Proposed 100 yr. Q through ditch section = 44.1 cfs
QMAX	9824130	824130	824120	84.	1490.	3.70	4.99	1.50	4.01	24.92	1.11	17.87	
QMAX	1824300	824300	824130	36.	264.	3.90	6.48	3.70	4.99	24.93	5.32	17.73	
QMAX	9824140	824140	824120	84.	2615.	5.00	6.41	1.50	4.01	27.31	1.33	14.25	
QMAX	1824400	824400	824140	36.	138.	5.20	8.28	5.00	6.41	27.60	5.32	14.03	
QMAX	1824490	824000	824490	30.	100.	1.59	2.01	1.15	5.95	-37.18	-7.78	20.95	
QMAX	2824490	824000	824490	30.	100.	1.59	2.01	1.15	5.95	-37.18	-7.78	20.95	
QMAX	9824500	824500	824490	60.	2550.	2.00	6.54	1.15	5.95	74.51	1.39	20.38	
QMAX	9824590	824590	824500	60.	2780.	3.00	6.63	2.00	6.54	35.90	1.03	28.87	
QMAX	1824600	824600	824590	48.	110.	3.50	6.63	3.00	6.63	35.12	1.19	28.87	
QMAX	9824650	824650	824600	84.	2250.	5.00	6.63	3.50	6.63	18.26	-1.12	13.58	
QMAX	9825100	825100	82510	144.	500.	-4.00	2.00	-4.00	2.00	785.77	0.57	17.15	
QMAX	1825200	825200	825100	144.	125.	-4.00	2.09	-4.00	2.00	504.71	2.09	17.85	
QMAX	9825610	825610	825600	133.	2550.	-3.60	2.26	-4.00	2.23	299.86	0.71	16.53	
QMAX	1825650	825650	826190	140.	475.	-4.00	2.16	-4.00	2.09	602.55	1.99	14.08	
QMAX	9825650	825650	825600	168.	825.	-4.00	2.16	-4.00	2.23	-595.71	-1.40	13.93	
QMAX	9825653	825653	825650	97.	2050.	-1.05	2.17	-4.00	2.16	61.59	0.19	12.17	
QMAX	1825655	825653	825655	24.	200.	-1.05	2.17	-1.29	2.26	-7.87	-1.43	14.50	
QMAX	9825615	825615	825655	96.	650.	-1.00	2.26	-1.29	2.26	12.11	0.07	11.87	
QMAX	9825616	825615	825610	126.	235.	-3.00	2.26	-3.60	2.26	297.64	0.74	16.55	
QMAX	1825700	825700	825615	24.	150.	3.00	6.79	1.50	2.26	15.55	5.25	19.48	
QMAX	9825620	825620	825615	144.	1580.	1.20	4.05	-3.00	2.26	288.10	2.73	16.65	
QMAX	1825630	825630	825620	96.	121.	1.20	4.52	1.20	4.05	144.07	3.89	16.60	
QMAX	2825630	825630	825620	96.	121.	1.20	4.52	1.20	4.05	144.07	3.89	16.60	
QMAX	1825800	825800	825630	72.	320.	3.63	5.97	3.58	4.52	131.33	4.54	15.77	
QMAX	2825800	825800	825630	72.	320.	3.63	5.97	3.58	4.52	131.33	4.54	15.77	
QMAX	9825900	825900	825800	144.	680.	4.00	6.30	3.63	5.97	76.93	1.71	14.25	
QMAX	9825220	825220	825200	120.	5910.	4.00	5.52	-4.00	2.09	103.79	0.49	18.00	
QMAX	9825410	825410	825220	120.	810.	6.10	7.35	4.00	5.52	96.67	1.98	17.47	
QMAX	1825420	825420	825410	36.	129.	6.30	13.14	6.10	7.35	44.10	8.90	17.47	
QMAX	9825430	825430	825420	120.	1170.	6.50	13.22	6.30	13.14	96.69	1.00	17.40	
QMAX	9825429	825429	825630	120.	1700.	8.00	9.66	3.50	4.52	38.35	2.34	17.52	
QMAX	1825500	825500	825430	30.	125.	9.41	13.60	8.82	13.22	33.51	6.95	15.05	
QMAX	9825230	825230	825200	192.	5900.	4.00	5.80	-4.00	2.09	95.62	0.60	15.88	
QMAX	1825230	825230	825220	54.	340.	4.00	5.80	4.00	5.52	12.04	2.83	16.47	
QMAX	1825300	825300	825230	60.	110.	4.00	7.06	4.00	5.80	106.53	5.49	15.68	
QMAX	9825390	825390	825300	192.	845.	4.00	7.16	4.00	7.06	95.47	0.99	20.75	
QMAX	1825400	825400	825390	36.	135.	5.50	13.67	4.00	7.16	95.45	13.31	20.65	
QMAX	9826150	826150	82615	84.	500.	-4.00	2.07	-4.00	2.00	1424.67	1.09	13.08	
QMAX	9826190	826190	826150	120.	1450.	-4.00	2.09	-4.00	2.07	604.62	0.94	13.92	

