November 12, 2025

Mr. Nate Senn
Siting Coordination Office
Division of Water Resource Management
Florida Department of Environmental Protection
2600 Blair Stone Road, MS 3500
Tallahassee, FL 32399-2400

Subject: Orlando Utilities Commission - Curtis H. Stanton Energy Center Access Ramp Paving Project at the Combustion Waste Storage Area, Conditions of Certification PA 81-14M

Dear Mr. Senn:

Orlando Utilities Commission (OUC) respectfully submits this notification of a proposed improvement at the Stanton Energy Center (SEC) Combustion Waste Storage Area, which operates under Conditions of Certification PA 81-14M, dated August 30, 2017.

As OUC's Mr. David Baez discussed with you on August 27th, 2025, OUC proposes to pave an existing access ramp extending from the northeast toe to the top of the combustion waste storage area. The ramp covers approximately 42,000 square feet, and the asphalt-paved surface is intended to improve trafficability and operational safety.

After paving, stormwater runoff from the access ramp will continue to drain to the existing wet detention pond located south of the combustion waste storage area. This pond is designed to manage stormwater runoff from the full 250-acre watershed, which includes the entire 180-acre combustion waste storage area at buildout, comprising the approximately 90-acre original landfill and its 90-acre horizontal expansion to the west. At this time, Cells 1 and 2 of the horizontal expansion have been constructed; however, the necessity of Cell 3 remains uncertain.

Please find enclosed Sections A and E of the ERP application that pertain to the proposed improvement. Design details are also provided under separate cover for your review and records. If you have any questions regarding this submittal, please contact me at (407) 434-3091 or tgaboian@ouc.com.

Sincerely,

Tom Gaboian
Digitally signed by Tom Gaboian
Date: 2025.11.12 07:37:20 -05'00'

Tom Gaboian, P.E.
Senior Environmental Compliance Specialist

Enclosure:

- Application for Individual and Conceptual Approval Environmental Resource Permit - Sections A and E
- Construction Drawings for Access Ramp Paving

Cc: Mike Kyhos, Director of OUC Environmental Compliance – Power Generation
Wade Gillingham, Vice President of OUC Electric & Water Production
David Baez, Senior Environmental Compliance Specialist

Application for
Individual and Conceptual Approval
Environmental Resource Permit,
State 404 Program Permit,
and Authorization to Use State-Owned
Submerged Lands

Florida Department of Environmental Protection/

Water Management Districts

Effective December 22, 2020

Instructions for Use of This Form:

This form is designed to assist you in submitting a complete application. All applications must include Section A-General Information for All Activities. Sections B through H list typical information that is needed based on the proposed activities and are only required as applicable. Part 1-C of Section A will guide you to the correct sections needed based on your proposed activities. Applicants are advised to consult Chapter 62-330, F.A.C., and the Environmental Resource Permit Applicant's Handbook Volumes I and II for information regarding the ERP permitting process and requirements while preparing their application. Internet addresses for Chapter 62-330, F.A.C., and the Applicant's Handbook, Agency contact information, and additional instructions for this form can be found in Attachment 1.

What Sections of the Application Must I Fill Out?

Type of Activity	Section A	Section B	Section C	Section D	Section E	Section F	Section G	Section H	Section I
Fill in wetlands or waters for a single family residence?	Y	Y	N	N	N	N	N	N	Y, if in assumed waters
Docks, shoreline stabilization, seawalls associated with a single family residence?	Y	Y	N	N	N	Y, as needed	N	N	Y, if in assumed waters
Wetland impacts (other than association with an individual residence)?	Y	N	Y	N	N	N	N	N	Y, if in assumed waters
Boating facilities, a marina, jetty, reef, or dredging?	Y	N	Y	Y	N	Y, as needed	N	N	Y, if in assumed waters
Any work on state owned submerged land?	Y	N	Y	N	N	Y	N	N	Y, if in assumed waters
Construction of a stormwater management system?	Y	N	Y, as needed	N	Y	N	N	N	N
Constructing a mitigation bank?	Y	N	Y	N	Y, as needed	N	Y	N	Y, if in assumed waters
Creating a mine?	Y	N	Y, as needed	N	N	N	N	Y	Y, if in assumed waters

If you have any questions, or would like assistance completing this form, please contact the staff of the nearest office of either the Florida Department of Environmental Protection (DEP) or a Water Management District (WMD) (see Attachment 2).

Section A:
General Information for All Activities

Part 1: Name, Application Type, Location, and Description of Activity

A. Name of project, including phase if applicable: **"Asphalt Paving of Landfill Access Ramp at OUC Stanton Energy Center". The project will be completed in one phase.**

B. This is for (check all that apply):

☐ Construction and operation of **new** works, activities, and/ or a stormwater management system

☐ **Conceptual Approval** of proposed works, activities and/ or a stormwater management system

☒ Modification or alteration of **existing** works, activities, and/or a stormwater management system. Provide the existing DEP or WMD permit #, if known: **ERP Tracking Number 48-0308758 for Power Plant Conditions of Certification PA 81-14M dated 08/30/17.**

Note: Minor modifications do not require completion of this form, and may instead be requested by letter in accordance with section 6.2 of Applicant's Handbook Volume I.

☐ **Maintenance or repair** of works, activities, and/ or a stormwater management system previously permitted by the DEP or WMD. Provide existing permit #, if known:

☐ Abandonment or removal of works, activities, and/ or a stormwater management system.

Provide existing DEP or WMD permit #, if known:

☐ Operation of an **existing unpermitted** work, activity, and/or stormwater management system.

☐ Construction of additional phases of a permitted work, activity, or system.

Provide the existing DEP or WMD permit #, if known:

☐ A State 404 Program authorization:

☐ Exemption ☐ General Permit ☐ Individual Permit

If requesting an Exemption or General Permit provide Rule #, if known:

☐ **By checking this box**, I hereby voluntarily waive, in accordance with Rule 62-330.090(8), F.A.C., the agency action deadlines in section 5.5.4 of Volume I in the event my project also requires a State 404 Program authorization (other than an exemption) under Chapter 62-331, F.A.C., and request that the agency actions for the ERP and State 404 Program authorizations be issued at the same time. (This is strongly recommended to ensure consistency, and to reduce the potential need for project modifications to resolve inconsistencies that may occur when the agency actions are issued at different times.) If this box is checked and the Agency(ies) determines that no State 404 Program authorization is required, the Agency will continue to abide by section 5.5.4 of Volume I.

C. **List the type of activities proposed. Check all that apply**, **and provide the supplemental information requested in each of the referenced application sections.** Please also reference Applicant's Handbook Volumes I and II for the type of information that may be needed.

☐ Activities associated with one single-family residence, duplex, triplex, or quadruplex that do not qualify for an exemption or a General Permit: **Provide the information requested in Section B. Do not complete Section C.**

☐ Activities within wetlands or surface waters, or within 25 feet of a wetland or surface water, (not including the activities associated with an individual single-family residence). Examples include dredging, filling, outfall structures, docks, piers, over-water structures, shoreline stabilization, mitigation, reclamation, and restoration/enhancement. **Provide the information requested in Section C.**

☐ Activities within navigable or flowing surface waters such as a multi-slip dock or marina, dry storage facility, dredging, bridge, breakwaters, reefs, or other offshore structures: **In addition to Section C, also provide the information requested in Section D.**

☐ Activities that are (or may be) located within, on, or over state-owned submerged lands (See Chapter 18-21, F.A.C. https://www.flrules.org/gateway/ChapterHome.asp?Chapter=18-21): **In addition to Section B or C, also provide the information requested in Section F.**

☐ Construction or alteration of a stormwater management system serving residential, commercial, transportation, industrial, agricultural, or other land uses, or a solid waste facility (excluding mines that are regulated by DEP). **Provide the information requested in Section E.**

☐ Creation or modification of a Mitigation Bank (refer to Chapter 62-342, F.A.C. https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-342): **Provide the information requested in Section G.**

☐ Mines (as defined in Section 2.0 of Applicant's Handbook Volume I) that are regulated by the DEP: **Provide the information requested in Section H.**

☒ Other, describe: **Asphalt paving of access ramp to the top of the closed 90-acre original landfill. The access ramp currently has a limerock road base.**
Please contact the Agency to determine which additional sections of the application are needed. See Attachment 2 for Agency contacts.

D. Describe in general terms the proposed project, system, works, or other activities. For permit modifications, please briefly describe the changes requested to the permit: **Asphalt paving of approximately 42,000 square feet of an existing landfill access ramp within the approximately 250-acre watershed of an existing wet detention pond.**

E. Project/Activity Street/Road Address or other location (if applicable): **5100 South Alafaya Trail**
City: **Orlando** County: **Orange** Zip: **32831**

Note: For utility, road, or ditch/canal activities, provide a starting and ending point using street names and nearest house numbers or provide length of project in miles along named streets or highways.

F. Project location map and Section, Township, and Range information (use additional sheets if needed):

Please attach a location map showing the location and boundaries of the proposed activity in relation to major intersections or other landmarks. **See Figure 1.** 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.
Sections: **14 and 23** Township: **23 South** Range: **31 East**
Land Grant name, if applicable:

G. Latitude (DMS) **28° 28' 52.15"** Longitude (DMS) **81° 10' 49.88"** (Taken from central location of the activity). Explain source for obtaining latitude and longitude (i.e. U.S.G.S. Quadrangle Map, GPS, online resource): **AutoCAD drawing coordinates converted to latitude and longitude and verified with Google Earth.**

H. Tax Parcel Identification Number(s): **13-23-31-0000-00-001**, **23-23-31-0000-00-008**, and **14-23-31-0000-00-026**

[Number may be obtained from property tax bill or from the county property appraiser's office; if on multiple parcels, provide multiple Tax Parcel Identification Numbers]

I. Directions to Site (from major roads; include distances and landmarks as applicable): **State Road 528 (Beachline Expressway) to Innovation Way to Alafaya Trail. Turn right on Alafaya Trail to guardhouse at facility entrance.**

J. Project area or phase area: **Approximately 1 acre**

K. Name of waterbody(ies) (if known) in which activities will occur or into which the system will discharge: **To Green Branch and eventually to the Econlockhatchee River**

The following questions (M-O) are not applicable to activities related to an individual single-family residence, including a dock, pier, and/or seawall associated with that residence.

L. Is it part of a larger plan of development or sale? ☐ yes ☒ no

M. Impervious or semi-impervious area excluding wetlands and other surface waters (if applicable):

0.96 acres or 42,000 square feet

N. Volume of water the system is capable of impounding (if applicable):

Normal Pool: **200 acre-feet** Mean Depth: **10.2 feet**
Maximum Pool: **336 acre-feet** Mean Depth: **14.6 feet**

Part 2: Supplemental Information, and Permit History

A. Is this an application to modify an existing Environmental Resource Permit or to construct or implement part of a multi-phase project, such as a project with a Conceptual Approval permit? ☒ Yes ☐ No (If you answered "yes", please provide permit numbers below*):*

Agency	Date	Permit/Application No.	Project Name
FDEP Siting Coordination Office (SCO)	03/16/2012*	ERP Tracking Number 48-0308758 for Conditions of Certification PA81-14	Horizontal Expansion of Combustion Waste Storage Area at OUC Stanton Energy Center

*SCO approval for design of horizontal expansion of CWSA and construction of Cell 1

B. Indicate if there have been any **pre-application meeting(s)** with the DEP, WMD, or delegated local government, or other discussions, meetings, or coordination with other stakeholders or agencies about the proposed project, system or activity. If so, please provide the date(s), location(s) of the meeting, and the name(s) of Agency staff that attended the meeting(s):

Agency	Date	Location	Meeting Attendees

C. **Attach a depiction (plan and section views), which clearly shows the works or other activities proposed to be constructed.** Use multiple sheets, if necessary, a scale sufficient to show the location and type of works, and include a north arrow and a key to any symbols used. **Specific information to be included in the plans is based on the activities proposed and is further described in Sections B-H**. However, supplemental information may be required based on the specific circumstances or location of the proposed works or other activies. **See Attachment A1.**

D. Processing Fee: **Please submit the application processing fee along with this application form and supplemental information.** Processing fees vary based on the size of the activity, the type of permit applied for, and the reviewing Agency. Please reference Appendix D of Applicant's Handbook Volume I to determine the appropriate fee.

Part 3: Applicant and Associated Parties Information

Instructions: Please complete the following sections. For corporations, list a person who is a registered agent or officer of the corporation who has the legal authority to bind the corporation.

A. Applicant (Entity Must Have Sufficient Real Property Interest)
☒ **This is a Contact Person for Additional Information**
Last Name: **Gaboian** First Name: **Tom** Middle Initial:
Title: **Sr Environmental Compliance Specialist** Company: **Orlando Utilities Commission**

Address: **P.O. Box 3193**
City: **Orlando** State: **Florida** Zip: **32802**
Home Telephone: Work Telephone: **(407) 434–3091**
Cell Phone: E-mail Address: tgaboian@ouc.com

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

B. Land Owner(s) (If Different or in Addition to Applicant)
☐ **Check here if land owner is also a co-applicant**

Last Name: First Name: Middle Initial:
Title: Company:
Address:
City: State: Zip:
Home Telephone: Work Telephone:
Cell Phone: E-mail Address:

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

C. Operation and Maintenance Entity(see Applicant's Handbook I, Section 12.3)

Last Name: First Name: Middle Initial:
Title: Company:
Address:
City: State: Zip:
Home Telephone: Work Telephone:
Cell Phone: E-mail Address:

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

D. Co-Applicant (If Different or In Addition to Applicant and Owner)

Last Name: First Name: Middle Initial:
Title: Company:
Address:
City: State: Zip:
Home Telephone: Work Telephone:
Cell Phone: E-mail Address:

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

E. Registered Professional Consultant
☒**This is a contact person for additional information**

Last Name: **Cheung** First Name: **Francis** Middle Initial: **K**
Title: **Senior Consultant** Company: **Ardaman & Associates, Inc.**
Address: **8008 South Orange Avenue**
City: **Orlando** State: **Florida** Zip: **32809**
Home Telephone: Work Telephone: **(407) 855-3860**
Cell Phone: **(407) 468-1492** E-mail Address: fcheung@ardaman.com

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

Environmental Consultant
☐**This is a contact person for additional information**

Last Name: First Name: Middle Initial:
Title: Company:

Address:
City: State: Zip:
Home Telephone: Work Telephone:
Cell Phone:
E-mail Address:

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

F. Agent Authorized to Secure Permit (If Different from Consultant)

Last Name: First Name: Middle Initial:
Title: Company:
Address:
City: State: Zip:
Home Telephone: Work Telephone:
Cell Phone:
E-mail Address:

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

If necessary, please add additional pages for other contacts and property owners related to this project.

G. Real Property Interest

a. Permits are only issued to entities having sufficient real property interest as described in Section 4.2.3(d) of Applicant's Handbook Volume I**. Please attach evidence of the applicant's real property interest over the land upon which the activities subject to the application will be conducted, including mitigation areas (if applicable).** Refer to Sections 4.2.3(d)-(e) for sufficient real property interest documentation. **Attachment A2 includes Orange County Property Appraiser information showing ownership by the Orlando Utilities Commission and/or the City of Orlando.**

b. For activities that require a recorded notice in accordance with rule 62-330.090(7), F.A.C., please provide either the complete legal description of the property or a copy of the pages of the document recorded in the public records that contains the complete legal description. If the land upon which the proposed activities are to occur is not owned by the applicant, the applicant must also provide copies of any right-of-way, leases, easements, or other legal agreement which authorizes the applicant to perform the activities on those lands.

Part 4: Signatures and Authorization to Access Property

Instructions: For multiple applicants please provide a separate Part 4 for each applicant. For corporations, the application must be signed by a person authorized to bind the corporation. A person who has sufficient real property interest (see Section 4.2.3(d) of Applicant's Handbook Volume I) is required in (B) to authorize access to the property, except when the applicant has the power of eminent domain.

A. By signing this application form, I am applying 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 relieve me of any obligation for obtaining any other required federal, state, water management district, or local permit prior to commencement of construction. I agree to operate and maintain the permitted system unless the permitting agency authorizes transfer of the permit to a different responsible operation and maintenance 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.

Typed/Printed Name of Applicant or Applicant's Authorized Agent

Signature of Applicant or Applicant's Authorized Agent

Date

(Corporate Title if applicable)

B. Certification of Sufficient Real Property Interest and Authorization for Staff To Access the Property:

I certify that:

☐ **I possess sufficient real property interest in or control, as defined in Section 4.2.3 (d) of Applicant's Handbook Volume I,** over the land upon which the activities described in this application are proposed and I have legal authority to grant permission to access those lands. I hereby grant permission, evidenced by my signature below, for staff of the Agency to access, inspect, and sample the lands and waters of the property as necessary for the review of the proposed works and other activities specified in this application, upon advance notice. I authorize these agents or personnel to enter the property as many times as may be necessary to make such review, inspection, and/ or sampling. Further, if a permit is granted, upon advance notice, I agree to provide entry to the project site for such agents or personnel with proper identification to determine compliance with permit conditions and permitted plans and specifications.

OR

☐ I represent an entity having **the power of eminent domain and condemnation authority**, and I/we shall make appropriate arrangements to enable staff of the Agency to legally access, inspect, and sample the property as described above.

Typed/Printed Name

Signature

Date

(Corporate Title if applicable)

C. Designation of Authorized Agent (If Applicable):

I hereby designate and authorize 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

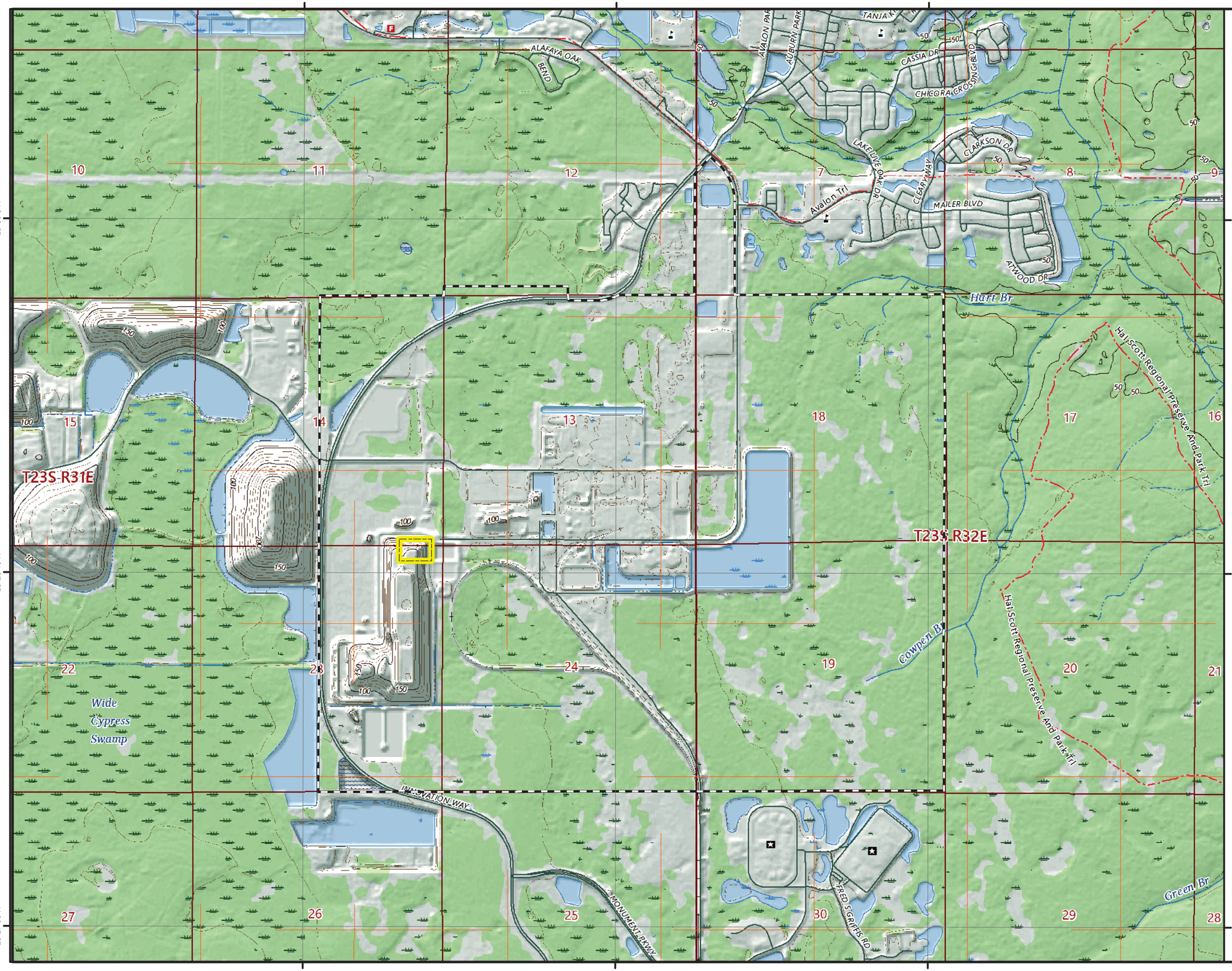
Signature of Applicant

Date

(Corporate Title if applicable)

81°11'15"W 81°10'0"W 81°8'45"W

28°30'0"N 28°28'45"N 28°27'30"N



N
W E
S

Feet
0 2,000 4,000

Scale: 1" = 2,000'

SOURCE: TOPOGRAPHIC DATA FROM UNITED STATES GEOLOGICAL SURVEY 2022

Legend

- Property Boundary
- Project Location

OUC The Reliable One®

PROJECT LOCATION

Ardaman & Associates, Inc.
Geotechnical, Environmental, and Materials Consultants
A Tetra Tech Company

PAVING ACCESS RAMP TO TOP OF CLOSED ORIGINAL CWSA
OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

DRAWN BY: ACV	CHECKED BY: PAK	DATE: 10/08/25
FILE NO. 25-13-0166C	APPROVED BY: FKC	FIGURE: 1

W:\Projects\2022\22-13-0033_Seminole_Electric\ArcGIS\ArcLayouts\20221010\Site Plan 11x17.mxd

Attachment A1

Description of the Project

Scope of Work and Specification for Asphalt Paving of Stanton Energy Center Landfill Ramp

1. Project Overview: The purpose of this project is to asphalt an existing road currently constructed with roadbase limestone. The work shall include site preparation, grading, application of asphalt, and necessary finishing to ensure a durable and high-quality paved surface suitable for vehicular traffic. Approximately **42,000** square feet will be covered with asphalt.

2. Scope of Work: The contractor shall provide all labor, materials, tools, equipment, and supervision necessary to complete the following tasks:

2.1 Site Preparation:

- Assess the condition of the existing limestone roadbase. Fill or cut as needed to ensure a minimum cross slope of 2% for tangent sections to ensure water flows off the pavement surface into drainage systems (fabriform/rip-rap swale).
- Remove any debris, loose material, or vegetation from the road surface.
- Compact the existing roadbase to 95% density to ensure a stable foundation for the asphalt layer, following FDOT Section 160 and 200 requirements.
- Identify and repair any unstable or soft spots by removing and replacing them with suitable fill material, per FDOT specifications.

2.2 Asphalt Paving:

- Supply and install a hot mix asphalt (HMA) layer with a total thickness of 4 inches, using SP 12.5 TLE PG 82-22 with 20% RAP, placed in two lifts.
- The asphalt mix shall comply with FDOT Superpave mix design criteria.
- Spread and compact the asphalt using proper paving equipment to achieve uniform thickness and smoothness, per FDOT Section 330.
- Ensure proper drainage by maintaining a slight camber or slope as required by FDOT guidelines. Maintain positive flow to drain/ditch. (No ponding)

2.3 Finishing and Quality Control:

- Ensure proper compaction with a steel wheel roller and pneumatic roller to achieve the required density, per FDOT Section 330 requirements.
- Check for any defects, such as segregation, rutting, or insufficient compaction, and make necessary corrections in accordance with FDOT QC/QA standards.
- No traffic markings are required.
- Clean the site upon project completion and dispose of waste material.

3. Materials and Specifications:

- Asphalt Mix: SP 12.5 TLE PG 82-22 with 20% RAP, complying with FDOT Section 334.

- Compaction Equipment: Vibratory rollers with adequate weight for proper compaction, in accordance with FDOT Section 330.
- Weather Conditions: Paving shall not be conducted during heavy rainfall or extreme cold temperatures to prevent asphalt defects, per FDOT specifications.

4. Work Schedule:

- The contractor shall submit a detailed work schedule before commencement.

5. Safety and Environmental Considerations:

- Traffic will be limited, however the contractor must implement proper safety measures for workers and traffic management, in compliance with FDOT Maintenance of Traffic (MOT) requirements.
- Environmental protection measures, including dust control and waste management, must be adhered to OUC requirements.
- OUC Safety Orientation is required (1 hour session for all employees)



Optional Scope: Repair of damaged asphalt near the Brine Plant. The work will begin by identifying and marking the repair area, followed by setting up appropriate safety measures and traffic control if necessary. The damaged asphalt will be sawcut around the perimeter to create clean, vertical edges, then removed and properly disposed of down to the existing base layer. The base will be inspected for stability; if found unstable, it will be replaced with limerock aggregate base to ensure a solid foundation.

Once the base is confirmed or repaired, a tack coat will be applied to the vertical edges to ensure proper bonding between the old and new materials. An approximately 2-inch lift of HMA (previously specified) will then be placed and compacted to match the surrounding pavement. Compaction will be performed using appropriate equipment such as a vibratory plate or roller to achieve a smooth, uniform finish. Upon completion of paving, the work area will be cleaned of all debris and equipment, and any adjacent surfaces disturbed during construction will be restored.

The area is approximately **1,415 square feet**.



Attachment A2

Orange County Property Appraiser Parcel Information

Parcel 13-23-31-0000-00-001

5100 S Alafaya Trl 13-23-31-0000-00-001

Name(s):
CITY OF ORLANDO
ORLANDO UTILITIES COMMISSION
Physical Street Address:
5100 S Alafaya Trl
Property Use:
8900 - Municipal (Other)
Mailing Address On File:
Po Box 3193
Orlando, FL 32802-3193
Postal City and Zip:
Orlando, FL 32831
Municipality:
Orlando
Total Land Area:
69,160,754 sq ft ± | 1,587.71 acres ±



5100 S ALAFAYA TRL, ORLANDO, FL 32831 5/15/2024 1:10 PM

Parcel 23-23-31-0000-00-008

S Alafaya Trl

Name(s):
CITY OF ORLANDO
Physical Street Address:
S Alafaya Trl
Property Use:
8900 - Municipal (Other)
Mailing Address On File:
Po Box 3193
Orlando, FL 32802-3193
Postal City and Zip:
Orlando, FL 32831
Municipality:
Orlando
Total Land Area:
165,125 sq ft ± | 3.79 acres ±


S ALAFAYA TRL, ORLANDO, FL 32831 02/12/2022

Parcel 14-23-31-0000-00-026

S Alafaya Trl
Name(s):
CITY OF ORLANDO
Physical Street Address:
S Alafaya Trl
Property Use:
8900 - Municipal (Other)
Mailing Address On File:
Po Box 3193
Orlando, FL 32802-3193
Postal City and Zip:
Orlando, FL 32831
Municipality:
Orlando
Total Land Area:
49,817 sq ft ± | 1.14 acres ±

Section E: Supplemental Information Required for Works or Other Activities Involving a Stormwater Management System
(Other Than a Single-Family Project)

Instructions: The information listed in the checklists below represents the level of information that is usually required to evaluate an application. Information can be provided within reports, plans, and documents. 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. The supplemental information required by this section is in addition to the information required by Section A of the application.

Part 1: Stormwater Management System Summary

Provide drainage calculations, signed and sealed by an appropriate registered professional, and supporting documentation demonstrating that the proposed project meets the conditions for issuance under 62-330.301(1)(a),(b),(c),(e), F.A.C. The drainage calculations should include, but not necessarily be limited to, the following:

1. General Site Information:

a. ☒ Provide pre-development and post-development drainage map(s), as appropriate, that include drainage patterns and basin boundaries with acreage served by each hydraulically separate system, showing the direction of flows, including any off-site runoff being routed through or around the system; topographic information; and connections between wetlands and other surface waters. **The pre-development and post-development drainage maps for the existing wet detention pond that manages stormwater runoff from the landfill access ramp were provided in an Ardaman report titled "Hydrologic and Hydraulic Modeling and Stormwater Management Design Report for the Proposed Horizontal Expansion of Coal Combustion Waste Landfill", dated November 3, 2011. A copy of this report is included in Attachment E1.**

b. ☐ Provide the results of any percolation tests, where appropriate, and soil borings that are representative of the actual site conditions. Identify the wet season high water table elevations, soil profiles, and hydraulic conductivity. Include dates, datum, and methods used to determine these soil parameters.

c. ☒ Identify the onsite hydrologic soil classification (e.g. Type A, B/D, D). Reference the source, such as the USDA/NRCS Soil Survey, used in estimating the onsite hydrologic soil classification. Provide maps, as appropriate, with the project limits delineated. **The hydrologic soil classifications are described in the report in Attachment E1. The project area covers only a small (less than one acre) portion of the total 250-acre watershed of the wet detention pond.**

d. ☒ Identify the seasonal high water or mean high tide elevation for receiving waters/wetlands into which runoff will be discharged. Include dates, datum, and methods used to determine these elevations. **According to the Ardaman report titled "Hydrogeological Report for Proposed Horizontal Expansion of Combustion Waste Storage Area, Orlando Utilities Commission, Stanton Energy Center, Orange County, Florida", dated December 2, 2011, the normal water table elevation at the wet detention pond location is +81.5 feet (NAVD88), and the seasonal high water table adjacent to the man-made ditch into which the wet detention pond discharges is +81 to +82 feet (NAVD88).**

e. ☒ Identify the name of each receiving waterbody to which the proposed stormwater management system will discharge: **The discharge will enter Green Branch of the Econlockhatchee River.**

f. ☒ Indicate the existing land use and land cover. **The existing land use within the project area is an unpaved landfill access ramp constructed with limestone road base material.**

g. ☒ Provide the acreage and percentages of the total project, of the following:
   1. Impervious surfaces (excluding buildings, wetlands, and other surface waters) **0.96 acres (100%)**
   2. Buildings;
   3. Pervious surfaces (green areas not including wetlands);

4. Lakes, canals, retention areas, other open water areas; and
5. Wetlands (Please compare to Section C to ensure consistency in wetland acreages).

h. ☐ Provide the location and description of any nearby existing offsite features (such as wetlands and other surface waters, stormwater management ponds, and buildings or other structures) which might be affected by or affect the proposed construction or development.