QMAX	9826200	826200	82620	84.	500.	-3.50	2.05	-3.50	2.00	1990.59	1.66	12.53
QMAX	9826245	826245	826200	122.	7150.	-3.20	2.27	-3.50	2.05	536.11	0.86	15.55
QMAX	1826250	826250	826245	144.	240.	-3.17	2.85	-3.20	2.27	535.77	5.18	15.38
QMAX	9826290	826290	826250	96.	5140.	0.00	2.96	-3.17	2.85	383.66	0.83	20.10
QMAX	1826295	826295	826290	54.	180.	6.00	14.76	3.00	2.96	166.53	10.73	19.93
QMAX	1826400	826400	826295	30.	120.	8.38	15.13	7.59	14.76	39.97	8.10	16.83
QMAX	2826400	826400	826295	42.	120.	8.14	15.13	7.68	14.76	90.04	9.37	16.92
QMAX	1826300	826300	826290	84.	320.	1.00	3.44	0.00	2.96	51.64	3.94	14.82
QMAX	9826305	826305	826300	120.	485.	1.40	3.81	1.00	3.44	34.14	1.64	15.23
QMAX	1826310	826310	826305	72.	120.	1.50	4.10	1.40	3.81	34.14	3.07	15.07
QMAX	9826315	826315	826310	120.	595.	2.00	4.37	1.50	4.10	34.18	1.29	14.88
QMAX	1826320	826320	826315	60.	340.	2.50	5.13	2.20	4.37	34.23	4.28	14.65
QMAX	9826325	826325	826320	120.	260.	6.00	7.02	2.50	5.13	34.24	1.81	14.57
QMAX	1826350	826350	826325	36.	300.	8.12	10.89	6.88	7.02	34.24	5.87	14.53
QMAX	9826450	826450	82645	78.	500.	-3.50	2.07	-3.50	2.00	2080.31	1.74	12.52
QMAX	9826500	826500	826450	126.	2950.	-3.50	2.49	-3.50	2.07	1167.84	1.82	20.73
QMAX	1826550	826550	826500	120.	195.	-2.00	2.49	-3.50	2.49	523.15	1.98	13.27
QMAX	9826560	826560	826500	114.	4950.	-2.53	3.06	-3.50	2.49	1129.11	1.65	20.18
QMAX	1826570	826570	826560	72.	100.	-2.02	5.89	-2.53	3.06	318.05	11.42	19.88
QMAX	2826570	826560	826570	72.	100.	-1.99	3.06	-2.62	5.89	-294.65	-10.97	20.05
QMAX	3826570	826560	826570	72.	100.	-2.07	3.06	-2.55	5.89	-298.76	-11.05	20.05
QMAX	9826600	826600	826570	108.	1210.	-1.00	7.56	-2.62	5.89	1131.25	4.89	20.03
QMAX	9826640	826640	826600	106.	4055.	2.20	9.92	-1.00	7.56	1046.73	2.57	18.85
QMAX	1826650	826650	826640	96.	116.	2.20	10.21	2.20	9.92	362.63	3.93	17.80
QMAX	2826650	826650	826640	96.	116.	2.20	10.21	2.20	9.92	362.63	3.93	17.80
QMAX	3826650	826650	826640	96.	116.	2.20	10.21	2.20	9.92	362.63	3.93	17.80
QMAX	9826665	826665	826650	112.	715.	2.64	10.86	2.20	10.21	1078.80	2.97	17.45
QMAX	9826685	826685	826665	96.	650.	8.98	11.02	4.00	10.86	85.83	-2.74	18.78
QMAX	1826700	826700	826685	30.	380.	9.28	14.28	8.98	11.02	26.90	6.27	19.78
QMAX	1826750	826750	826665	96.	340.	2.64	11.16	2.64	10.86	538.22	4.08	17.23
QMAX	2826750	826750	826665	96.	340.	2.64	11.16	2.64	10.86	538.22	4.08	17.23
QMAX	9826780	826780	826750	120.	1460.	8.03	14.16	2.64	11.16	818.06	5.04	16.62
QMAX	1826850	826780	826850	48.	100.	8.68	14.16	8.27	16.53	-100.43	-8.23	14.70
QMAX	2826850	826850	826780	48.	100.	8.31	16.53	8.03	14.16	105.53	8.64	14.38
QMAX	9826855	826855	826850	120.	2120.	17.50	22.82	8.27	16.53	488.18	4.37	15.37
QMAX	1826860	826860	826855	43.	100.	18.00	25.36	17.50	22.82	91.23	9.16	13.35
QMAX	9826865	826865	826860	120.	2080.	29.00	35.27	18.00	25.36	488.26	5.89	15.32
QMAX	1826900	826900	826865	48.	240.	29.50	37.14	29.00	35.27	109.94	8.60	13.60
QMAX	2826900	826900	826865	48.	240.	29.50	37.14	29.00	35.27	109.94	8.60	13.60
QMAX	9826940	826940	826900	180.	1900.	41.00	43.56	29.50	37.14	335.72	1.09	15.35
QMAX	1826950	826950	826940	48.	304.	41.10	47.34	41.00	43.56	168.02	8.52	15.25
QMAX	2826950	826950	826940	48.	304.	41.10	47.34	41.00	43.56	168.02	8.52	15.25
QMAX	9826790	826790	826750	120.	4810.	27.50	30.32	2.64	11.16	169.23	1.99	15.00
QMAX	1826800	826800	826790	48.	140.	28.00	34.08	27.50	30.32	82.17	7.45	14.90
QMAX	2826800	826800	826790	48.	140.	28.00	34.08	27.50	30.32	82.17	7.45	14.90
QMAX	9826970	826970	826850	120.	1170.	8.50	16.82	8.27	16.53	304.99	-2.09	17.50
QMAX	9826980	826980	826970	120.	1525.	10.00	17.74	8.50	16.82	245.41	2.56	16.47
QMAX	1826990	826990	826980	54.	340.	10.50	19.20	10.00	17.74	117.73	7.38	24.13
QMAX	9829000	829000	82900	48.	500.	-1.00	2.29	-1.00	2.00	1885.91	2.86	13.53
QMAX	9829100	829100	829000	60.	450.	1.70	2.86	-1.00	2.29	21.75	0.09	15.38
QMAX	9829190	829190	829000	84.	1600.	-1.00	2.34	-1.00	2.29	89.45	0.87	20.23
QMAX	1829200	829200	829190	29.	100.	0.00	4.90	-1.00	2.34	64.56	8.99	20.13
QMAX	2829200	829200	829190	24.	100.	0.00	4.90	-1.00	2.34	24.84	7.86	20.13
QMAX	9829400	829400	82940	84.	500.	-4.00	2.19	-4.00	2.00	760.34	0.89	14.13
QMAX	9829410	829410	829400	120.	1100.	-3.90	2.17	-4.00	2.19	230.86	0.73	18.50
QMAX	1829450	829450	829410	132.	200.	-3.81	2.17	-3.90	2.17	222.97	1.62	18.52
QMAX	9829500	829500	829450	133.	1350.	-3.50	2.40	-3.81	2.17	217.27	1.60	18.53
QMAX	9829300	829300	82930	48.	500.	-1.50	2.19	-1.50	2.00	1922.29	2.54	12.75
QMAX	9829501	829500	829300	85.	1400.	-1.10	2.40	-1.50	2.19	155.42	1.32	18.30
QMAX	9829510	829510	829500	120.	1750.	-1.00	2.40	-1.10	2.40	15.98	0.17	20.62
QMAX	1829600	829600	829510	30.	260.	-0.50	2.69	-1.00	2.40	15.73	3.20	20.50

	WEIR_ID	FROM	TO	ZCREST	ZU	ZD	ZMAXU	QMAX	ZMAXD	TMAX
QWEIR	7821200	821200	821190	7.50	-4.50	-4.50	6.07	0.00	5.28	0.0
QWEIR	7821300	821300	821290	10.60	0.87	0.87	8.46	0.00	6.35	0.0
QWEIR	7821400	821400	821390	14.90	9.00	8.00	12.96	0.00	11.56	0.0
QWEIR	7821500	821500	821490	26.20	20.50	19.00	26.44	30.66	21.36	14.2
QWEIR	7822050	822050	822000	4.50	0.50	-2.10	4.69	21.74	2.01	15.0
QWEIR	7822100	822100	822000	6.50	-2.10	-2.10	3.86	0.00	2.01	0.0
QWEIR	7822200	822200	822190	6.50	-1.00	-2.00	4.29	0.00	3.91	0.0
QWEIR	7822250	822250	822110	6.08	-1.10	-1.10	4.86	0.00	4.15	0.0
QWEIR	7822300	822300	822290	12.00	-0.65	-0.65	8.14	0.00	6.19	0.0
QWEIR	7822400	822400	822390	12.50	1.50	1.00	11.68	0.00	7.02	0.0
QWEIR	7822420	822420	822410	12.50	3.00	2.80	12.51	0.46	11.68	25.3
QWEIR	7822500	822500	822490	15.40	5.00	4.00	13.96	0.00	12.53	0.0
QWEIR	7823100	823100	823000	6.50	-2.00	-2.00	5.14	0.00	2.00	0.0
QWEIR	7823180	823180	823170	6.00	1.17	-0.50	5.45	0.00	5.22	0.0
QWEIR	7823190	823190	823180	6.00	0.09	1.17	5.96	0.00	5.45	0.0
QWEIR	7823200	823200	823190	6.00	0.22	0.09	6.28	39.66	5.96	21.6
QWEIR	7823300	823300	823290	9.00	3.00	1.40	7.25	0.00	6.96	0.0
QWEIR	7823400	823400	823390	9.80	3.60	3.30	10.20	66.17	8.46	17.0
QWEIR	7824080	824080	824000	6.50	-1.01	-2.54	2.66	0.00	2.01	0.0
QWEIR	7824100	824100	824085	5.50	0.30	0.30	3.49	0.00	2.74	0.0
QWEIR	7824200	824200	824110	9.30	3.60	3.40	5.97	0.00	4.57	0.0
QWEIR	7824300	824300	824130	10.00	3.90	3.70	6.48	0.00	4.99	0.0
QWEIR	7824400	824400	824140	11.00	5.20	5.00	8.28	0.00	6.41	0.0
QWEIR	7824490	824490	824000	7.50	1.15	-2.54	5.95	0.00	2.01	0.0
QWEIR	7824600	824600	824590	12.50	3.50	3.00	6.63	0.00	6.63	0.0
QWEIR	7825200	825200	825100	10.00	-4.00	-4.00	2.09	0.00	2.00	0.0
QWEIR	7825300	825300	825230	12.00	4.00	4.00	7.06	0.00	5.80	0.0
QWEIR	7825400	825400	825390	15.00	5.50	4.00	13.67	0.00	7.16	0.0
QWEIR	7825420	825420	825410	12.80	6.30	6.10	13.14	52.60	7.35	17.4
QWEIR	6825430	825430	825429	12.40	6.50	8.00	13.22	38.90	9.66	17.4
QWEIR	7825500	825500	825430	13.00	9.41	6.50	13.60	120.52	13.22	17.4
QWEIR	6825600	825600	825200	4.80	-4.00	-4.00	2.23	0.00	2.09	0.0
QWEIR	7825630	825630	825620	13.50	1.20	1.20	4.52	0.00	4.05	0.0
QWEIR	7825655	825655	825653	6.80	-1.29	-1.05	2.26	0.00	2.17	0.0
QWEIR	7825700	825700	825615	9.20	3.00	-3.00	6.79	0.00	2.26	0.0
QWEIR	7825800	825800	825630	13.50	3.63	1.20	5.97	0.00	4.52	0.0
QWEIR	7826250	826250	826245	10.00	-3.17	-3.20	2.85	0.00	2.27	0.0
QWEIR	7826295	826295	826290	14.00	6.00	0.00	14.76	173.24	2.96	19.9
QWEIR	7826300	826300	826290	10.00	1.00	0.00	3.44	0.00	2.96	0.0
QWEIR	7826310	826310	826305	10.00	1.50	1.40	4.10	0.00	3.81	0.0
QWEIR	7826320	826320	826315	10.20	2.50	2.00	5.13	0.00	4.37	0.0
QWEIR	7826350	826350	826325	13.00	8.12	6.00	10.89	0.00	7.02	0.0
QWEIR	7826400	826400	826295	14.00	8.14	6.00	15.13	291.20	14.76	19.9
QWEIR	7826500	826500	826450	6.00	-3.50	-3.50	2.49	0.00	2.07	0.0
QWEIR	7826550	826550	826500	4.00	-2.00	-3.50	2.49	0.00	2.49	0.0
QWEIR	7826570	826570	826560	5.00	-2.62	-2.53	5.89	219.83	3.06	20.0
QWEIR	7826650	826650	826640	11.00	2.20	2.20	10.21	0.00	9.92	0.0
QWEIR	7826700	826700	826685	14.00	9.28	8.98	14.28	39.30	11.02	22.3
QWEIR	7826750	826750	826665	12.00	2.64	2.64	11.16	0.00	10.86	0.0
QWEIR	7826800	826800	826790	34.00	28.00	27.50	34.08	5.68	30.32	14.8
QWEIR	7826850	826850	826780	14.70	8.27	8.03	16.53	650.92	14.16	16.6
QWEIR	7826860	826860	826855	24.00	18.00	17.50	25.36	416.01	22.82	15.3
QWEIR	7826900	826900	826865	36.00	29.50	29.00	37.14	319.25	35.27	15.3
QWEIR	7826990	826990	826980	18.50	10.50	10.00	19.20	155.03	17.74	16.5
QWEIR	7829100	829100	829000	2.00	1.70	-1.00	2.86	209.12	2.29	15.4
QWEIR	7829200	829200	829190	5.00	0.00	-1.00	4.90	0.00	2.34	0.0
QWEIR	7829600	829600	829510	5.00	-0.50	-1.00	2.69	0.00	2.40	0.0
QWEIR	90221	82100	0	-2.00	-2.00	0.00	2.00	835.11	0.00	14.6
QWEIR	90222	82200	0	-2.50	-2.50	0.00	2.00	1392.44	0.00	15.9
QWEIR	90223	82300	0	-2.50	-2.50	0.00	2.00	592.08	0.00	13.2

QWEIR	90224	82400	0	-2.60	-2.60	0.00	2.00	1393.63	0.00	13.2
QWEIR	90225	82510	0	-4.00	-4.00	0.00	2.00	785.77	0.00	17.1
QWEIR	90226	82615	0	-4.00	-4.00	0.00	2.00	1424.67	0.00	13.1
QWEIR	90227	82620	0	-3.50	-3.50	0.00	2.00	1990.59	0.00	12.5
QWEIR	90228	82645	0	-3.50	-3.50	0.00	2.00	2080.31	0.00	12.5
QWEIR	90229	82900	0	-1.00	-1.00	0.00	2.00	1885.91	0.00	13.5
QWEIR	90230	82930	0	-1.50	-1.50	0.00	2.00	1922.29	0.00	12.8
QWEIR	90231	82940	0	-4.00	-4.00	0.00	2.00	760.34	0.00	14.1

APPENDIX D

MODEL RESULT COMPARISON TABLES

2.33 YEAR (MEAN ANNUAL) EVENT
5-YEAR EVENT
10-YEAR EVENT
25-YEAR EVENT
50-YEAR EVENT
100-YEAR EVENT

Model Results Comparison - 2.33 Year Event
Proposed Model Results Minus Modified Existing Model Results
****Results compiled from the .smx model files.**

Existing Conditions Model Results		Magnitude of Stage Change	*1 Indicates Positive Stage Change	Proposed Conditions Model Results	
Junction	Stage			Junction	Stage
82400	2	0		82400	2
824000	2.01	0		824000	2.01
824080	2.04	0		824080	2.04
824085	2.08	0.01		824085	2.07
824100	2.4	0		824100	2.4
824110	3.95	0.01	1	824110	3.96
824120	2.78	0		824120	2.78
824130	4.32	0		824130	4.32
824140	5.61	0		824140	5.61
824200	4.9	0		824200	4.9
824300	5.29	0.01	1	824300	5.3
824400	6.65	0		824400	6.65
824490	3.52	0		824490	3.52
824500	4.65	0		824500	4.65
824590	4.92	0		824590	4.92
824600	4.92	0		824600	4.92
824650	5.46	0		824650	5.46

Model Results Comparison - 5 Year Event
Proposed Model Results Minus Modified Existing Model Results
****Results compiled from the .smx model files.**

Existing Conditions Model Results		Magnitude of Stage Change	*1 Indicates Positive Stage Change	Proposed Conditions Model Results	
Junction	Stage			Junction	Stage
82400	2	0		82400	2
824000	2.01	0		824000	2.01
824080	2.08	-0.01		824080	2.07
824085	2.15	-0.01		824085	2.14
824100	2.64	0		824100	2.64
824110	4.07	0		824110	4.07
824120	3.04	0		824120	3.04
824130	4.45	0		824130	4.45
824140	5.75	0		824140	5.75
824200	5.1	0		824200	5.1
824300	5.52	0		824300	5.52
824400	6.9	0		824400	6.9
824490	3.87	0		824490	3.87
824500	4.99	0		824500	4.99
824590	5.23	0		824590	5.23
824600	5.24	-0.01		824600	5.23
824650	5.57	0		824650	5.57

Model Results Comparison - 10 Year Event
Proposed Model Results Minus Modified Existing Model Results
****Results compiled from the .smx model files.**

Existing Conditions Model Results		Magnitude of Stage Change	*1 Indicates Positive Stage Change	Proposed Conditions Model Results	
Junction	Stage			Junction	Stage
82400	2	0		82400	2
824000	2.02	0		824000	2.02
824080	2.17	-0.02		824080	2.15
824085	2.28	-0.02		824085	2.26
824100	2.96	0		824100	2.96
824110	4.23	0		824110	4.23
824120	3.39	0		824120	3.39
824130	4.63	0		824130	4.63
824140	5.94	0		824140	5.94
824200	5.37	0		824200	5.37
824300	5.81	0		824300	5.81
824400	7.23	0		824400	7.23
824490	4.42	0		824490	4.42
824500	5.43	0		824500	5.43
824590	5.64	0		824590	5.64
824600	5.65	0		824600	5.65
824650	5.71	0		824650	5.71

Model Results Comparison - 25 Year Event
Proposed Model Results Minus Modified Existing Model Results
****Results compiled from the .smx model files.**

Existing Conditions Model Results				Proposed Conditions Model Results	
Junction	Stage	Magnitude of Stage Change	*1 Indicates Positive Stage Change	Junction	Stage
82400	2	0		82400	2
824000	2.01	0		824000	2.01
824080	2.28	-0.03		824080	2.25
824085	2.38	-0.02		824085	2.36
824100	3.1	0		824100	3.1
824110	4.33	0		824110	4.33
824120	3.58	0		824120	3.58
824130	4.74	0		824130	4.74
824140	6.1	0		824140	6.1
824200	5.54	0		824200	5.54
824300	6	0		824300	6
824400	7.51	0		824400	7.51
824490	4.83	0		824490	4.83
824500	5.73	0		824500	5.73
824590	5.91	0		824590	5.91
824600	5.91	0		824600	5.91
824650	5.91	0		824650	5.91

Model Results Comparison - 50 Year Event
Proposed Model Results Minus Modified Existing Model Results
****Results compiled from the .smx model files.**

Existing Conditions Model Results		Magnitude of Stage Change	*1 Indicates Positive Stage Change	Proposed Conditions Model Results	
Junction	Stage			Junction	Stage
82400	2	0		82400	2
824000	2.01	0		824000	2.01
824080	2.54	-0.07		824080	2.47
824085	2.62	-0.05		824085	2.57
824100	3.37	-0.01		824100	3.36
824110	4.49	0		824110	4.49
824120	3.85	0		824120	3.85
824130	4.91	0		824130	4.91
824140	6.27	0		824140	6.27
824200	5.83	0		824200	5.83
824300	6.31	0		824300	6.31
824400	7.86	0		824400	7.86
824490	5.59	0		824490	5.59
824500	6.27	0		824500	6.27
824590	6.39	0		824590	6.39
824600	6.39	0		824600	6.39
824650	6.39	0		824650	6.39

Model Results Comparison - 100 Year Event
Proposed Model Results Minus Modified Existing Model Results
****Results compiled from the .smx model files.**