2. Water Quality Analysis:

a. ☒ Provide a description of the proposed stormwater treatment methodology that addresses the type of treatment, pollution abatement volumes, and recovery analysis. **The stormwater runoff will be treated in the existing wet detention pond, which was designed in accordance with St. Johns River Water Management District (SJRWMD) requirements.**

b. ☒ Is the receiving waterbody known to be impaired and/or have an established Total Maximum Daily Load (TMDL) or Basin Management Action Plan (BMAP)? If so, please provide specific descriptions of all water quality parameters for which the waterbody is known to be impaired. For more information about water quality, impaired waters, and to determine whether a TMDL has been adopted in your project area, refer to: https://floridadep.gov/dear/water-quality-evaluation-tmdl/content/final-tmdl-reports. To determine whether a BMAP exists, or is being developed in your project area, refer to: https://floridadep.gov/dear/water-quality-restoration/content/basin-management-action-plans-bmaps.

☒ yes ☐ no ☐ don't know **The Econlockhatchee River is listed as impaired for fecal coliform bacteria, including E. coli.**

If yes, provide calculations demonstrating that the proposed project will not contribute to violations of state water quality standards in accordance with the applicable Applicant's Handbook, Vol. II. **Fecal coliform bacteria do not exist in coal combustion wastes.**

c. ☒ Does the project have a direct discharge to Class I or II waters; Outstanding Florida Waters (OFW); or Class III waters, which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting? *To determine whether your project is within or will discharge to an OFW, or for more information about OFWs in general, refer to: https://floridadep.gov/dear/water-quality-standards/content/outstanding-florida-waters.*

☒ yes ☐ no ☐ don't know **Stormwater runoff from the project area will continue to flow to a wet detention pond that discharges to Green Branch--a tributary of the Econlockhatchee River. Green Branch is classified as Outstanding Florida Waters up to approximately 10,000 feet downstream of the discharge point from the wet detention pond.**

If yes, additional treatment in accordance with the applicable Applicant's Handbook, Vol. II, may be required. **The wet detention pond was provided with the additional treatment volume and permanent pool volume required for ponds discharging directly to Outstanding Florida Waters.**

d. ☒ Provide construction plans and calculations that address the required treatment volume and recovery, as well as stage-storage and design elevations, which demonstrate compliance with the appropriate water quality treatment criteria in the applicable Applicant's Handbook, Vol. II. **The construction plans for paving the landfill access ramp are included in Attachment E2. The stormwater management calculations can be found in Attachment E1. The as-built stage-storage relationship for the wet detention pond is presented in Attachment E3.**

e. ☒ Provide a description of the engineering methodology, assumptions, and references for the parameters listed above and a copy of all 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, and justification for model selection. **See Attachment E1.**

3. Water Quantity Analysis:

Provide calculations and documentations demonstrating that the project, as proposed, meets the applicable design criteria as indicated in the applicable Applicant's Handbook, Vol. II. Typically, the information would include, at a minimum, but not necessarily limited to, the following:

a. ☒ For projects requiring pre-development analysis, provide an analysis of the pre-development peak rate of discharge and/or volume of runoff for all design storm events. Account for all onsite depressional storage and offsite contributing area. Please refer to the applicable Applicant's Handbook, Vol. II for the design storm event(s) that apply to your project. **The pre-development drainage analysis is provided in the report in Attachment E1.**

b. ☒ Provide an analysis of the post-development peak rate of discharge and/or volume of runoff for all applicable design storm events. Account for all onsite storage and offsite contributing area. Please refer to the applicable Applicant's Handbook, Vol. II for the design storm event(s) and criteria that apply to your project. **The post-development drainage analysis is provided in the report in Attachment E1.**

These analyses should include:

1. ☒ Runoff characteristics, including area, runoff curve number or runoff coefficient, and time of concentration for each drainage basin in the pre-development and post-development condition; **See Attachment E1.**
2. ☒ Design storms used including rainfall depth, duration, frequency, and distribution; **See Attachment E1.**
3. ☒ Runoff hydrograph(s) for each drainage basin for all required design storm event(s); **See Attachment E1.**
4. ☒ Stage-storage computations for any area, such as a reservoir, closed basin, detention area, or channel, used in storage routing; **See Attachments E1 and E3.**
5. ☐ Stage-discharge computations for any storage areas at a selected control point, such as control structure or natural restriction;
6. ☐ Flood routings through on-site conveyance and storage areas;
7. ☐ Water surface profiles in the primary drainage system for each required design storm event(s);
8. ☒ Runoff peak rates and volumes discharged from the site for each required design storm event(s); **See Attachment E1.**
9. ☐ Design tailwater elevation(s) for each storm event at all points of discharge (include source or method of estimate); and
10. ☐ Pump specifications and operating curves for range of possible operating conditions (if used in system).

c. ☒ 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, input and output data, justification for model selection, and, if necessary, a description of the program. **The requested information is provided in the report in Attachment E1.**

4. Floodplain Analysis (where applicable).

a. ☐ If the project is in a known floodplain of a stream or other water course, identify the appropriate floodplain boundary and approximate flooding elevations of any lake, stream, or other watercourse located on or adjacent to the site.

b. ☐ For traversing works, in accordance with the applicable Applicant's Handbook, Vol. II, provide:
   1. ☐ Hydraulic calculations for all proposed traversing works; and
   2. ☐ Water surface profiles showing upstream impact of traversing works.

c. ☐ For impacts to regulated floodplains, in accordance with the applicable Applicant's Handbook, Vol. II, provide:
   1. ☐ Location and volume of encroachment within regulated floodplain(s); and
   2. ☐ Plans and calculations for compensating floodplain storage, if necessary, and calculations required for determining minimum building and road flood elevations.

Part 2: Construction Plans

1. Provide clear, construction level detailed plans for the system. The plans must be signed and sealed by an appropriate registered professional as required by law. **See Attachment E2.** These plans should include cumulative information from all applicable sections, as well as the following:

   a. ☐ Project area boundary and total land area (as defined in A.H. Vol. I, subsection 2.0(a)(107), including distances and orientation from roads or other landmarks.

   b. ☒ Existing topography extending at least 100 feet off the project area. All topography shall include location and description of benchmarks, reference to NGVD 1929 or NAVD 1988 along with the conversion factor. **See Attachment E4. Elevations are referenced to NAVD 1988. At the site, elevations referenced to NGVD 1929 is equal to elevations referenced to NAVD 1988 plus 1.05 feet.**

   c. ☒ Proposed site plan with acreage, including the following:
      1. ☒ plan view of proposed development, including impervious surfaces and water management areas;
      2. ☐ land cover and natural communities*;
      3. ☐ wetlands and other surface waters*;
      4. ☐ undisturbed uplands*;
      5. ☐ aquatic communities*;
      6. ☐ proposed buffers*;
      7. ☐ proposed impacts to wetlands and other surface waters, and any proposed connections/outfalls to other surface waters or wetlands, (if applicable); and
      8. ☐ onsite wetland mitigation areas*.
      9. ☐ For phased projects, provide a master development plan clearly delineating the limits of each phase of construction.

      *Information should reflect that provided in Section C.

   d. ☒ Paving, Grading, and Drainage Information, which includes, but is not necessarily limited to, the following:
      1. ☒ Existing topography; **See Attachment E4**.
      2. ☐ Boundaries of wetlands and other surface waters and upland buffers (see Section C);
      3. ☐ Plan view of proposed development;
      4. ☒ Proposed elevations and/or profiles, including:
         a) ☒ roadway, parking, and pavement grades;
         b) ☐ floor slabs, walkways, and other paved surfaces;
         c) ☐ earthwork grades for pervious landscaped areas; and
         d) ☐ perimeter site grading, tying back into existing grades.

5. ☐ Location of all water management areas, including elevations, dimensions, side slopes, and design water depths;
6. ☒ Location, size, and invert elevations of existing and proposed stormwater conveyance systems;
7. ☐ Vegetative cover plan for all on-site and off-site earth surfaces disturbed by construction; and
8. ☐ Rights-of-way and easements for the system, including all on-site and off-site areas to be reserved for water management purposes (including access), and rights-of-way and easements for the existing drainage system, if any.

e. ☐ Stormwater detail information, including but not necessarily limited to, the following:
   1. ☐ Cross section of all stormwater management areas, including elevations, dimensions, side slopes, and proposed stabilization measures (with location of the cross section(s) shown on the corresponding plan view);
   2. ☐ Detail of all proposed control structures, including elevations, dimensions, and skimmer, where applicable; and
   3. ☐ Details of proposed stormwater management systems, such as underdrains, exfiltration trenches, vaults, and other proposed Best Management Practices (BMPs).

f. ☐ Location and description of any nearby existing offsite features (such as wetland and other surface waters, stormwater management ponds, and building or other structures) which might be affected by or affect the proposed construction or development.

Part 3: Construction Schedule and Techniques

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

a. ☐ Access and staging of equipment;

b. ☐ 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.

c. ☐ The location of disposal site(s) for any excavated material, including temporary and permanent disposal sites.

d. ☐ A demolition plan for any existing structures to be removed.

e. ☐ Dewatering plan details. 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.

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;

Part 4: Operation and Maintenance and Legal Documentation:

a. ☒ Describe the overall maintenance and operation schedule for the proposed system. **The existing stormwater management system is maintained and operated as part of the routine facility operation.**

b. ☒ Identify the entity (or entities) that will be responsible for operating and maintaining the system (or parts of the system) to demonstrate that the entity (or entities) meet(s) the requirements of section 12.3 of the Applicant's Handbook, Vol. I. **OUC is responsible for operating and maintaining the system.**

1. ☐ If different from the permittee, provide 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.
2. ☐ 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.

c. ☐ Provide drafts of all proposed conservation easements, stormwater management system easements, draft property owner's association documents, and plats for the property containing the proposed system.

d. ☐ Provide legal reservations for access to the treatment system for maintenance and operation by future maintenance entities for subdivided projects.

e. ☐ Provide indication of how water and wastewater service will be supplied.

f. ☒ 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 Attachment E5.**

g. ☐ If any associated land agreements are required to implement the proposed activities, such as flowage easements across lands not owned by the applicant, include such documentation. If negotiations are underway, but not yet concluded, regarding such land use agreements, please indicate that and provide an anticipated date for providing that documentation. A permit cannot be issued for an activity to use lands that are not owned by the applicant or for which the applicant does not hold a sufficient real property interest to use those lands.

Part 5: Water Use

a. ☐ Describe how irrigation will be provided to the project. 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 a Consumptive Use or Water Use permit has not been issued for the project, indicate if such a permit will be required. ☐ yes ☒ no ☐ don't know
If yes, please indicate 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.

Part 6: Special Basin Information

a. Is your project within a special basin as described in the applicable Applicant's Handbook, Vol. II?

☐ yes ☒ no ☐ don't know

b. If yes, please demonstrate that the project will meet the applicable special basin criteria.

Attachment E1

Hydrologic and Hydraulic Report

HYDROLOGIC AND HYDRAULIC REPORT
PROPOSED HORIZONTAL EXPANSION OF
COAL COMBUSTION WASTE LANDFILL

FILE NUMBER: 10-13-0249

Prepared for:

OUC
The *Reliable* One®

ORLANDO UTILITIES COMMISSION
STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

November 03, 2011

Prepared by:

Ardaman & Associates, Inc.
Geotechnical, Environmental, and
Materials Consultants
A Tetra Tech Company
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Hydrologic and Hydraulic Modeling and Stormwater Management Design Report

Proposed Horizontal Expansion of Coal Combustion Waste Landfill

Ardaman & Associates, Inc.
Geotechnical, Environmental, and Materials Consultants
A Tetra Tech Company

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ASFE/The Geoprofessional Business Association

Ardaman & Associates, Inc.
Geotechnical, Environmental, and
Materials Consultants
A Tetra Tech Company

November 03, 2011
File Number 10-13-0249

Florida Department of Environmental Protection
Central District
3319 Maguire Blvd, Suite 232
Orlando, Florida 32803-3767

Attention: Debra Laisure, P.E.
Stormwater Permitting Manager
Submerged Lands and Environmental Resource Permitting

Subject: Hydrologic and Hydraulic Analyses in Support of the Proposed Horizontal Expansion for the Orlando Utilities Commission (OUC) Coal Combustion Waste Landfill Project, Orange County, Florida.

Dear Ms. Laisure:

Enclosed please find the hydrologic and hydraulic modeling and stormwater management design for the proposed horizontal expansion of the coal combustion waste landfill located in southeastern Orange County.

If you have any questions or comments regarding this report, or if we may be of further assistance in expediting your review, please feel free to contact one of the undersigned

Very truly yours,
ARDAMAN & ASSOCIATES, INC. - A Tetra Tech Company
Certificate of Authorization No. 5950

11/3/2011

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Enclosures

cc: Mr. Thomas Lubozynski, P.E. (FDEP)
Mr. Charles W. Doud, P.E. (OUC)
Mr. Garfield Blair (OUC)

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1.0 INTRODUCTION

Orlando Utilities Commission (OUC) plans to expand the Coal Combustion Waste (CCW) landfill at the Stanton Energy Center (SEC), also known as Combustion Waste Storage Area (CWSA), located in southeastern Orange County, Florida. A stormwater management plan is proposed to provide stormwater treatment and attenuation for the interim phases and the final landfill configuration. The final landfill footprint will consist of 250 acres, including the existing 90-acre CCW. This report presents a technical discussion of hydrologic and hydraulic analyses that were undertaken to support management, planning, and design associated with the proposed work.

1.1 Site Location

The Orlando Utilities Commission SEC is located in southeastern Orange County, Florida in the vicinity of the Econlockhatchee River, about 12 miles southeast of downtown Orlando and 6 miles northeast of Orlando International Airport. The location of the SEC site is shown in Figure 1. The site is located within Sections 13, 14, 23, and 24 of Township 23 South, Range 31 East, and Sections 7, 18, and 19 of Township 23 South, Range 32 East. The address of the facility is 5100 South Alafaya Trail, Orlando, Florida. Alafaya Trail ends at the site entrance. The site is north of the Beach Line Expressway (State Road 528) and east of Innovation Way, which provides access from Alafaya Trail to State Road 528.

1.2 Project Description and Background

The existing CCW at the SEC has been in operation since 1987 under Conditions of Certification approved by the Florida Department of Environmental Protection (FDEP) Siting Coordination Office. Fly ash and dewatered flue gas desulfurization (FGD) sludge from the SEC, and high lime-content fly ash from two other Florida power plants, are processed on site to produce a fixated material, which is called ProMat. The ProMat is delivered to the CCW already mixed, properly cured, and ready for placement. In addition to ProMat, unsold bottom ash, brine concentrator/crystallizer solids from the onsite wastewater treatment facility, and approved miscellaneous power plant solid wastes are also placed in the CCW landfill. Approximately 90 acres of the originally proposed CCW have been used to-date and waste is currently being landfilled in an approved vertical expansion.

The existing CCW landfill does not have a bottom liner and leachate collection system or a low permeability cap. The Conditions of Certification allow fixated wastes that achieve a specified maximum permeability to be placed in the unlined facility. Conditions of Certification (COC), which govern construction and operation of the existing SEC facility, require one of the following mitigative measures be adopted by OUC to reduce the potential for groundwater impacts: a) use of an adequate chemical fixation process on the solid wastes to achieve a uniform layer at least 18 inches thick across the cell bottom with a permeability of $1x10^{-7}$ cm/sec or less; b) use of an adequate chemical fixation process on the solid wastes to achieve a permeability of $5x10^{-6}$ cm/sec or less.