Existing Conditions Model Results		Magnitude of Stage Change	*1 Indicates Positive Stage Change	Proposed Conditions Model Results	
Junction	Stage			Junction	Stage
82400	2	0		82400	2
824000	2.01	0		824000	2.01
824080	2.75	-0.09		824080	2.66
824085	2.82	-0.08		824085	2.74
824100	3.51	-0.02		824100	3.49
824110	4.57	0		824110	4.57
824120	4.01	0		824120	4.01
824130	4.99	0		824130	4.99
824140	6.41	0		824140	6.41
824200	5.97	0		824200	5.97
824300	6.48	0		824300	6.48
824400	8.28	0		824400	8.28
824490	5.95	0		824490	5.95
824500	6.54	0		824500	6.54
824590	6.63	0		824590	6.63
824600	6.63	0		824600	6.63
824650	6.63	0		824650	6.63

APPENDIX E

EXISTING/PROPOSED CONVEYANCE CALCULATIONS
MANNING'S EQUATION CALCULATIONS

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PROJECT TEL Gypsum Relocation
PROJECT NO. 100754-0402
SHEET NO. 1 OF 9
CALCULATED BY RAH DATE 12/28/2011
CHECKED BY _____ DATE _____

On-Site Conveyance (Maximum Q)

* Manning's Equation $Q(cfs) = \left(\frac{1.49}{n}\right) A R^{2/3} \sqrt{S}$

Where: n = Manning's Roughness Coefficient
A = Area of Flow
R = Hydraulic Radius = $\frac{A}{P}$
P Wetted Perimeter
S = Slope

* Calculations must show that proposed culverted sections provide adequate capacity according to existing conditions.

* Refer to Figures 6 & 7 for locations identified in calculations.

- Existing culverted section (E1) through Big Bend's Rail loop is downstream of proposed culverted sections 1, 2 & 3. The maximum Q allowed through this section is calculated using Manning's Equation for full flow through the culvert. The culvert details are as follows:

121 LF of 24" RCP, n = 0.012
U/S INV EL. = -0.55
D/S INV EL. = -0.77

$A = \pi r^2 = \pi \cdot 1^2 = 3.14 SF$
$P = 2\pi r = 2(3.14) \cdot 1 = 6.28$
$R = A/P = 0.5$
$S = \frac{-0.55 - -0.77}{121} = 0.0018$

$Q = \left(\frac{1.49}{0.012}\right) \cdot 3.14 \cdot (0.5)^{2/3} \sqrt{.0018}$

Max Q = 10.47 cfs

→

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PROJECT TEC Gypsum Relocation
PROJECT NO. 100754-0400
SHEET NO. 2 OF 9
CALCULATED BY AAA DATE 12/28/2011
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The proposed culverts at culverted sections 1, 2 & 3 must be sized to provide conveyance for 10.47 cfs.

- Based on site survey @ P1, the U/S INV EL = 1.7, the D/S INV EL = 1.0. Length = 42 FT

$$S = \frac{0.7}{42} = 0.016 \ \text{Ft/Ft}$$

Proposed 24" RCP at this location:

$$Q = \left(\frac{1.49}{0.012}\right) \cdot 3.14 \cdot (0.5^{2/3}) \sqrt{0.016}$$

$$= 31.7 \text{ cfs} > 10.47$$

∴ A 24" RCP @ P1 with a slope of 0.016 Ft/Ft will be sufficient

- Based on the site survey @ P2, the U/S INV = -0.1, the D/S INV = -0.4. Length = 90'

$$S = \frac{0.2}{90} = 0.002$$

Proposed 24" RCP @ this location

$$Q = \left(\frac{1.49}{0.012}\right) \cdot 3.14 \cdot (0.5^{2/3}) \cdot \sqrt{0.002}$$

$$= 11.6 \text{ cfs} > 10.47$$

∴ A 24" RCP @ P2 with a slope of 0.002 Ft/Ft will be sufficient.

→

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PROJECT TEC Gypsum Relocation
PROJECT NO. 100754-0400
SHEET NO. 3 OF 9
CALCULATED BY EFM DATE 12/28/2011
CHECKED BY _____ DATE _____

- Based on site survey @ P3, the U/S INV EL. = -0.4.
  The D/S INV EL. = -0.55, Length = 50'

  $S_f = \frac{0.15}{50} = 0.003$ ft/ft

  Proposed 24" RCP @ this location.

  $Q = \left(\frac{1.49}{0.012}\right) \cdot 3.14 \cdot (0.5^{2/3}) \cdot \sqrt{0.003}$

  $= 13.5$ cfs > 10.47

  ∴ A 24" RCP @ P3 with a slope of 0.003 ft/ft will be sufficient.

- The discharge through P4 & P5 is not governed by a U/S or D/S culverted section. The ditch section where these crossings are proposed appears to be a dead end ditch. To allow for flow to continue through this ditch, culverts are proposed to maintain conveyance. An estimate of the current flow through this ditch can be completed by calculating the flow through a trapezoidal channel with water at the 5 Yr WSEL elevation. Based on site specific survey the approximate dimensions of the channel can be determined and used to calculate the flow that must be conveyed through proposed culverted sections.

→

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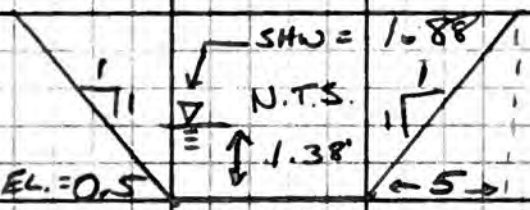
PROJECT TEC Gypsum Relocation
PROJECT NO. 100754-0400
SHEET NO. 4 OF 9
CALCULATED BY RPM DATE 12/28/2011
CHECKED BY _____ DATE _____

— Trapezoidal Section @ P4 — According to site survey estimate.

EL. = 5.5



$S = \frac{0.1}{100} = 0.001 \frac{ft}{ft}$

$n = 0.03$ for weeded natural channels

$Q = \left(\frac{1.49}{0.03}\right) 12.94 \cdot 1.1^{2/3} \cdot \sqrt{.001}$

Max Q = 21.65 cfs

$A = (8 \times 1.38) + (0.38 \times 1.38)$
$= 12.94$ SF

$P = 8 + 2\left(\sqrt{1.38^2 + 1.38^2}\right)$
$= 11.9$ Ft

$R = A/P = 1.1'$

— Based on site survey @ P4, the U/S INV EL. = 0.4.
The D/S INV EL. = 0.2 Length = 50'

$S = \frac{0.2}{50} = 0.004$ Ft/Ft

Proposed 2-24" RCP @ this location.

$Q = \left(\frac{1.49}{0.012}\right) \cdot 3.14 \cdot (0.5^{2/3}) \cdot \sqrt{0.004}$

$= 2 \times 15.5$ cfs $= 31.0$ CFS > 21.65

∴ 2-24" RCP @ P4 with a slope of 0.004 Ft/Ft will be sufficient.

→

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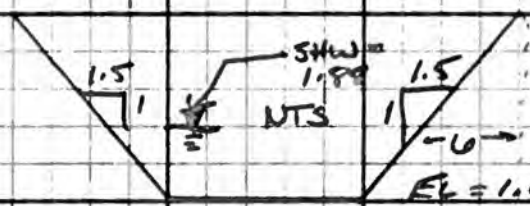
PROJECT TEC Gypsum Relocation
PROJECT NO. 100754-04100
SHEET NO. 5 OF 9
CALCULATED BY RPM DATE 12/28/2011
CHECKED BY _____ DATE _____

- Trapezoidal Section @ PS - According to site survey estimate.



EL = 5.0

$S = \frac{0.1}{75} = 0.001 \frac{Ft}{Ft}$

$A = (8 \times 0.88) + (0.88 \times (1.5 \times 0.88$
$= 10.2\ SF$

$P = 8 + 2(\sqrt{0.88^2 + (0.88 \times 1.5)^2}$
$= 11.2\ ft$

$R = A/P = 1.45$

$n = 0.03$ for weeded natural channels

$Q = \left(\frac{1.49}{0.03}\right) \cdot 10.2 \cdot 1.45^{2/3} \sqrt{0.001}$

Max Q = 32.6 cfs

- Based on site survey @ PS, the US INV. EL = 0.8
The D/S INV. EL = 0.5 L = 50

$S = \frac{0.3}{50} = 0.006 \frac{Ft}{Ft}$

Proposed 2-24" RCP @ this location

$Q = \left(\frac{1.49}{0.012}\right) \cdot 3.14 \cdot (0.5^{2/3}) \sqrt{0.006}$

$= 2 \times 19.0 = 38.0$ cfs > 32.6

∴ 2-24" RCP @ PS with a slope of 0.006 Ft/Ft will be sufficient.

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PROJECT TEC Gypsum Relocation
PROJECT NO. 100754-0402
SHEET NO. 6 OF 9
CALCULATED BY RAM DATE 12/28/2011
CHECKED BY _____ DATE _____

- Existing culverted section (E2) through Big Bend Rail Loop is downstream of proposed culverted section PL6. The maximum Q allowed through this section is calculated using Manning's Equation for full flow through the culvert. The culvert details are as follows:

  69 LF of 24" RCP, n = 0.012 $S = \frac{0.2}{69}$
  U/S INV EL = 0.72
  D/S INV EL = 0.52

Max $Q = \left(\frac{1.49}{0.012}\right) \cdot 3.14 \cdot (0.5^{2/3}) \cdot \sqrt{0.003}$

Max Q = 13.5 CFS

- Based on site survey @ PL6, the U/S INV. EL. = 1.9
  The D/S INV. EL = 1.6, L = 50 LF
  $S = \frac{0.3}{50} = 0.006$ Ft/Ft

Proposed 24" RCP @ this location:

$Q = \left(\frac{1.49}{0.012}\right) \cdot 3.14 \cdot (0.5^{2/3}) \cdot \sqrt{0.006}$

= 19.0 CFS > 13.5 CFS

∴ A 24" RCP @ PL6 with a slope of 0.006 Ft/Ft will be sufficient.

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PROJECT TEC Gypsum Relocation
PROJECT NO. 100754-0400
SHEET NO. 7 OF 9
CALCULATED BY RAM DATE 12/28/2011
CHECKED BY _____ DATE _____

- A culverted section @ P7 is required. Flow through this section can be retrieved from the Hillsborough Co model that this drainage design is based upon. The model file can be found in Appendix B of this report.
- This section of Jackson Branch is modeled between junctions 824120 and 824100 in Hills. Co. Miellaneous Coastal Streams model. The flows through that section are located in the .SMX file.
- The SMX file indicates that during the 100 yr event 44.10 CFS is the maximum flow.
- A culverted section @ P7 needs to be able to Maintain the same conveyance without creating upstream impacts.
- Based on site survey at P7, the U/S INV EL = 0.6
  The D/S INV EL. = 0.0
  L = 250 LF
  Proposed 2-36" RCP @ this location
  $S = \frac{0.6}{250} = 0.0024 \frac{ft}{ft}$

$$Q = \left(\frac{1.49}{0.012}\right) 7.1 \cdot (0.75^{2/3}) \cdot \sqrt{0.0024} = 35.6 \text{ cfs}$$

$2(35.6) = 71.3 \text{ CFS} > 44.1$

∴ 2 - 36" RCP with a slope of 0.0024 ft/ft will be sufficient. →

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PROJECT TEC Gypsum Relocation
PROJECT NO. 100754-0400
SHEET NO. 8 OF 9
CALCULATED BY RPM DATE 9/21/2012
CHECKED BY _____ DATE _____

- An existing box culvert, (E3) is located at the access road connection to the National Gypsum property. The maximum Q allowed through this section is calculated using Manning's Equation for full flow through the culvert. The existing culvert details are as follows:

24 LF of 4.5' x 8' Concrete Box Culvert, n = 0.012

U/S INV. EL. = 1.06
D/S INV. EL. = 0.95

$A = 4.5 \times 8 = 36$ SF

$P = 2(4.5) + 8 = 17$ FT

$R = A/P = \frac{36}{17}$

$S = \frac{1.06 - 0.95}{24} = 0.0046$

$$Q = \left(\frac{1.49}{0.012}\right)(36)\left(\frac{36}{17}\right)^{2/3}\sqrt{0.0046}$$

Max Q = 499.9 CFS

If any modifications occur @ (E3), (P8) must provide conveyance for 499.9 CFS or more.

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PROJECT TEC Gypsum Relocation
PROJECT NO. 100754-0400
SHEET NO. 9 OF 9
CALCULATED BY RPM DATE 9/21/2012
CHECKED BY _____ DATE _____

- An existing box culvert, (E4) is located at the rail loop where the proposed rail spur extension will be meeting the existing loop. Th maximum Q allowed through this section is calculated using Mannings Equation for full flow through the culvert. The existing culvert details are as follows:

603 LF of 2 5'x3' Concrete Box Culverts
n = 0.012
U/S INV. EL = 1.66
D/S INV. EL = 1.60
A = 2(5x3) = 30SF

$Q = \left(\frac{1.49}{0.012}\right)(30)(30/22)^{2/3}\sqrt{0.00095}$

P = 2(3+3+5) = 22
R = A/P = 30/22

Max Q = 144.2 CFS

S = (1.66 - 1.60)/603 = 0.00095

(P9) must maintain existing conveyance.

(P9) is a proposed culvert extension of 25 LF. To maintain the calculated conveyance, the proposed extension must have the following dimensions

603 existing ft plus 25 foot extension.

2 - 3' x 5' concrete box culverts

U/S INV = 1.69
D/S INV = 1.60

S = 0.09/897 = 0.00100

APPENDIX F

PROJECT SITE RUNOFF CALCULATIONS

ECT
Environmental Consulting & Technology, Inc.

PROJECT TEC Gypsum Runoff
PROJECT NO. 100754-0400
SHEET NO. 1 OF 2
CALCULATED BY [illegible] DATE 1/4/2012
CHECKED BY _____ DATE _____

Project Area Runoff Volume Calculations

- TEC's Gypsum Relocation Facility is proposed to capture all rainfall that falls within the project area and route the runoff produced through a pipe system to TEC's recycle ponds.
- The system is designed for the 25-year event. As shown in Figure 3, the rainfall amount for the 25yr/24hr event is 8.0 inches.
- The rainfall volume that will be captured and routed is dependent on the bermed project area, 22.5 Ac
- The SCS Method will be used to calculate this volume.

$$Q = \frac{(P - I_a)^2}{(P - I_a) + S}$$ where $I_a = 0.2S$; $S = \frac{1000}{CN} - 10$

- The site has a CN of 98 because the berms capture 100% of the runoff

$S = \frac{1000}{98} - 10 = 0.204$, $I_a = 0.2 \times 0.204 = 0.041$

$$Q = \frac{(8 - 0.041)^2}{(8 - 0.041) + 0.204} = 7.76 \text{ in}$$

Runoff Volume = $22.5 \text{ Ac} \left(\frac{7.76 \text{ in}}{12 \text{ in}}\right) = 14.55$ Ac-Feet = 633,798 CF

ECT
Environmental Consulting & Technology, Inc.

PROJECT TEC Gypsum Runoff
PROJECT NO. 100754-0400
SHEET NO. 2 OF 2
CALCULATED BY [illegible] DATE 1/4/2012
CHECKED BY _____ DATE _____

Cont...

The total volume captured and routed to TEC's process water ponds will be:

633,798 CF

The ponds require an additional capacity for the storage of 633,798 CF of runoff. (See total in gallons below)

1 CF = 7.48 gallons

633,798 CF x 7.48 gal/CF =

4,740,809.0 Gallons

APPENDIX G

ROADWAY DRAINAGE CALCULATIONS
EXISTING SWALE SIZING CALCULATIONS

ECT
Environmental Consulting & Technology, Inc.

PROJECT TEC Gypsum Road
PROJECT NO. 100754-0400
SHEET NO. 1 OF 2
CALCULATED BY APM DATE 2/8/2012
CHECKED BY _____ DATE _____

Roadway Runoff Calculations

- Paved access roads are required for this facility.

The cross section for these access roads shall include a drainage swale to capture the required treatment volume. According to the ERP manual, the required treatment volume is equal to the volume of the first 1" of rainfall. Since this accounts for pervious and impervious area, the treatment swales for the impervious area only of the access roads for the gypsum storage area are sized using 1¼" of rainfall over the impervious area of the access roads.

The impervious area of the access road connecting Wyandotte road to the gypsum storage area is approximately equal to 100,000 SF. The impervious area for the driveway from the storage area to the National Gypsum property is approximately 13,000 SF. (The approximate length of roadway for these areas is equal to 2,280 LF)

The required volume that needs to be treated is equal to $\left(\frac{73{,}000\ SF}{43{,}560\ SF/Ac}\right) \frac{1.25\ in}{12\ in/Ft} = 0.175\ \frac{Ac}{Ft}$

$0.175\ Ac/Ft \approx 7623\ CF.$

→

ECT
Environmental Consulting & Technology, Inc.

PROJECT TEC Cayasen Roadway
PROJECT NO. 100754-0400
SHEET NO. 2 OF 2
CALCULATED BY RPM DATE 2/8/2012
CHECKED BY _____ DATE _____

The total length of roadway for these access roads is approximately 2,280 LF.