The current proposed project consists of an approximately 91.5-acre lined horizontal expansion located west of and contiguous with the existing 90-acre unlined CCW. The horizontal expansion area is divided into three lined cells, which will be constructed sequentially. The ultimate footprint of the CCW is approximately 250 acres, including the existing 90-acre CCW, the proposed lined horizontal expansion, and future areas north of the existing area. The

existing 90-acre CCW, the lined horizontal expansion area and ultimate footprint are shown on Figure 2.

Currently, stormwater runoff that comes into contact with the waste is collected in the existing CCW and ditches lined with at least 3 feet of fixated waste and discharged to the CCW Runoff Pond, which is lined with an HDPE geomembrane. Stormwater runoff from side slope areas that have received soil cover is allowed to be discharged to the natural drainage system without treatment. Current plans are for stormwater runoff from the properly closed portions of the existing CCW, vertical expansion and the horizontal expansion areas to be collected and treated in the proposed stormwater detention pond to be located south of the landfill (Figure 2).

2.0 SCOPE OF HYDROLOGIC AND HYDRAULIC REPORT

The primary objective of the hydrologic study is to develop a stormwater management plan for the future 250-acre CCW landfill. The plan provides for stormwater runoff treatment and attenuation utilizing a wet detention pond as the most suitable method since groundwater levels in the area are close to land surface. The wet detention pond is proposed south of the 250-acre landfill expansion (see Figure 2).

The stormwater management system and its various components were evaluated using Interconnected Channel and Pond Routing (ICPR) model version 3.10 Service Pack 7. The hydrologic and hydraulic analyses, which are described in detail throughout the remainder of this report, generally include the following work elements.

2.1 Data Collection

This task included compilation and review of existing available information ranging from 2006 and 2011 topographic maps and aerial photography, land use, soils information, 2009 revised FEMA flood hazard maps, national wetland inventory (NWI), USGS maps, and 2011 surveys.

2.2 Pre-Development Condition Model

Collected data were compiled and used to develop a model representing the pre-development condition. In previous meetings with FDEP, it was established that the pre-development scenario is the current 2011 condition. The model database was assembled, tested, and refined to provide a reliable tool for prediction of the system's response to a design storm event rainfall.

2.3 Post-Development Condition Model

In support of the final 250-acre landfill expansion, a model was developed and tested to represent the designed post-development conditions. This hydrologic and hydraulic (H&H) model was assembled to demonstrate compliance with regulatory criteria.

2.4 Documentation of Results

This report summarizes data collected and methodologies used to evaluate hydrologic and hydraulic conditions, under both pre-development and post-development conditions. It also describes the performance criteria used in the design of the proposed stormwater management system.

3.0 PROJECTION AND DATUM

The horizontal datum used in this evaluation is the North America Datum 83 (NAD83). The vertical datum is the North American Vertical Datum of 1988 (NAVD88) and the horizontal projection is State Plane Florida East.

4.0 REGULATORY REQUIREMENTS

The site lies within the St. Johns River Water Management District (SJRMWD) within the Econlockhatchee River Basin and, as delegated by the Florida Department of Environmental Protection (FDEP), the Site is subject to the stormwater management rules developed by the SJRMWD.

Per the criteria, the post-development peak rate of discharge must not exceed the pre-development peak rate of discharge. To be consistent with applicable requirements, the following 24-hour duration events were simulated: the mean annual storm (2.33-year return) with a total rainfall depth of 4.4 inches and the 25-year storm with a total rainfall depth of 8.8 inches. Total rainfall depths were derived from the SJRWMD rainfall maps. The Florida Modified Type II distribution was used for these simulations.

Wet detention system design requirements:

(a) For a wet detention system, the design treatment volume is the greater of the following: one inch of runoff over the drainage area or 2.5 inches over the impervious area (excluding water bodies). FDEP believes that the proposed wet detention system directly discharges into Outstanding Florida Waters (OFWs) and, therefore, requested that an additional 50 percent water quality treatment volume be considered. Additionally per FDEP, landfill areas with an impermeable liner and two feet of soil cover are considered impervious; Refer to Appendix A for calculations.

(b) The outfall structure should be designed to drawdown one-half the required treatment volume within 24 and 30 hours following a storm event; refer to Appendix A for calculations.

(c) The permanent pool should be sized to provide at least a 14-day residence time for stormwater runoff during the wet season, which occurs from June to October. Because FDEP considers the wet detention pond system discharges to Outstanding Florida Waters, an additional 50 percent permanent pool volume is required; refer to Appendix A for calculations.

(d) At least 30 percent of the wet detention pond surface area shall consist of a littoral zone. As an alternative to a littoral zone, either an additional 50 percent of the appropriate permanent pool volume or pre-treatment of the stormwater prior to entering the wet detention pond may be used. An additional 50 percent of permanent pool was used in this evaluation (i.e., a 21-day residence time was used); refer to Appendix A for calculations.

(e) A maximum pond depth of 12 feet and a mean depth between 2 and 8 feet. An estimated pond depth of 12 feet will be used in this design and the mean depth was calculated to be 3.09 feet; refer to Appendix A and B for calculations and design elevations.

(f) The average pond ratio must be at least 2:1; under these design conditions, short circuiting is minimized and pollutant removal efficiency and mixing is maximized. A square shape with a

partition dike was used in this design to maximize mixing; refer to Drawings 16, 17, and 18 in Appendix M.

(g) To minimize groundwater contributions which may lower treatment efficiencies, the control elevation should be set at or above the normal on-site ground water table elevation. The normal water level (NWL) was estimated to be +81.5 feet (NAVD88) based on groundwater elevation in a nearby monitor well with 22 years of groundwater elevation records, and a battery of 5 piezometers installed in August 2011 within the proposed pond location; refer to Appendix L.

(h) Pond side slopes must be no steeper than 3:1 (horizontal: vertical) between the control elevation and two feet below. A constant slope of 3:1 was used from the top of dike to pond bottom. Note that the pond is located in an industrial site, thus no public access is expected; refer to Drawings 16, 17, and 18 in Appendix M.

5.0 **PRE-DEVELOPMENT CONDITIONS**

As previously described, the pre-development scenario represents the current 2011 conditions. The pre-development model was assembled, tested and refined to provide a reliable tool for prediction of the system response to a storm event rainfall.

Under existing conditions, runoff from the existing 90-acre CCW flows into the CCW runoff pond as well as two man-made ditches located east, and west at the toe of the landfill; refer to Figure 3 for basin delineation and flow direction. Currently, 49 acres flows into the CCW runoff pond, 22 acres flows into the east ditch, and 19 acres into the west ditch. Discharges from the CCW runoff pond are routed via pipe into the Recycle Pond. Discharges from the east ditch continue eastward into a man-made ditch that connects to a wetland system, which ultimately discharges into the Econlockhatchee River. Runoff in the western ditch remains in a low-laying area with a potential discharge into the area north of the existing CCW. For the area between Innovation Way and west of the existing CCW, runoff is routed into the western ditch. For areas north of the existing CCW, surface water runoff flows toward the northeast into a wetland area across Innovation Way. For the remaining areas east and south of the existing CCW, flow is generally east through a man-made ditch and into a series of wetlands flowing towards the Green Branch tributary of the Econlockhatchee River.

6.0 **POST-DEVELOPMENT CONDITIONS**

A wet detention system was selected to treat runoff from the 250-acre proposed landfill expansion area. As previously mentioned, the 250-acre area encompasses the existing 90-acre CCW. Runoff from the expanded area will be collected in a perimeter toe ditch which is connected to the proposed wet detention pond through two drop inlets. For the horizontal expansion, the designed trapezoidal perimeter ditch is 10.0 feet wide at the invert, 8.0 feet deep with an invert elevation of 85.0 feet (NAVD). On the existing 90-acre CCW, the designed triangular perimeter ditch invert elevation is at 90.0 feet (NAVD) and is 6.0 feet deep. Each drop inlet consists of one FDOT Type D structure with one 36-inch HDPE pipe. The top of each riser is flush with the trapezoidal ditch at elevation 85.0 feet (NAVD) and the culvert invert elevation is set at elevation 75.5 feet (NAVD). The culverts are designed to cross beneath and perpendicular to the existing man-made ditch; refer to Appedix M, Design Drawings.

Excess runoff from the wet detention pond will be discharged into the existing man-made ditch through two riser structures. The proposed wet detention pond is located south of the landfill

expansion; refer to Figures 2 and 4. Elements involved in the design of the stormwater management system include a pair of riser structures sized to treat and attenuate runoff from the 250-acre expansion area, a set of bleed-down devices to restore the treatment volume, and a pair of pipes to effectively convey the excess runoff in to the existing man-made ditch. The wet detention pond has a total contributing area of 250 acres with a required treatment volume of 60.0 acre-feet; refer to design calculations in Appendix A. The bottom surface area of the pond will be 15.6 acres at elevation 69.5 feet; the pond area at the control elevation of 81.5 feet (NAVD) was determined to be 20.0 acres; the design elevation of the treatment volume is at 84.5 feet (NAVD) with a total area of 21.1 acres. The top of dike is at elevation 88.0 feet (NAVD) with a total area of 22.5 acres. Each drop structure consists of one FDOT Type D outlet with one 36-inch HDPE pipe. Also, each drop structure will have a pair of 10.0-inch diameter bleed down devices at elevation 81.5 feet (NAVD) to recover the treatment volume and one rectangular notch with a width of 4 feet and an invert elevation of 84.5 feet (NAVD) to limit peak discharges. The required permanent pool volume is 61.76 acre-ft with a mean depth of 3.09 feet; however, the pond will likely be excavated to an even greater depth to provide fill material for landfill construction. Refer to Appendix A and B for design calculations and wet detention pond design parameters. Also, typical details of the proposed wet detention pond are presented in Drawings 16, 17, and 18 in Appendix M.

7.0 METHODOLOGY AND MODEL DEVELOPMENT

Hydrologic analyses typically employ specialized mathematical models to define the response of a drainage system to design storm events. A model, in this context, is a computer implemented mathematical representation of the physical and behavioral characteristics of a system. With this mathematical representation, storm event conditions are simulated and results are analyzed to evaluate drainage system performance.

7.1 Model Selection

A hydro-meteorological, hydrodynamic modeling approach was selected for use in defining design flow rates, peak discharges, and water surface elevations. The approach involves computation of runoff, storage, and conveyance in response to a rainfall event that is uniformly distributed over the contributing drainage area. Frequency of the rainfall event (in this case, a synthetic design storm) is assumed to be the same as the frequency of its resulting flood in terms of flows and stages.

Numerous computer programs are available for use in hydro-meteorological simulation. ICPR for Windows was selected for use in this study. ICPR is a storm event modeling system that generates runoff hydrographs for basins and performs hydrodynamic routings of that runoff through a surface water conveyance system comprised of lakes, ponds, channels, and drainage structures.

7.2 Model Network Layout

ICPR operates with a model network comprised of a series of node and link elements. These connections provide a framework for dynamic storage and routing of flows throughout a drainage system. Nodes, located at critical points of interest within the drainage system, have storage and elevation characteristics and are used as locations for delivery of runoff to the drainage system. Model node elements typically represent lakes, ponds and points of interest in open channels. Nodes are also used to assign downstream boundary conditions for the

modeled system, where a known water surface elevation (called a "time-stage") must be defined.

Link elements have specific hydraulic characteristics and are used to convey flow between nodes. Model link elements typically represent open channels and drainage structures (culverts, bridges, weirs, etc.) that provide conveyance through the surface water drainage system.

7.3 Basin Delineation

Basins represent local drainage areas delineated so that they contribute runoff to a single point, a node, in the model network. The 2006 1-foot contours obtained from Orange County in combination with the 2011 1-foot topographic contours (produced for this project by Geometic Technologies) were used to determine drainage divides in support of the existing scenario; refer to Figure 3. Design drawings in conjunction with 1-foot contours were used to define proposed conditions; refer to Figure 4.

7.4 Land Use and Cover

Land use categories were used along with soil types to define runoff potential. Categories used to describe land use and cover for the project site and offsite areas are based upon the Florida Land Use, Cover and Forms Classification System (FLUCFCS). Generalized land use conditions were evaluated for the site based on GIS coverage files available from SJRWMD. This information was then updated and used to evaluate existing conditions; refer to Figure 5. Similarly, post-development land use conditions were evaluated and updated to represent the future condition. Land uses for the proposed scenario are presented in Figure 6.

7.5 Hydrologic Soil Groups

Soils are classified into hydrologic soil groups, depending on their infiltration rate and rate of water transmission that relate to runoff potential. Classification of soils, their hydrologic soil groups and their respective areas of coverage across the site were obtained from Natural Resources Conservation Service (NRCS). Hydrologic soil groups were used along with land use to define runoff potential, as discussed later in this report: Refer to Figure 7.

A general description of Hydrologic Soil Groups (HSG) is presented below:

- Class A: High infiltration rates. Soils are deep well drained to excessively drained sands and gravels.
- Class B: Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.
- Class C: Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.
- Class D: Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Some soils are classified as belonging to two hydrologic soil groups, such as A/D, B/D, and C/D. These ratings mean that, under natural conditions, the soil is classified as belonging to hydrologic soil group D, but by artificial methods (e.g. ditching) the water table could be lowered sufficiently so that the soil would fit into a lower runoff potential category.

7.6 Runoff Curve Number

Hydrologic losses from each sub-basin were computed using the SCS curve number option available in ICPR. This option in ICPR uses SCS curve numbers to compute runoff excess from rainfall as described in the National Resource Conservation Service (NRCS), formerly the Soil Conservation Service (SCS) publication, TR-55.

The curve number (CN) for each sub-basin was assigned based on the land use and soil type information for both the pre-development and post-development conditions. Runoff curve numbers used in this analysis are representative of average antecedent moisture conditions (AMC-II). For overall weighted curve numbers and breakdown of curve numbers per basin for the pre-development and post-development conditions, please refer to Appendices C and D.

7.7 Time of Concentration

Time of Concentration is generally defined as the amount of time it takes for a drop of water to travel from the most hydrologically distant point in a basin to the point where that basin discharges to a receiving water body. This parameter is then used in the computation of a runoff hydrograph, when using the SCS Unit Hydrograph Method for hydrograph generation.

The computation is made according to techniques recommended in TR-55 by the NRCS. Travel segment data for this study was developed using contours and aerial photographs. The flow path along the surface of the basins was broken into two main components; sheet flow and shallow concentrated flow. Since some of the basins rendered times of concentration smaller than 6 minutes, a minimum value of 6 minutes was used. For TC calculations, please refer to Appendix E for pre-development conditions and Appendix F for post-development conditions. Please note Appendix F only includes TC calculations for post-development areas impacted by the expansion; for post-development areas not impacted by the expansion, please refer to Appendix E.

7.8 Surface Storage

ICPR is capable of modeling lakes, wetlands, and floodplains with varying surface areas (and therefore storage volumes) as water levels rise and recede within the system. In order to make these possible, surface areas at successively higher elevations must be described for every water body in the model.

Design plans were used to define a stage area relationship for the proposed storm water management facility. Comprehensive modeling input data can be retrieved from the model input files in Appendices G and H of this report.

7.9 Boundary Conditions

The receiving water feature from the wet detention treatment facility is an existing manmade ditch; refer to Figure 2. The manmade ditch generally runs parallel to Innovation Way, north and south. On the south side, the ditch flows towards the east for ultimate discharge into a series of wetlands southeast of the proposed landfill. These series of wetlands ultimately discharge in to the Econlockhatchee River. On the north side, the ditch flows east into to a wetland system which eventually discharges under Innovation Way for ultimately discharge into the Econlockhatchee River. The ditch and all its hydraulic and hydrologic components were evaluated in the ICRP model to assess fluctuations and potential impacts during the storm event

since this ditch was used as the receiving feature (i.e., variable tailwater node). Refer to Appendixes G and H for model input and output data.

7.10 **Model Testing**

A thorough review of model input data was undertaken and a qualitative assessment of preliminary model results was made. Input data were reviewed, to yield consistent and defensible use of parameter values. Commonly accepted values for parameters (runoff curve number, time of concentration, peak rate factor, and structure discharge coefficients) were carefully and thoughtfully employed.

Model testing was performed to identify and account for overflows and to generally evaluate model performance. Modifications to input data were made until the model yielded reasonably reliable results and could be used as a reasonable predictor of watershed response to rainfall.

8.0 **RESULTS OF HYDROLOGIC AND HYDRAULIC ANALYSES**

The results of storm event simulations were used to establish pre-development conditions, to evaluate the effectiveness of the proposed stormwater management system, and to demonstrate that regulatory requirements were met. The following discussion of simulation results is limited to those comparisons that are necessary to describe the effectiveness of the proposed stormwater management system.

8.1 **Pre-Development Condition Simulation Results**

Results of storm event simulations from the pre-development model were used to provide a baseline when defining the design peak stages and discharge rates. Model results of the 2.33y/24h and 25y/24h storm events are shown in tables 1, 2, 3, and 4. These locations were selected along the existing man-made ditch since they better represent probable impacted areas. Also, hydrographs (discharge and stage) of reaches RPRE140 and RPRE160 are provided in Appendices I and J. Additional model results information can be found in Appendix G; Refer to Figure 3**.**

8.2 **Post-Development Condition Simulation Results**

The results of the storm event simulation, using the post-development conditions model network, were evaluated to demonstrate that the peak discharge rates and stages from the proposed stormwater management systems were not greater than the peak discharge rates of pre-development conditions, and that the required treatment volume was met. Refer to tables 1, 2, 3, and 4 for model results. Also, hydrographs (discharge and stage) of reaches RPRE140 and RPRE160 are provided in Appendices I and J. Additional model results information can be found in Appendix H; Refer to Figure 4.

The landfill will be constructed in several phases (e.g., Phases I, II, III, and IV). Each phase has a different contributing area, therefore different treatment volume depths. The proposed pond will be constructed to serve each phase as well as the final configuration or phase IV. Under this condition, the drawdown mechanism consists of two 10-inch orifices per drop structure, for a total of four 10-inch orifices at elevation 81.5 feet (NAVD88).

9.0 SUMMARY

The proposed stormwater management system was designed to treat and attenuate the 250-acre landfill expansion. Analyses of the pre-development and post-development hydrologic and hydraulic conditions were performed using a hydro- meteorological, hydrodynamic modeling approach to provide a level of understanding of the existing and proposed systems response to a storm event.

Based on comparisons of existing and proposed conditions simulation results of the system response, the proposed scenarios will not cause an increase in peak discharge rates and/or stages, resulting in no adverse impacts to downstream adjacent land areas. Also, the system has been shown to provide sufficient treatment storage and allows for recovery of that storage volume according to regulatory requirements. Refer to Tables 1 and 2 below for pre/post discharge comparison for the mean annual and 25 year storm events.

Table 1: Pre and Post Discharge Comparison, Mean Annual Storm Event

Reach Name	Pre Max Discharge (cfs)	Post Max Discharge (cfs)
RPRE350	25.25	24.89
RPRE340	23.12	22.74
RPRE330	21.28	20.87
RPRE300	9.5	8.21
RPRE100A	9.07	7.3
RPRE100	12.38	10.89
RPRE105	11.95	10.37
RPRE115	5.24	3.46
RPRE120	4.82	2.92
RPRE130	44.33	4.48
RPRE140	34.27	13.8
RPRE160	45.73	15.45
RPRE170	54.5	43.91
RPRE180	44.88	28.36
RPRE190	54.78	44.2
RPRE200	54.99	44.39

Table 2: Pre and Post Stage Comparison, Mean Annual Storm Event

Node Name	Pre Max Stage (feet)	Post Max Stage (feet)
NPRE350	76.21	76.15
NPRE340	76.27	76.21
NPRE330	76.59	76.56
NPRE300	79.08	79.06
NPRE100	81.02	81.2
NPRE105	81.83	81.8
NPRE115	82.14	82.08
NPRE120	82.13	82.07
NPRE130	80.62	80.27
NPRE140	80.60	80.12
NPRE160	79.97	79.99
NPRE170	79.92	79.96
NPRE180	79.86	79.92
NPRE190	77.51	77.39
NPRE200	77.18	77.14

Table 3: Pre and Post Discharge Comparison, 25-Year Storm Event

Reach Name	Pre Max Discharge (cfs)	Post Max Discharge (cfs)
RPRE350	53.76	52.23
RPRE340	50.14	48.49
RPRE330	46.87	45.17
RPRE300	21.3	19.41
RPRE100A	17	12.81
RPRE100	52.34	51.98
RPRE105	38.91	30.82
RPRE115	9.21	6.25
RPRE120	9.72	6.29
RPRE130	44.88	41.39
RPRE140	67.07	54.4
RPRE160	89.89	54.65
RPRE170	162.67	129.07
RPRE180	47.5	30.21
RPRE190	163.56	129.89
RPRE200	164	130.3

Table 4: Pre and Post Stage Comparison, 25-Year Storm Event

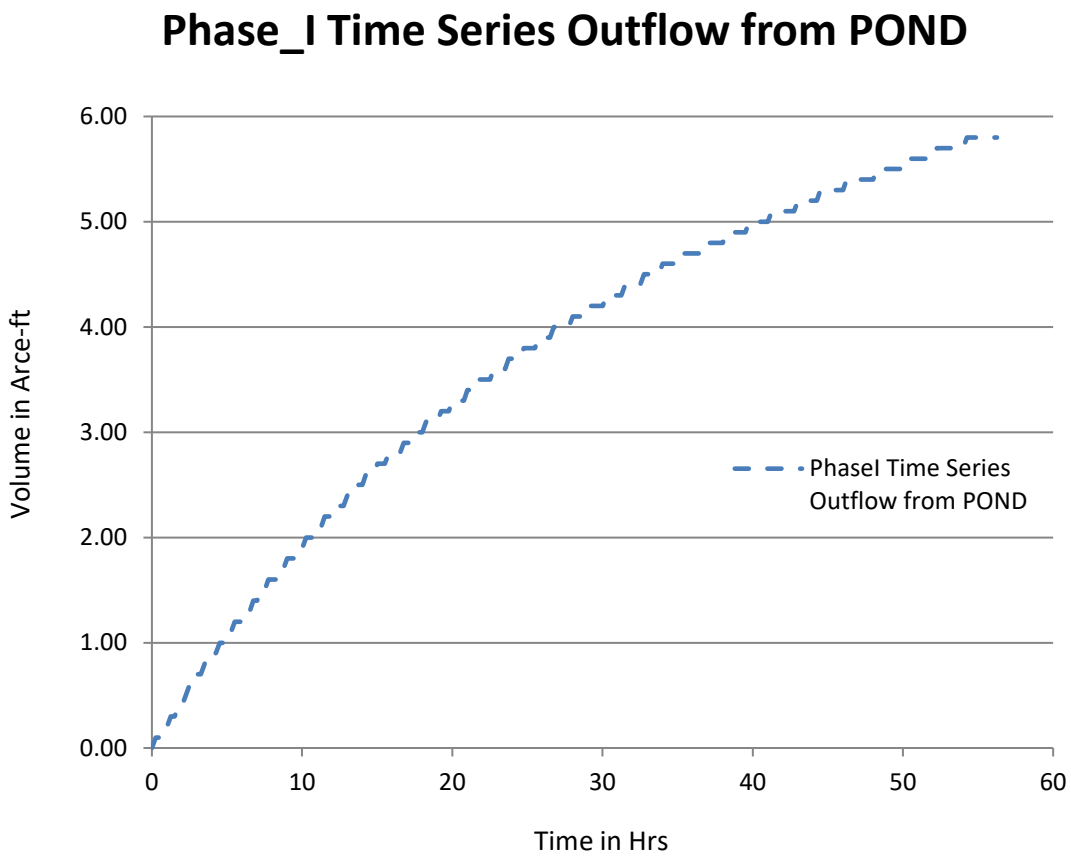
Node Name	Pre Max Stage (feet)	Post Max Stage (feet)
NPRE350	76.61	76.43
NPRE340	76.69	76.53
NPRE330	77.58	77.51
NPRE300	79.27	79.25
NPRE100	82.73	82.63
NPRE105	82.74	82.64
NPRE115	82.98	82.79
NPRE120	82.97	82.79
NPRE130	82.63	81.78
NPRE140	82.62	81.78
NPRE160	81.80	80.83
NPRE170	80.87	80.64
NPRE180	80.61	80.45
NPRE190	78.54	78.26
NPRE200	77.53	77.45

Summary tables of design parameters for the post-development condition are provided in Appendix B - Summary of Wet Detention Pond Design Parameters. Also, hydrographs comparison results (at selected locations) of pre-development and post-development analyses are presented in Appendices I and J. Similarly, input and output data are provided in Appendices G and H.

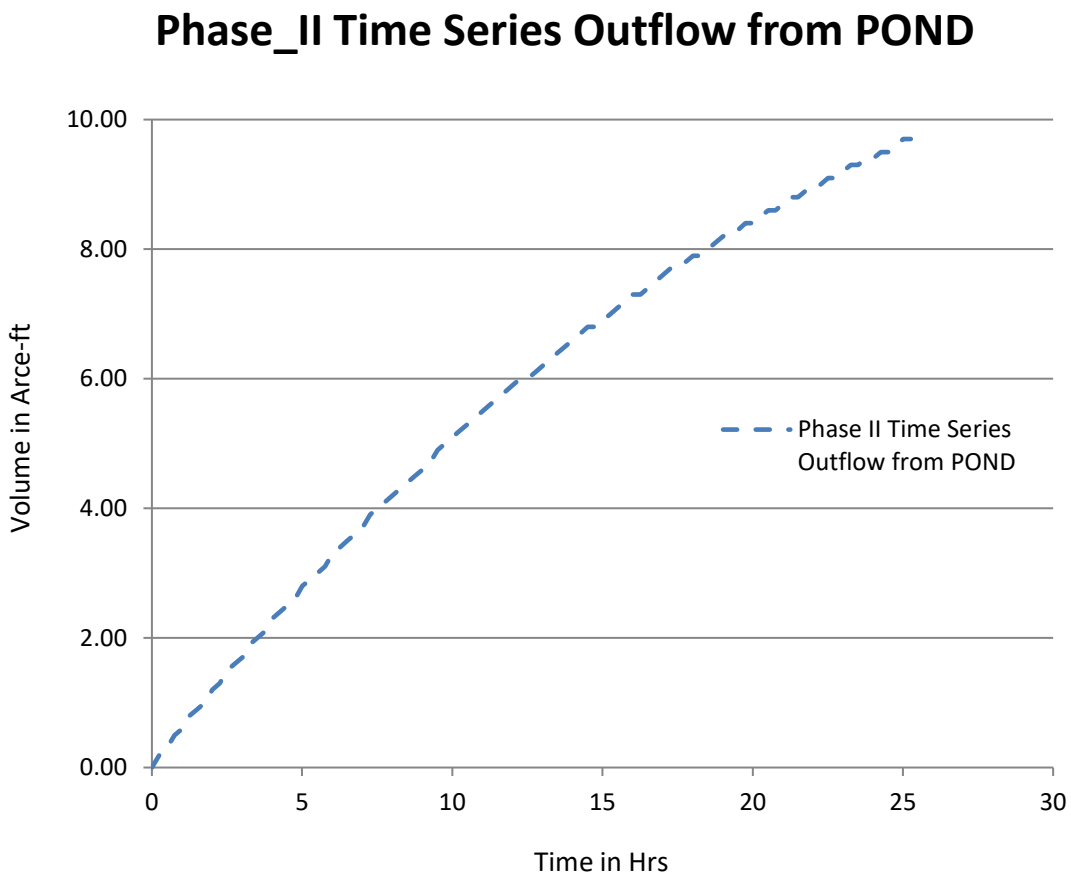
10.0 FINAL POND CONFIGURATION AND PROJECT PHASES

The landfill will be constructed in several phases (e.g., Phases I, II, III, and IV). Each phase has a different contributing area, therefore different treatment volume depths. The proposed pond will be constructed to serve the final configuration or phase IV. Under this condition, the drawdown mechanism consists of two 10-inch orifices per drop structure, for a total of four 10-inch orifices at elevation 81.5 feet (NAVD88).

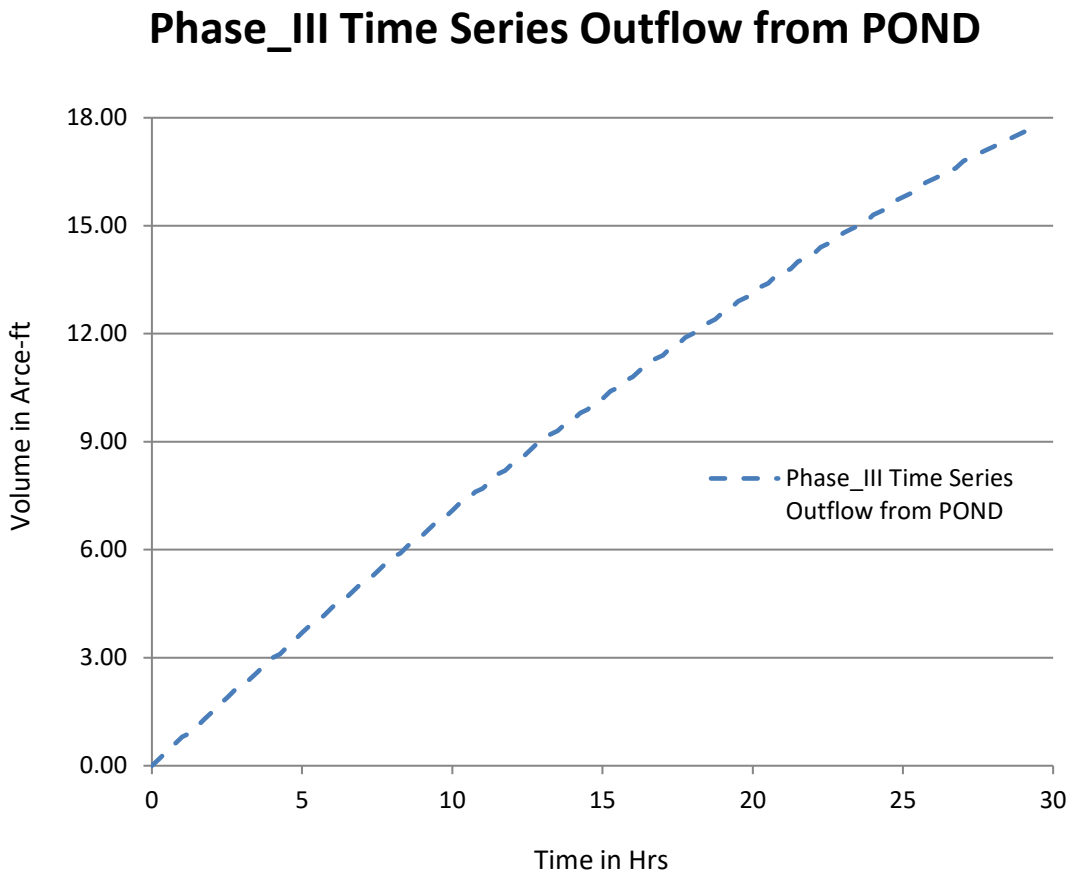
For Phase I, the total impervious area is approximately 37 acres. The required treatment volume is $2.5\ inch \times 37\ acre \times 1.5\ (additional) \div 12 \frac{inch}{feet} = 11.56\ acre - ft.$ The treatment depth is $11.56\ acre.ft \div 20\ acre = 0.57\ ft.$ Under this condition, it is required that one half of the treatment volume ($5.78\ acre - ft$) be released between 24-30 hours. As shown in the graph below, half of the treatment volume is discharged in 55 hrs. This extended time is due to the small hydrostatic head available in this scenario. No additional orifices are proposed to recover the treatment volume within 24-30 hours since additional storage is available in the pond for the next storm.