The cross section of a swale that would capture the required treatment volume is as follows:

Cross-sectional area = 4 SF

2280 LF x 4 SF = 9,120 CF of treatment provided.

1. Swale is adequately sized and will contain the required treatment volume for the access roads associated with this project.

* Swales shall be designed with blocks to impede untreated flow into the roadway ditches that the access roads are crossing. These blocks should be 1' higher than the swale bottom in order to allow for the required treatment volume to be captured.

APPENDIX C
GROUND PHOTOGRAPHS

Photograph No. 1. View of Wetland S1 facing south – swale overgrown with Brazilian peppers.

Photograph No. 2. View of Wetland S2 facing west – a double ditch system along south side of old field.

Photograph No. 3. View of Wetland S3 facing south – location where ditch from agricultural field enters project site.

Photograph No. 4. View of Wetland S3 facing north – view of canal that runs along east side of project.

Photograph No. 5. View of Wetland S4 facing west – ditch parallels south side of access road. Cattail cover is dense.

Photograph No. 6. View of Wetland S5 facing east – wide swale along access road.

Photograph No. 7. View of Wetland V1 facing south – southeast junction of several ditches. Ditches typically overgrown with Brazilian peppers.

Photograph No. 8. View of Wetland V1 facing north – ditch overgrown with paragrass.

Photograph No. 9. View of Wetland V2 looking north from center of channel.

Photograph No. 10. View of Wetland V2 looking south from center of channel.

Photograph No. 11. View of Wetland V2 looking east across channel.

Photograph No. 12. View of Wetland V3 facing west – turns west and parallels access road on north side. Cattails are majority of cover in this portion of the ditch.

Photograph No. 13. View of Wetland V4 facing north – large ditch that parallels Wetland V1.

Photograph No. 14. View of Wetland D1 facing east at box culvert.

Photograph No. 15. View of Wetland D2 facing east.

Photograph No. 16. View of Wetland W1 facing east.

Photograph No. 17. View of culverted railroad crossing which drains Wetland W1 looking west from edge of Wetland W1.

APPENDIX D

COMPLETED USACE WETLAND JURISDICTION DETERMINATION FORMS

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): May 25, 2012

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: Randy Melton, Tampa Electric Company, P.O. Box 111, Tampa, Florida 33601

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:Tampa Regulatory Office, SAJ-2012-

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: The The Tampa Electric Company Big Bend Station consists of four coal-fired steam generators which use wet flue gas desulfurization (FGD) control technology (i.e., wet scrubbers) to reduce emissions of sulfur oxides. Gypsum (hydrated calcium sulfate) produced as a by-product of the wet FGD control systems is currently sold for use in the production of wallboard, or stored onsite at the Big Bend Station. Since the existing onsite gypsum storage facility is near its storage capacity, Tampa Electric is planning the installation of a new gypsum handling and storage facility which will provide the ability to handle and store gypsum (the Project). Construction of the new gypsum handling and storage facility will be accomplished in two phases. Phase I of the project will consist of a stackout pile, gypsum management area, paved haul roads and a stormwater management system. Gypsum will be hauled from the FGD area within the plant by truck to the new storage area for the time being. Phase II could eventually be constructed to include a conveyor system to transfer gypsum directly from the plant to the new gypsum storage facility and other transloading and management facilities such as a radial stacker and storage dome. In the Phase II operational scenario, a full hood cover belt conveyor would transfer gypsum from the reclaim hopper in the plant to a diverter gate which would be used to transfer gypsum to either a truck/railcar loadout silo or to a stackout area for transfer to the gypsum management pile. A rotary plow will be used to transfer gypsum from the management pile or truck/railcar loadout silo to trucks/railcars which will then transfer the gypsum to offsite customers. The reclaimed gypsum may also be transferred by truck to the Big Bend Station dock for loading onto barges. This product gypsum will be barged to agricultural customers in South America. The Project's major components include: • Phase I- 1) Truck transfer of gypsum to the new gypsum handling and storage facility. 2) Nominal 1.4 million ton capacity gypsum pile management area. 3) Mobile equipment to transfer gypsum from the stock out pile to the gypsum pile management area, reclaim hopper, or directly to truck. 4) Two

access roads. 5) Stormwater management system. • Phase II- 1) Enclosed pipe conveyors, belt conveyors, and enclosed belt transfer stations to transfer gypsum from the existing Big Bend Station FGD gypsum processing area to a radial stacker. 2) Covered belt conveyors to transfer gypsum from the reclaim hopper to either the truck loadout silo or to the gypsum storage dome. 3) Nominal 100 ton capacity truck/railcar loadout silo. Gypsum from the existing Big Bend Station FGD system will be conveyed into the adjacent North Stackout Area and stacked onto an impervious pad with secondary containment walls. It will then be loaded into trucks to be hauled to the East 40 storage area. Gypsum will be reclaimed from the storage pile using mobile equipment (e.g., front end loaders) and loaded into trucks or railcars for hauling to customers or to the waterfront dock for loading onto barges and shipment to offshore customers. A final decision as to whether to build Phase II has not been reached by Tampa Electric at this time. However, if Phase II is implemented, gypsum from the existing Big Bend Station processing area will be transferred by covered belt and pipe belt conveyors to the radial stacker. The existing 150-foot (ft) covered conveyor would be modified to transfer gypsum from the existing gypsum transfer building in the plant to a new transfer station in the new East 40 storage area by means of a new pipe conveyor. The gypsum would then be distributed either into stockout piles for pickup by front end loader and transport to the main gypsum management pile or to a receiving hopper for loadout into trucks or transferred via a covered conveyor to a gypsum storage dome. In a pipe conveyor, the belt is wrapped into a cylindrical pipe form guided by six hexagonally arranged idlers along the conveyor route. This allows the conveyor to negotiate inclines of up to 30 degrees and to curve in both the vertical and the horizontal directions enabling the conveyor to negotiate obstacles that would obstruct a conventional straight conveyor. With the material being transferred completely enclosed within the belt pipe, fugitive dust emissions and spillage are eliminated along the conveyor run on both the pipe (outbound) and the belt (return) conveyors. Pipe conveyors also allow for relatively long conveying distances without the need for transfer towers. The continuous pipe conveyor would be approximately 3,200 ft (0.61 mile) in length. As mentioned previously, from the transfer station, a fully covered radial stacker conveyor would transfer gypsum to the stackout piles. Gypsum would be reclaimed from the stackout piles using mobile equipment (e.g., front end loaders) and either transferred to an above-grade reclaim hopper in the gypsum pile management area or loaded into trucks for transport. Mobile equipment will be also used to reclaim gypsum from the management area pile for transfer to the reclaim hopper or loadout directly into trucks. The radial stacker may also transfer gypsum directly to the reclaim hopper. From the reclaim hopper, a fully covered belt conveyor will transfer gypsum to a diverter gate which will be used to transfer gypsum via a covered conveyor to a truck/railcar loadout silo, a conical storage pile located

inside the gypsum storage dome or the radial stacker, which will deposit gypsum into discrete stackout piles. A rotary plow will be used to transfer gypsum from the truck/railcar loadout silo to trucks/railcars which will then transfer the gypsum to offsite customers. Within the covered gypsum storage dome, gypsum will be transferred from the conical storage pile to trucks using mobile equipment for subsequent shipment to offsite customers. The reclaimed gypsum may also be transferred by truck to the Big Bend Station dock for loading onto barges. Modifications planned for the existing gypsum handling system include: (a) addition of an backup stack-out conveyor and an impervious storage pad with containment walls to be located at the current FGD by-products storage pile to the west of the limestone storage building, The new backup stackout conveyor will transfer gypsum from the existing gypsum product handling building to the new storage pad. The backup stack-out belt conveyor will be 20 inches wide, have a length of 1,240 ft, and a gypsum transfer capacity of 200 tons per hour. The conical gypsum storage pile will be 45 ft high with a storage capacity of 3,350 tons. Equipment associated with the transfer of gypsum from truck to barge includes a front-end loader and a new receiving hopper located at the dock. Gypsum trucks will unload to an existing impervious storage pad with containment walls located at the dock. A front-end loader will then transfer gypsum from the storage pad to the new receiving hopper. A clamshell located on the barge will then transfer gypsum from the receiving hopper to the barge. The Project will result in the permanent filling of approximately 0.97 acres of highly disturbed natural or man-made surface water features (i.e., 0.04 acre of altered natural stream channel, 0.16 acre of freshwater marsh, 0.74 acre of upland-cut ditches, and 0.03 acre of an upland excavated depression). Project construction is currently scheduled to commence no later than November 2013 and will be completed by April 2014. Environmental Consulting & Technolgy, Inc. (ECT) performed the wetland jurisdictional determinations along the proposed impact areas on the project site. Acreages are only indicated on the form for wetland impact assessment areas. However, impact wetland acreages are provided in the attached Table 1.