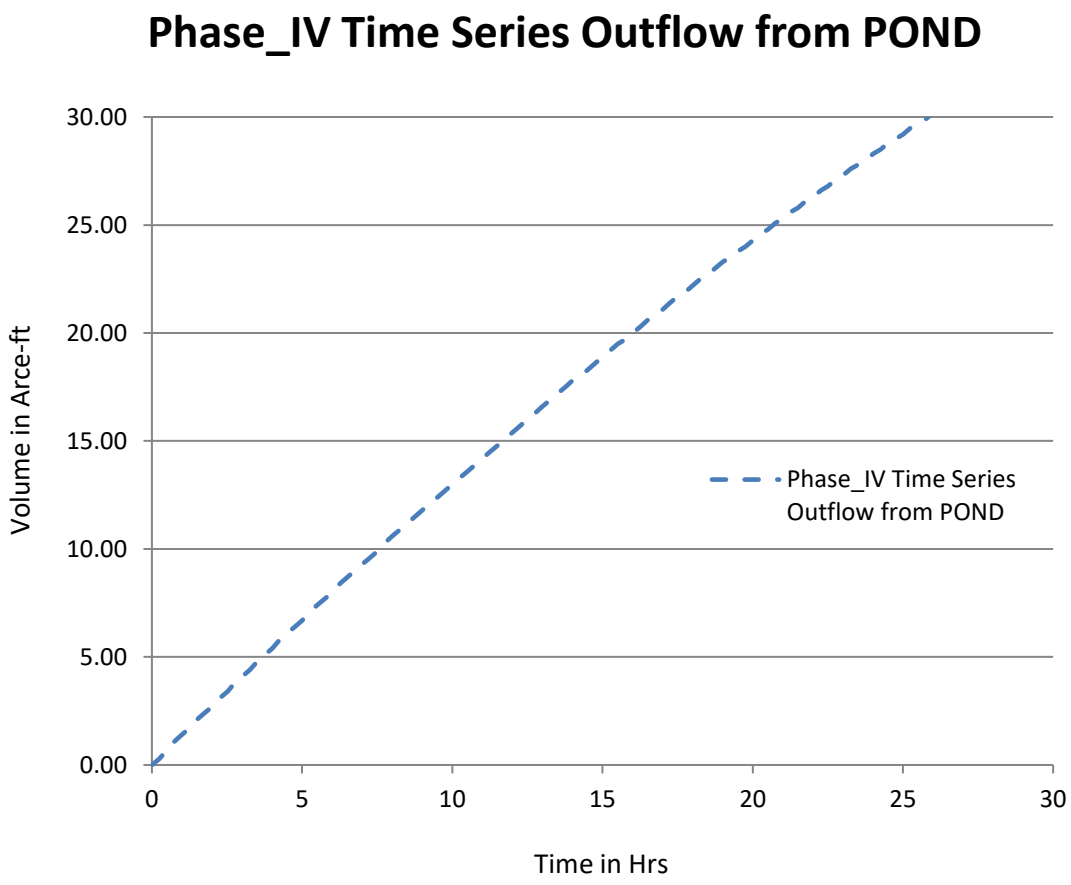
For phase II, the total impervious area is approximately 62 acres. The required treatment volume is $2.5\ inch \times 62\ acre \times 1.5(additional) \div 12\frac{inch}{feet} = 19.37\ acre - ft.$ The treatment depth is $19.37\ acre - ft \div 20\ acre = 0.97ft.$ For this condition, it is required that one half of the treatment volume $(9.68\ acre.ft)$ be released between 24-30 hours. As demonstrated in the graph below, half of the treatment volume is discharged in 25 hrs.

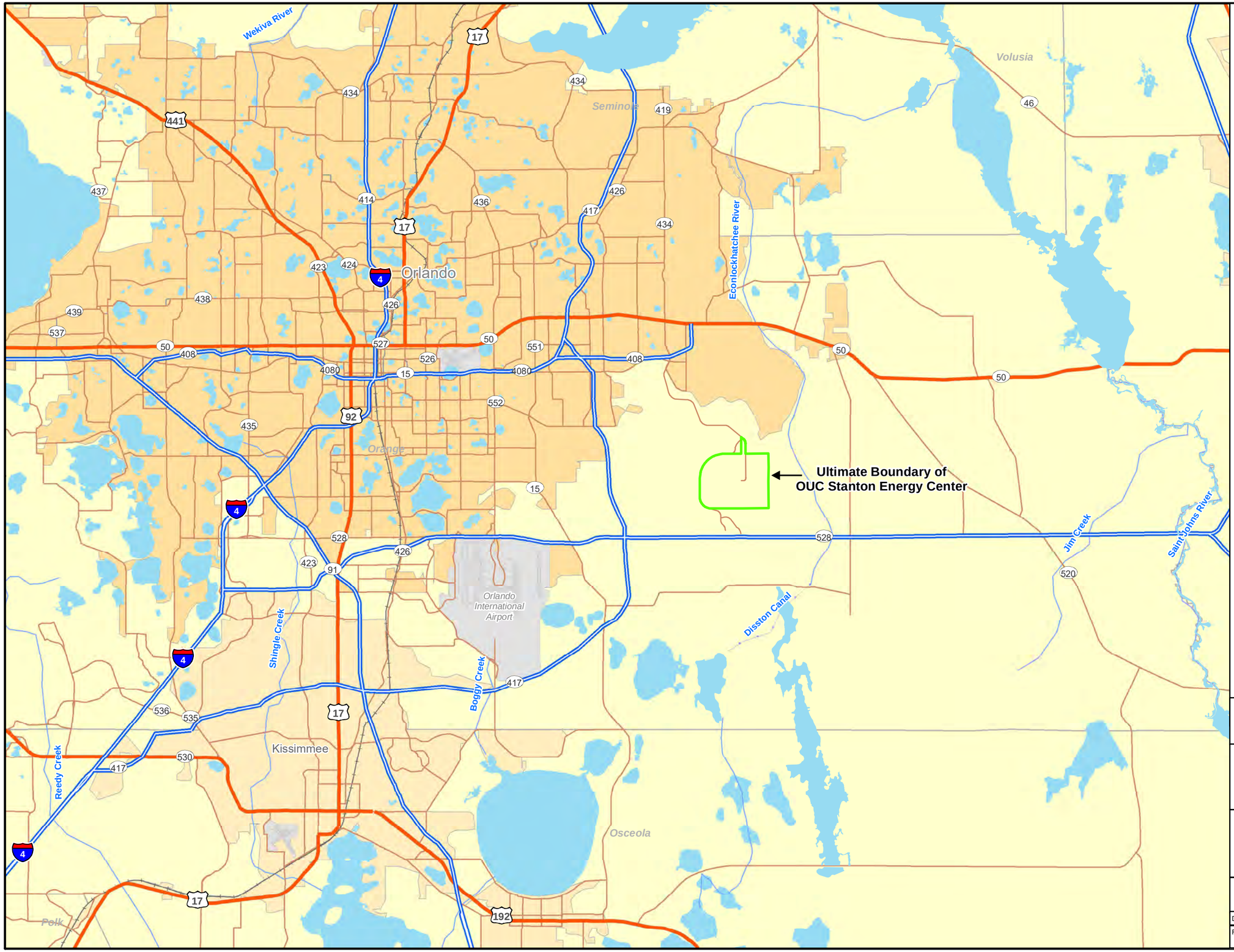


For phase III, the total impervious area is approximately 114 acres. The required treatment volume is $2.5\,inch \times 114\,acre \times 1.5 \div 12\frac{inch}{feet} = 35.62\,acre - ft$. The treatment depth is $35.62\,acre - ft \div 20\,acre = 1.78ft$. For this condition, it is required that one half of the treatment volume ($17.81\,acre - ft$) be released between 24-30 hours, but not early than 24 hrs. In this case, the treatment volume is being released in 22 hrs. Since the time is shorter than required, it is proposed to close one orifice. Under this condition (one orifice closed), the discharge time equals 29 hours. As shown in graph below, half of the treatment volume is discharged in 29 hrs.



For phase IV, the total impervious area is approximately 190 acres. The required treatment volume is $2.5\ inch \times 190\ acre \times 1.5 \div 12 \frac{inch}{feet} = 59.37\ acre - ft$. The treatment depth is $60.0\ acre.ft \div 20\ acre = 3.0\ ft.$ For this condition, it is required that one half of the treatment volume $(30.0\ acre - ft)$ be released between 24-30 hours. As demonstrated in graph below, half of the treatment volume is discharged in 26 hrs.





N

W E

S

0 9,000 18,000

Scale: 1" = 18,000'

Source: ESRI

Legend

Site Boundary

SITE LOCATION MAP

Ardaman & Associates, Inc.
Geotechnical, Environmental, and Materials Consultants
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8008 S. Orange Ave. Orlando, FL 32809
TEL 407/855-3860 FAX 407/859-8121 C.A.N. 5950

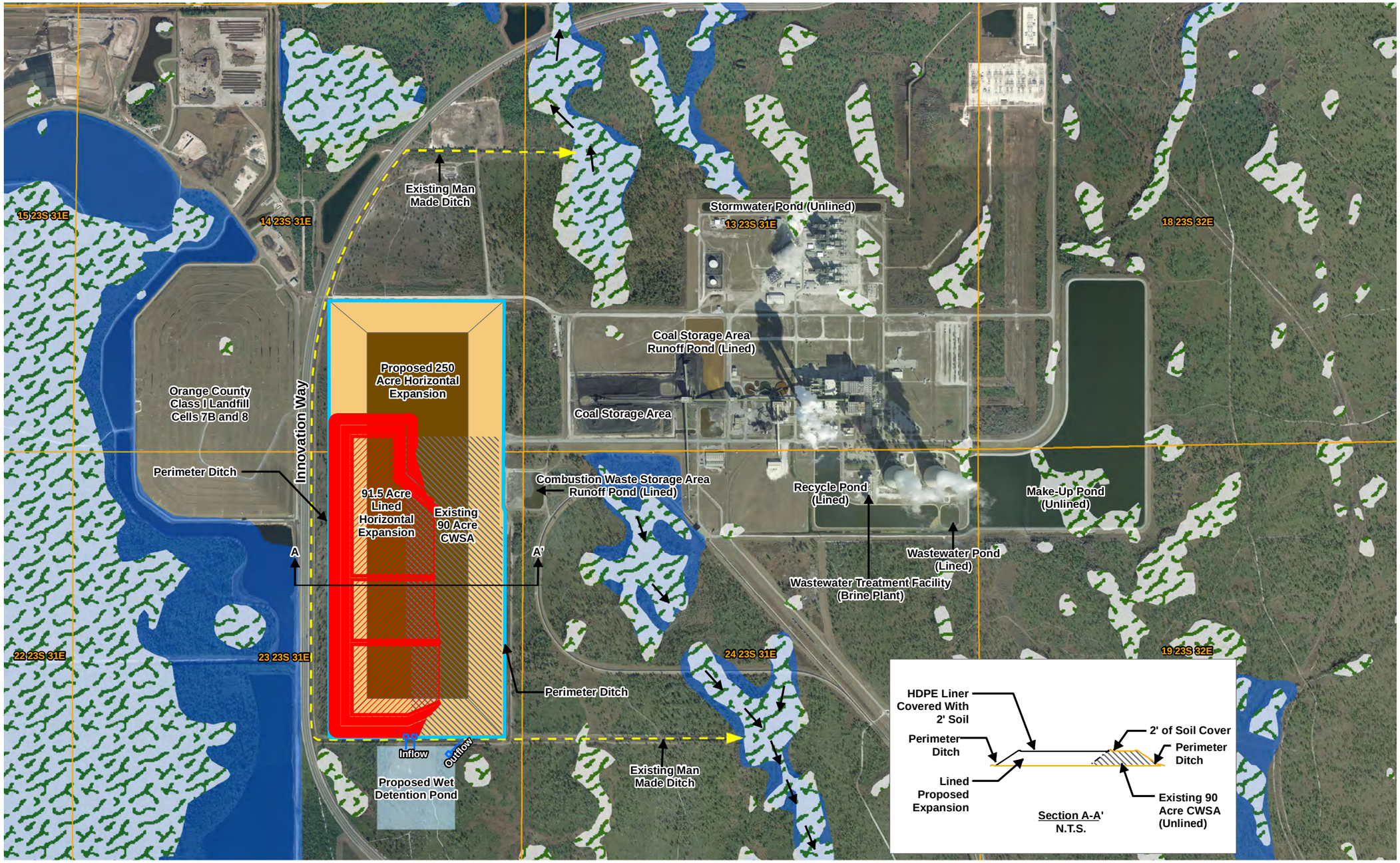
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OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

HORIZONTAL EXPANSION OF COAL COMBUSTION WASTE LANDFILL

DRAWN BY: **RMC**	CHECKED BY:	DATE: **10-24-11**
FILE NO. **10-0249**	APPROVED BY:	FIGURE: **1**

W:\Projects\2010\10-0249\ArcGIS_ArcLayouts\Figure1_SiteLocationMap.mxd



N

W E

S

0 600 1,200

Feet

Scale: 1" = 1,200'

- Proposed Landfill Ditch
- Existing CWSA
- Side Slopes
- Top of Landfill
- PLSS
- National Wetlands Inventory
- FEMA Flood Zone A

Imagery	Orange County Property Appraiser	Jan 2011
FEMA	Orange County	2009

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Figure 2

Project: 10-13-0249	Projection: State Plane Florida East	
Prepared: 09-15-11	Horizontal Datum: NAD83	Vertical Datum: N/A
Prepared by: RMC	Modified by: TJC	Modified: 10-21-11
File: \\2010\10-0249\ArcGIS_ArcLayouts\20110915\NWI_FEMA_Map.mxd		

STORMWATER CONCEPTUAL DESIGN

OUC STANTON ENERGY CENTER CCW LANDFILL

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A Tetra Tech Company
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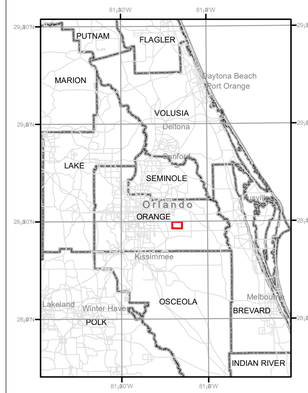
FIGURE 3

N
W E
S

Scale 1" = 600'
Feet
0 300 600 1,200 1,800
0 100 200 400
Meters

- Existing Node
- Existing Reach
- Existing Basin
- National Wetland Inventory
- FEMA Flood Zone A
- 5' Contour
- 1' Contour

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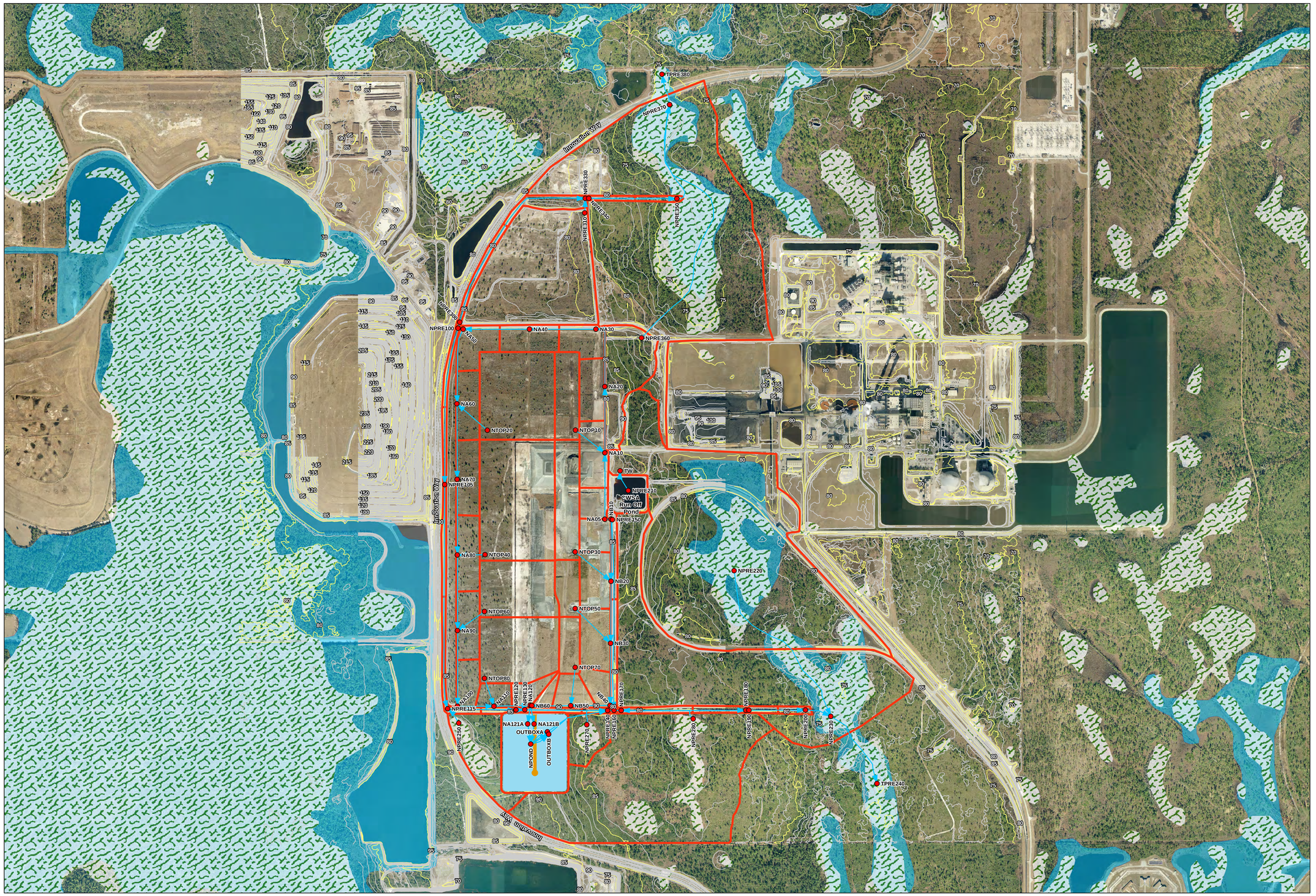
Project: 10-0249	Projection: State Plane Florida East	
Prepared: 09-21-11	Horizontal Datum: NAD83	Vertical Datum:
Prepared by: XL	Revised by:	Revised:
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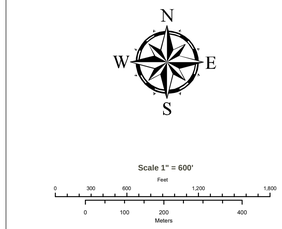
PRE-DEVELOPMENT NETWORK LAYOUT

OUC STANTON ENERGY CENTER COAL COMBUSTION WASTE LANDFILL

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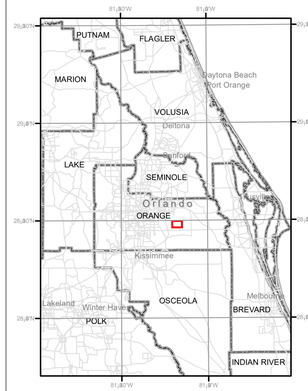
FIGURE 4





- Proposed Node
- Proposed Reach
- Proposed Basin
- Proposed Wet Detention Pond
- National Wetland Inventory
- FEMA Flood Zone A
- 5' Contour
- 1' Contour

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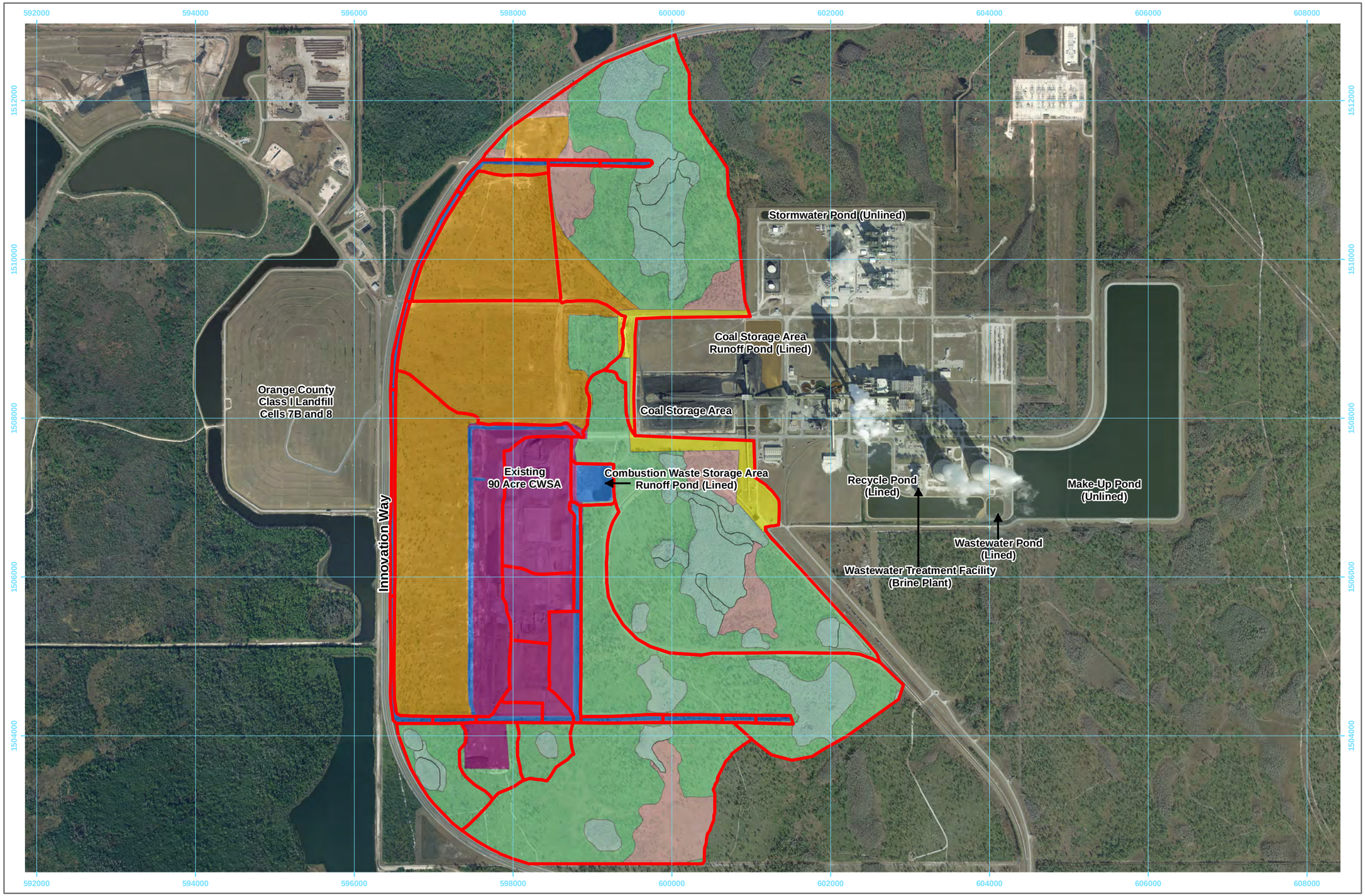


Project: 10-0249	Projection: State Plane Florida East	
Prepared: 09-21-11	Horizontal Datum: NAD83	Vertical Datum:
Prepared by: XL	Revised by:	Revised:
File: W:\Projects\2010\10-0249\ArcGIS_ArcLayouts\20111007\Proposed.mxd		

POST-DEVELOPMENT NETWORK LAYOUT

OUC STANTON ENERGY CENTER COAL COMBUSTION WASTE LANDFILL

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N
W E
S

0 600 1,200
Feet

Scale: 1" = 1,200'

Existing Basin

Landuse

- OPEN LAND
- RANGELAND
- UPLAND FORESTS
- STREAMS AND WATERWAYS
- WETLANDS
- TRANS, COMM, & UTIL
- SOLID WASTE DISPOSAL

Imagery	Orange County Property Appraiser	2011
Landuse	SJRWMD	2004

OUC The Reliable One

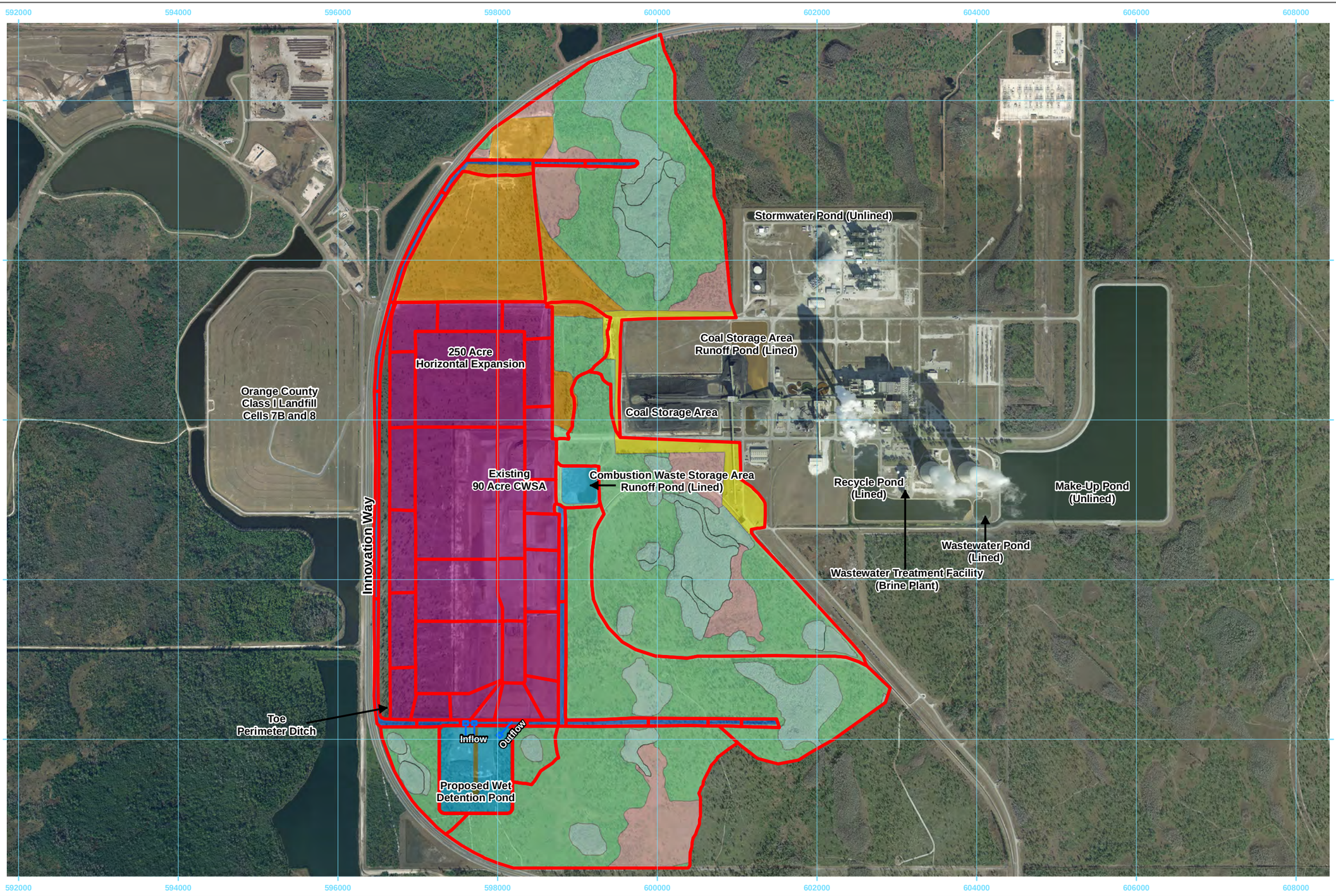
Figure 5

Project: 10-13-0024	Projection: State Plane Florida East	
Prepared: 10-20-11	Horizontal Datum: NAD83	Vertical Datum: N/A
Prepared by: RMC	Modified by:	Modified:
File: W:\Projects\2010\10-0249\ArcGIS_ArcLayouts\Figure5_Pre Landuse.mxd		

PRE-DEVELOPMENT LAND USE

OUC STANTON ENERGY CENTER COAL COMBUSTION WASTE LANDFILL

Ardaman & Associates, Inc.
Geotechnical, Environmental, and
Materials Consultants
A Tetra Tech Company
8008 S. Orange Ave. Orlando, FL 32809
TEL 407/855-3860 FAX 407/859-8121 C.A.N. 5950



N
W E
S

0 600 1,200
Feet

Scale: 1" = 1,200'

- Proposed Basin

Landuse

- OPEN LAND
- RANGELAND
- UPLAND FORESTS
- STREAMS AND WATERWAYS
- RESERVOIRS
- WETLANDS
- TRANS, COMM, & UTIL
- SOLID WASTE DISPOSAL
- PRIMITIVE/TRAILS