(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State:Florida County/parish/borough: Hillsborough City: N/A
Center coordinates of site (lat/long in degree decimal format): Lat. -27.79765069° N, Long. -82.390469679° W.
Universal Transverse Mercator: x=363,023.329729 East and y=3,075,562.64751 North
Name of nearest waterbody: Tampa Bay

Identify (estimate) amount of waters in the review area:
Non-wetland waters: 1,807.7 linear feet: average of 20 ft width (ft) and/or 0.83 acres.

Cowardin Class: Riverine
Stream Flow: Intermittent
Wetlands: 0.162 acres.
Cowardin Class: Emergent

Name of any water bodies on the site that have been identified as Section 10 waters:
Tidal: N/A
Non-Tidal: N/A

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): September 8, 9, 12, and 15; December 13, 2011

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity

are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:Figures 1 through 14 and Sheets 4, 5, 5-1 through 5-9 in ERP application.

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☐ U.S. Geological Survey Hydrologic Atlas: .

- ☐ USGS NHD data.
- ☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name:1 inch=2,000 feet; Gibsonton, 1987; Figure 2 in ERP application.

☒ USDA Natural Resources Conservation Service Soil Survey. Citation:Soils of Hillsborough County, 1987; Figure 3 in ERP application.

☒ National wetlands inventory map(s). Cite name:Gibsonston, 1987-USFWS 2006; Figure 5 in ERP application.

☐ State/Local wetland inventory map(s): .

☒ FEMA/FIRM maps:Figure 4 in ERP application.

☒ 100-year Floodplain Elevation is: 11.0 feet(National Geodectic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date):SWFWMD; Photo date 2011 on Figure 6 in ERP application.

or ☒ Other (Name & Date):Ground photographs; Photo dates September 8, 9, 12, and 15; December 13, 2011 in Appendix C in ERP application.

☐ Previous determination(s). File no. and date of response letter:

☒ Other information (please specify):Land use/cover map and wetland jurisdictional limits for impact areas are depicted on Figure 7 in the ERP application; Attached is a table of the wetlands identified on the project site (i.e Table 1). All of the wetlands onsite were delineated using the top of bank along berms. therefore, standard USACE Routine Wetland Delineation forms were not completed/required for upland and wetland locations.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Randy Melton 5/1/12

Signature and date of
Regulatory Project Manager
(REQUIRED)

Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining
the signature is impracticable)

Table 1. Wetlands/Surface Waters on the Tampa Electric Company Big Bend Power Station Gypsum Storage Area/Conveyor Improvements Project Site

Site Number ***	Latitude	Longitude	Cowardin Class	Size*	Class of Aquatic Resource
D1	27.80017428 N	82.38917736 W	N/A**	0.01	Non-Section 10-NonWetland
D2	27.79913896 N	82.39138079 W	N/A**	0.014	Non-Section 10-NonWetland
S1	27.79693803 N	82.39218183 W	N/A**	0.124	Non-Section 10-NonWetland
S2	27.79648821 N	82.39220789 W	N/A**	0.02	Non-Section 10-NonWetland
S4	27.79638560 N	82.39418242 W	N/A**	0.037	Non-Section 10-NonWetland
S5	27.79623166 N	82.39356272 W	N/A**	0.003	Non-Section 10-NonWetland
S6A	27.79487342 N	82.39660462 W	N/A**	0.025	Non-Section 10-NonWetland
S6B	27.79455428 N	82.39591899 W	N/A**	0.001	Non-Section 10-NonWetland
S6C	27.79625910 N	82.39442367 W	N/A**	0.109	Non-Section 10-NonWetland
S6D	27.79486638 N	82.39486017 W	N/A**	0.055	Non-Section 10-NonWetland
S9	27.79664148 N	82.39032489 W	N/A**	0.029	Non-Section 10-NonWetland
S11	27.79982076 N	82.39026175 W	N/A**	0.26	Non-Section 10-NonWetland
V2	27.79930466 N	82.38936778 W	N/A**	0.054	Non-Section 10-NonWetland
V3	27.79685600 N	82.39248011 W	N/A**	0.018	Non-Section 10-NonWetland
V4A	27.79649128 N	82.39389394 W	N/A**	0.05	Non-Section 10-NonWetland
V4B	27.79685465 N	82.39261972 W	N/A**	0.021	Non-Section 10-NonWetland
W1	27.80014868 N	82.39129657 W	PEM5C	0.162	Non-Section 10-Wetland
TOTAL				**0.992**	

** The estimated amount of the aquatic resource within project limits is in acres.*

*** The National Wetlands Inventory does not have this wetland/surface water feature mapped for the project area.*

All wetland/surface water types are man-made upland cut ditches, except for V2 (natural stream), S9 (pond), and W1 (marsh).

**** S3, S7, S8, S10, S12, and V1 were present within the project vicinity, but are not located within project limits.*

APPENDIX E

COMPLETED UMAM AND E-WRAP FORMS

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
TEC BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT		V2

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
511	Natural Stream	Impact	0.04 acre

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)
Wolf Branch	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

Connected to Tampa Bay, but location of assessment area does not appear to be tidally influenced.

Assessment area description

Channelized stream along densely wooded area between agricultural fields and industrial facilities.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
N/A	N/A

Functions	Mitigation for previous permit/other historic use
BIOLOGICAL: Macroinvertebrate habitat; fish cover, spawning and nursery habitat; amphibian habitat and feeding; aquatic turtle cover, feeding and breeding (stream banks); and habitat heterogeneity (water depth, vegetation, woody debris). PHYSICAL/CHEMICAL: Water quality treatment; sediment/erosion control; recharge/discharge; detrital export; flood retention/detention.	No / Agriculture

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Coastal shiner, madtom, bullhead, pirate perch, swamp darter, least killifish, mosquitofish, sailfin molly, amphiuma, sirena, southern dusky salamander, leopard frog, loggerhead musk turtle, cottonmouth moccasin, water snakes, raccoon, opossum, river otter, kingfisher, wood stork, and wading birds.	American alligator (SSC, habitat, long-term), wood stork (E, foraging, frequent), little blue heron (SSC, foraging and nesting, seasonal), snowy egret (SSC, foraging and nesting, seasonal), and tricolored heron (SSC, foraging and nesting, seasonal).

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Snowy egret, Northern cardinal, mud turtle, black racer, and mosquitofish.

Additional relevant factors:

Areas adjacent to stream used as a dump site for refuse.

Assessment conducted by:	Assessment date(s):
Bryan Dellus	13-Dec-11

PART II – Quantification of Assessment Area (Impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
TEC BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT		V2
Impact or Mitigation	Assessment conducted by:	Assessment date:
Impact	B. Delius	December 13, 2011

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	Outside habitats provide minimal support for wildlife. The majority of cover is invasive species that adversely affect wetland functions such as Brazilian peppers and Australian pines. Wildlife access is partially limited by deep ditches, railroad berms, and industrial facilities. Altered topography of stream reduces water quality treatment capabilities and increases the potential for flash flooding, which in turn greatly reduces the potential downstream benefits to Tampa Bay. Wetland function is negligibly protected by adjacent uplands. Land use in the area substantially reduces use by wildlife.	3	0
.500(6)(b)Water Environment (n/a for uplands)	Water levels and flows are altered from optimal conditions by artificial channelization. Water level indicators suggest a very flashy system. Sand bars suggest soil erosion and deposition, which is common in channelized streams. There is no evidence of past fires, which suggests fire has been artificially suppressed. There is no native vegetation present. Use by animals is lower than would be expected. Possible water quality degradation from agricultural/industrial runoff (i.e., sulfurous odor and milky sheen in water was observed during the assessment).	5	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	The majority of plant species in the vegetation layers are invasives. Regeneration and natural recruitment are greatly reduced. Virtually no plant life in the channel is indicative of a permanent deviation from normal successional patterns. Moderate siltation. Greater than normal woody debris from dense invasive cover. Significant alteration of natural structure/topography through artificial channelization and the invasion of invasive species have greatly impacted the system. Minimal wildlife support.	2	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.33	0

If preservation as mitigation,
Preservation adjustment factor = N/A
Adjusted mitigation delta = N/A

For impact assessment areas
FL = delta x acres = -0.33 x 0.04 = 0.01

Delta = [with-current]
-0.33

If mitigation
Time lag (t-factor) = N/A
Risk factor = N/A

For mitigation assessment areas
RFG = delta/(t-factor x risk) = N/A

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
TEC BIG BEND POWER STATION GYPSUM STORAGE AREA/[illegible] IMPROVEMENTS PROJECT		W1

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
641/619	FDEP: 641 FNAI: Depression Marsh SCS: 25-Freshwater Marsh	Impact	0.18 acre

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)
Wolf Branch	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

Assessment area is a topographic low within an larger area of historic maritime hammock. Surface runoff pools into the area. Area drains via culverts under railroad tracks into drainage ditches which ultimately empty into Tampa Bay.

Assessment area description

Area is a grassy marsh with some open water and wetland forest now dominated by Brazilian peppers.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Railroad tracks, power generation plant, and manufacturing plant	Most of the general landscape is urban/industrial.

Functions	Mitigation for previous permit/other historic use
BIOLOGICAL: Wading bird feeding; sandhill crane nesting; amphibian breeding; forage fish habitat; reptile feeding; rice rat nesting; and Florida round-tailed muskrat feeding and nesting. PHYSICAL/CHEMICAL: Water quality treatment; sediment/erosion control; [illegible], detrital export, flood [illegible]	Not/Agriculture

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Mammals: raccoon, opossum, muskrat; Birds: great blue, tricolor, and little blue herons, common and snowy egrets, sandhill crane, wood stork, bald eagle; Herpetofauna: cricket frog, alligator, amphiuma, mud snake, green tree frog, green water snake, banded water snake, bullfrog, pig frog, leopard frog, striped swamp snake, black swamp snake, lesser siren, greater siren.	Florida sandhill crane (T, foraging, nesting, seasonal), wood stork (E, foraging, seasonal), bald eagle (T, foraging, incidental), alligator (SSC, foraging, breeding, longterm), white ibis (SSC, foraging, longterm), tricolored heron (SSC, foraging, longterm), little blue heron (SSC, foraging, longterm), and snowy egret (SSC, foraging, longterm).

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Great egret, raccoon tracks, leopard frogs

Additional relevant factors:

None

Assessment conducted by:	Assessment date(s):
Christie Vandervoor	20-Aug-12

Form 62-345.900(1), F.A.C. [effective date 02-04-2004]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
TEC BIG BEND POWER STATION GYPSUM STORAGE AREA/CONVEYOR IMPROVEMENTS PROJECT		W1
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	C. Vandeveer	August 28, 2012

Scoring Guidance	Optimal (10)	Moderate (7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Indicator	w/o pres or current	with	Description
.500(6)(a) Location and Landscape Support	4	0	The area is surrounded by relict maritime hammocks with extensive encroachment of Brazilian pepper trees. Rail lines, roads, industry, ditching, and row crop fields comprise most of the surrounding landscape. Birds and small animals can access the area and the surrounding land can support the life cycles of many of these animals, but larger wildlife usage is discouraged by human activity and noise levels. Area offers few benefits (mostly detritus) to downstream habitats and possible pollutant loads in discharges may adversely affect wildlife.
.500(6)(b) Water Environment (n/a for uplands)	4	0	Historic aerial photographs indicate that the area has ranged from open water to marsh over the past decades probably depending on rainfall and diversion of water with agricultural ditching. Row crop fields with extensive ditches to control water began in the general area in the 1950s. The area receives surface runoff which now originates from various roads, a double railroad track loop, and industry and probably carries pollutant loads. The area drains via culverts under the railroad track loop into a series of ditches, which empty into Tampa Bay. The hydrology supports the grass-dominated marsh, but is insufficient to exclude the Brazilian peppers which dominate the forested edges of the wetland.
.500(6)(c) Community structure 1. Vegetation and/or 2. Benthic Community	4	0	The area is currently a grassy marsh dominated by *Paspalum distichum* with a small area of open water and minor populations of *Crinum americanum*, *Acrostichum danaeifolium*, and *Typha domingensis*. Historic aerial photographs indicate that the area once had a wetland shrub or tree component, but this part of the system has been taken over by Brazilian peppers to the exclusion of almost all other species. The altering of the land first for farming and currently for industry leaves this wetland and its abutting forest as a relict habitats.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.40	0

If preservation as mitigation,
Preservation adjustment factor = N/A
Adjusted mitigation delta = N/A

For impact assessment areas
FL = delta x acres = -0.40 x 0.10 = -0.04

Delta = (with-current)
-0.4

If mitigation
Time lag (t-factor) = N/A
Risk factor = N/A

For mitigation assessment areas
RFG = delta/(t-factor x risk) = N/A

Form 62-345.900(2), F.A.C. [effective date 02-04-2004]

Wetland Rapid Assessment Procedure

☑ Check One

☑ Existing Conditi ☐ Proposed Conditions

(WRAP)

Application Number	Project Name	Date	Evaluator	Wetland Type
	TEC Gypsum Stack Area/Cooling Improvements	2/13/2012	T. Arcuri	V2

Land Use	FLUCCS Code	Description:	Wetland Acreage
Industrial	511	Channelized Natural Stream	0.04

Wildlife Utilization (WU)	Wetland Canopy (O/S)	Wetland Ground Cover (GC)	Field Hydrology (HYD)	WQ Input & Treatment (WQ)*
0.5	0.5	0.5	2.0	2.0

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2

Habitat Support/Buffer

Buffer Type	(Score) x	(% of area) =	Sub Totals
422/740	0.5	75	0.375
511	1.0	25	0.25
			0.625

TOTAL 0.50

Land Use Category (LU)

Land Use Category	(Score) x	(% of area) =	Sub Totals
Undeveloped	3.0	50	1.5
Agriculture	1.0	50	0.5

WRAP SCORE 0.33 (LU) Total 2.0

Pretreatment Category (PT)

Pretreatment	(Score) x	(% of area)	= Sub Totals
Undeveloped	3.0	50	1.5
Dry Retent.	1.0	50	0.5

(PT) Total 2.0

Wildlife Utilization (WU)

Almost completely covered by Brazilian peppers. Wildlife use is limited, although water source available and travel through channel provides a covered corridor.

Wetland Canopy (O/S)

Dominated by Brazilian peppers.

Wetland Ground Cover (GC)

Very little herbaceous ground cover present under Brazilian peppers.

Habitat Support/Buffer

Adjacent habitat includes the adjacent channel, Brazilian pepper, and open disturbed lands.

Field Hydrology (HYD)

Carries runoff to Tampa Bay; flashing during storm events.

WQ Input & Treatment (WQ)

Pretreatment and input from surrounding disturbed uplands (i.e., agricultural fields and overgrown areas).

Wetland Rapid Assessment Procedure

☑ Check One

☑ Existing Conditi ☐ Proposed Conditions **(WRAP)**

Application Number	Project Name	Date	Evaluator	Wetland Type
	TEC Gypsum Storage Area/Conveyor Improvements	9/24/2012	T. Arcuri	W1

Land Use	FLUCCS Code	Description:	Wetland Acreage
Industrial	641/619	Freshwater Marsh/Exotic Wetland	0.16

Wildlife Utilization (WU)	Wetland Canopy (O/S)	Wetland Ground Cover (GC)
0.5	0.5	1

Field Hydrology (HYD)	WQ Input & Treatment (WQ)*
2.0	2.0

*The value of WQ is obtained by adding the TOTAL scores of Land Use Category and Pretreatment Category then dividing by 2

Habitat Support/Buffer

Buffer Type	(Score) x	(% of area) =	Sub Totals
422/740	0.5	75	0.375
831	0	25	0
			0.375

TOTAL: 0.50

Land Use Category (LU)

Land Use Category	(Score) x	(% of area) =	Sub Totals
Undeveloped	3.0	75	2.25
Industrial	1.0	25	0.25

(LU) Total: 2.5

Pretreatment Category (PT)

Pretreatment	(Score) x	(% of area)	= Sub Totals
Undeveloped	3.0	75	1.5
No Treat	0	50	0

(PT) Total: 1.5

WRAP SCORE: 0.38

Wildlife Utilization (WU)

Surrounding area mostly consists of Brazilian peppers and some industrial land uses. Wildlife use is limited, although water source available.

Wetland Canopy (O/S)

Dominated by Brazilian peppers along the fringes of marsh.

Wetland Ground Cover (GC)

Very little species diversity; mostly Paspalum distichum with a few other herbaceous wetland species.

Habitat Support/Buffer

Adjacent habitat includes Brazilian pepper, open disturbed lands, and industrial land uses.

Field Hydrology (HYD)

Retains runoff that ultimately discharges to Tampa Bay.

WQ Input & Treatment (WQ)

Pretreatment and input from surrounding disturbed uplands (i.e., overgrown areas and industrial development).