Imagery	Orange County Property Appraiser	2011
Landuse	SJRWMD	2004

OUC The Reliable One®

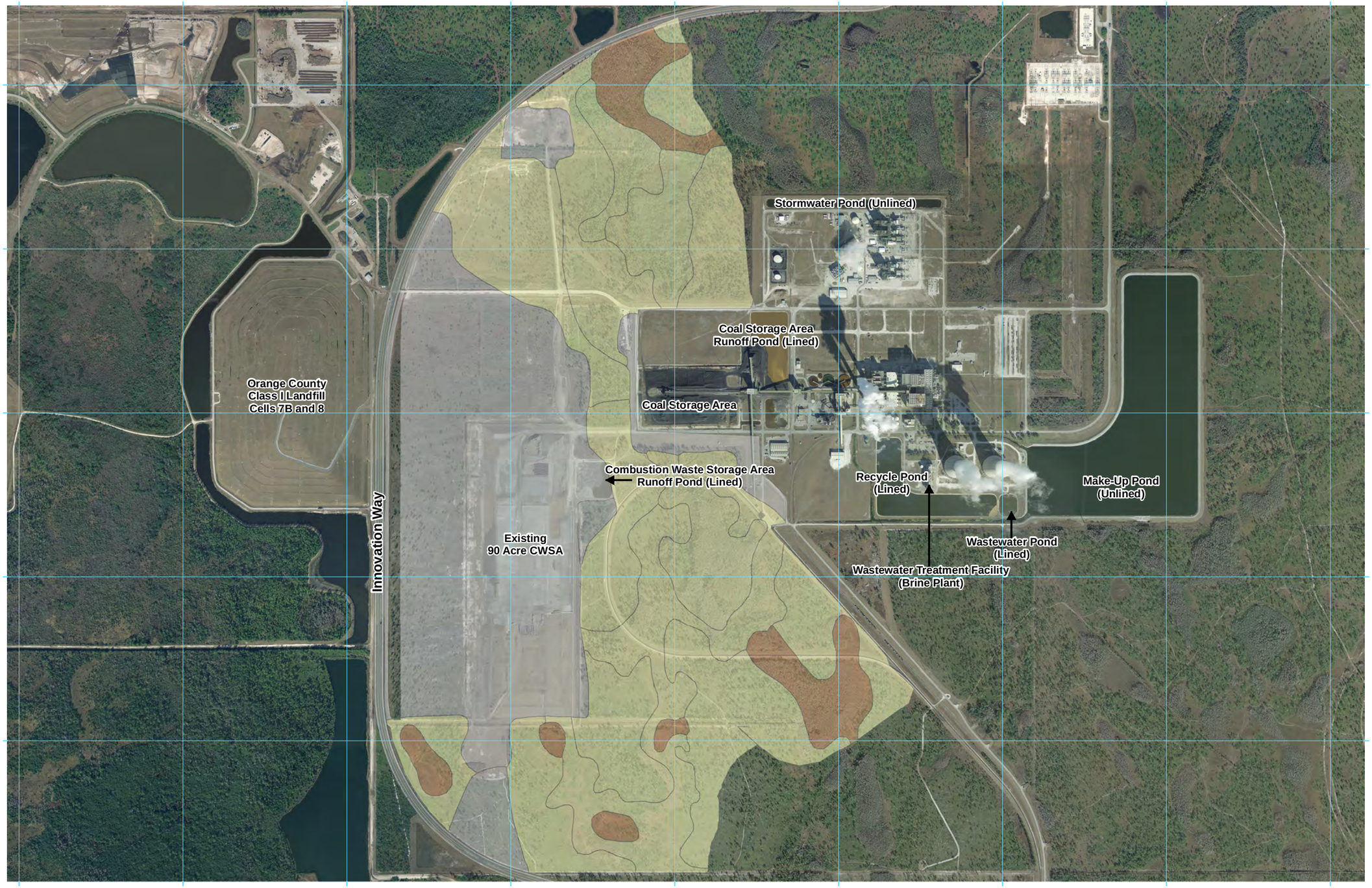
Figure 6

Project: 10-13-0024	Projection: State Plane Florida East	
Prepared: 10-26-11	Horizontal Datum: NAD83	Vertical Datum: N/A
Prepared by: XL	Modified by:	Modified:
File: W:\Projects\2010\10-0249\ArcGIS_ArcLayouts\Figure6_Post Landuse.mxd		

POST-DEVELOPMENT LAND USE

OUC STANTON ENERGY CENTER COAL COMBUSTION WASTE LANDFILL

Ardaman & Associates, Inc.
Geotechnical, Environmental, and Materials Consultants
A Tetra Tech Company
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N
W E
S

0 600 1,200
Feet

Scale: 1" = 1,200'

Soils

- B/D
- C
- D

Imagery	Orange County Property Appraiser	2011
Soils	SJRWMD	2001

OUC The Reliable One

Figure 7

Project: 10-13-0024	Projection: State Plane Florida East	
Prepared: 10-20-11	Horizontal Datum: NAD83	Vertical Datum: N/A
Prepared by: XL	Modified by:	Modified:
File: W:\Projects\2010\10-0249\ArcGIS_ArcLayouts\Figure7_Soils_Map.mxd		

SOIL HYDROLOGIC GROUP

OUC STANTON ENERGY CENTER COAL COMBUSTION WASTE LANDFILL

Ardaman & Associates, Inc.
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Appendix A: Design Calculations

Treatment volume:

Total contributing area: 250-acres
Total impervious area (liner with two feet of soil cover): 190-acres
Total pervious area (two feet of soil cover): 60 acres
The required treatment volume should be the greater of the following:

Treatment volume: $\frac{1\ inch \times 250\ acres}{\frac{12\ in}{ft}} = 20.83\ acre - ft$

or

Treatment volume: $\frac{2.5\ inches \times 190\ acres}{12\ in/ft} = 39.58\ acre - ft$

Additional 50 percent due to Outstanding Florida Water (OFW): $39.58\ acre - ft \times 50\ percent = 19.79\ acre - ft$

Total treatment volume: $39.58\ acre - ft + 19.79\ acre - ft = 59.37\ acre - ft \approx 60.0\ acre - ft$

Pond Normal Water Level (NWL): 81.5 feet (NAVD88)

Orifice invert elevation: 81.5 feet (NAVD88)

Pond Area at NWL: 20 acres

Treatment volume depth: $\frac{60\ acre-ft}{20\ acres} = 3.0\ feet$

Weir elevation: $81.5\ feet + 3.0\ feet = 84.5\ feet$

Required Permanent Pool Volume:

Since the system is considered (by FDEP) to be directly connected to Outstanding Florida Waters, an additional fifty percent of permanent pool volume is required.

Where: *DA*: 250 acres - Drainage area to pond.

C: 0.45 - Runoff coefficient.

R: 32 inches - Wet season rainfall, from SJRWMD (Wet Season Normal Rainfall from June - October)

RT: 21 days - Residence time, 14 days required plus 50% as an alternative to replace the littoral zone.

WS: 153 days - length of the wet season (June – October)

Additional 50% (1.5) is provided due to OFW

$$PPV = \frac{250\ acres \times 0.45 \times 32\ inches \times 21\ days \times (1.5)}{153\ days \times 12\ in/ft} = 61.76\ acre - ft$$

Mean Depth:

$$MD = \frac{61.76\ acre - ft}{20\ acres} = 3.09\ ft$$

Mean depth is within the required range, between 2 and 8 feet.

Recovery time:

Half of the treatment volume (30.0 acre-ft) should be discharged within the first 24 to 30 hours after the storm event.

$$Q = \frac{30.0\ acre-ft \times 43560\ \frac{sq\ ft}{acre}}{24\ hrs \times 3600\ sec/hr} = 15.13\ cfs$$

Design four orifices: $Q = \frac{15.13\ cfs}{4} = 3.78\ cfs\ each$

Treatment volume depth $(h1) = 81.5\ ft - 84.5\ ft = 3\ ft$

Stage at half the treatment volume= $\frac{30\ acre-ft \times (84.5-81.5)}{278.85\ acre-ft - 217.2\ acreft} + 81.5\ ft = 82.96\ ft$

$$(h2) = 82.96\ ft - 81.5\ ft = 1.46\ ft$$

$$h = \frac{3\ ft + 1.46\ ft}{2} = 2.23ft$$

Then, area of each orifice $A = \frac{3.78cfs}{0.6 \times \sqrt{2\left(\frac{32.2\ ft}{sec2}\right) \times 2.23ft}} = 0.53\ sq\ ft$

The diameter of each orifice $D = \sqrt{\frac{4 \times 0.53\ sq\ ft}{\pi}} = 0.82\ feet\ or\ 9.82\ inches\ each\ orifice$

(4) 10-inch diameter orifices were use to draw down the treatment volume. Refer to Appendix K for recovery analysis resulting from the H&H ICPR model. Also, refer to Appendix B for Summary of Wet Detention Pond Design Parameters.

Appendix B: Summary of Wet Detention Pond Design Parameters

Table 1: Wet Detention Pond Design Parameters

Wet Detention Pond	**Contributing Area**	**Treatment Volume**
	250 acres	60.0 acre-ft
Pond Geometry (Required Permanent Pool and Treatment Volume)	**Pond Bottom Elevation**	**Area**
	69.5 feet	15.58 acres
	Normal Water Level (NWL)	**Area**
	81.5 feet	20.0 acres
	Treatment Volume Elevation	**Area**
	84.5 feet	21.1 acres
	Pond Crest Elevation	**Area**
	88.0 feet	22.5 acres
Designed Water Control Structure (Overflow Elevation) (two required)	**Type**	Sharp Weir
	Geometry	Rectangular
	Total Length	4.0 feet
	Overflow Weir Elevation	84.5 feet
	Emergency overflow	85.9 feet
(Outfall Pipe) (two required)	**Geometry**	Circular
	Diameter (nominal)	36 Inches
	Material	HDPE SRD 21
	Upstream Invert	80.0 feet
	Downstream Invert	80.0 feet
	Length	110.0 feet
Designed Bleed-Down Device (Control Elevation) (two required per structure)	**Type**	Orifice
	Geometry	Circular
	Material	PVC SCH 40
	Diameter (ID)	10.0 Inches
	Invert	81.5 feet
Skimmer	**Top**	85.90 feet
	Bottom	84.16 feet

Appendix C: Pre-Development CN Calculations

Pre-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE100	1900	C	0.037132	74	
PRE100	5100	C	1.554868	100	99.8
PRE105	5100	C	3.215	100	100.0
PRE110	1900	B/D	1.025557	80	
PRE110	1900	C	85.74487	74	
PRE110	8350	C	36.510328	86	
PRE110	5100	C	0.10413	100	
PRE110	5100	C	6.074817	100	78.7
PRE115	5100	C	1.663	100	
PRE115	5100	B/D	0.956	100	
PRE115	5100	C	0.098	100	100.0
PRE120	4110	B/D	0.091821	80	
PRE120	5100	B/D	0.837279	100	
PRE120	5100	C	0.089498	100	
PRE120	8350	B/D	0.028091	89	
PRE120	8350	C	0.006875	86	98.8
PRE130	4110	B/D	0.044329	80	
PRE130	4110	C	0.012179	74	
PRE130	4110	D	0.000395	80	
PRE130	8350	B/D	0.320986	89	
PRE130	8350	C	2.139991	86	
PRE130	5100	B/D	0.580065	100	
PRE130	5100	C	0.710775	100	
PRE130	5100	D	0.005419	100	
PRE130	8350	C	0.049878	86	90.8
PRE140	4110	D	0.00023	80	
PRE140	8350	B/D	0.064413	89	
PRE140	8350	C	10.291724	86	
PRE140	8350	B/D	0.375189	89	
PRE140	8350	B/D	0.011166	89	
PRE140	5100	B/D	0.047615	100	
PRE140	5100	B/D	0.356993	100	
PRE140	5100	B/D	0.0184	100	
PRE140	5100	D	0.269565	100	87.0
PRE150	8350	C	0.159023	86	
PRE150	8350	C	0.011536	86	
PRE150	5100	C	2.104812	100	
PRE150	5100	B/D	0.104816	100	
PRE150	5100	C	0.498684	100	99.2
PRE160	4110	B/D	0.002599	80	
PRE160	8350	C	7.868982	86	
PRE160	8350	B/D	0.006594	89	
PRE160	8350	B/D	0.003257	89	
PRE160	8350	B/D	0.010618	89	
PRE160	5100	B/D	0.000922	100	
PRE160	5100	C	2.650268	100	
PRE160	5100	B/D	0.049926	100	
PRE160	5100	B/D	0.001666	100	

Pre-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE160	5100	B/D	0.261482	100	89.8
PRE170	4110	B/D	0.095312	80	
PRE170	4110	B/D	0.326829	80	
PRE170	4110	D	0.055461	80	
PRE170	5100	B/D	0.281765	100	
PRE170	5100	B/D	1.21353	100	
PRE170	5100	D	0.101706	100	
PRE170	5100	B/D	0.012147	100	95.4
PRE180	4110	B/D	0.193044	80	
PRE180	4110	D	0.133674	80	
PRE180	5100	B/D	0.826913	100	
PRE180	5100	B/D	0.041122	100	
PRE180	5100	D	0.409406	100	95.9
PRE190	4110	B/D	0.248185	80	
PRE190	5100	B/D	0.655091	100	94.5
PRE200	4110	B/D	0.40816	80	
PRE200	5100	B/D	0.650805	100	92.3
PRE210	4110	C	0.381274	74	
PRE210	4110	B/D	0.290291	80	
PRE210	4110	C	0.238126	74	
PRE210	8350	C	0.940562	86	
PRE210	8350	C	0.011317	86	
PRE210	5100	C	0.002589	100	
PRE210	5300	C	4.0978	100	
PRE210	5300	B/D	0.437523	100	94.5
PRE220	6210	B/D	0.145362	100	
PRE220	6210	D	1.25056	100	
PRE220	6430	B/D	0.831225	100	
PRE220	6430	D	1.113553	100	
PRE220	6210	B/D	0.742034	100	
PRE220	6210	D	1.316215	100	
PRE220	6210	B/D	0.013526	100	
PRE220	6210	B/D	1.537251	100	
PRE220	6460	B/D	1.345059	100	
PRE220	6460	B/D	0.097223	100	
PRE220	6460	B/D	1.230597	100	
PRE220	3100	B/D	7.716539	80	
PRE220	3100	B/D	0.472656	80	
PRE220	3100	B/D	0.364512	80	
PRE220	3100	D	0.394386	80	
PRE220	6300	B/D	0.234956	100	
PRE220	6300	B/D	1.090514	100	
PRE220	6430	B/D	1.932468	100	
PRE220	6430	B/D	1.704443	100	
PRE220	6210	B/D	0.474674	100	
PRE220	6210	B/D	17.483602	100	
PRE220	6460	B/D	0.338867	100	
PRE220	6460	B/D	2.159466	100	

Pre-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE220	6210	B/D	0.279476	100	
PRE220	6210	B/D	0.937282	100	
PRE220	6170	B/D	0.018637	100	
PRE220	6170	B/D	0.836738	100	
PRE220	6170	C	0.254667	100	
PRE220	6170	B/D	0.425502	100	
PRE220	6170	B/D	0.61999	100	
PRE220	3300	C	1.677442	74	
PRE220	3300	B/D	6.075224	80	
PRE220	3300	B/D	0.379558	80	
PRE220	8310	C	11.058445	74	
PRE220	8310	B/D	0.012081	80	
PRE220	8310	B/D	2.292828	80	
PRE220	8310	B/D	0.080083	80	
PRE220	1900	B/D	0.16061	80	
PRE220	1900	C	0.117637	74	
PRE220	1900	B/D	0.087804	80	
PRE220	4110	B/D	4.183328	80	
PRE220	4110	C	0.684923	74	
PRE220	4110	B/D	4.747539	80	
PRE220	4110	C	1.487466	74	
PRE220	4110	B/D	25.821548	80	
PRE220	4110	B/D	23.706858	80	
PRE220	4110	B/D	6.951773	80	
PRE220	4110	B/D	16.247047	80	
PRE220	4110	D	2.098403	80	
PRE220	8350	C	0.577273	86	
PRE220	8350	B/D	0.018894	89	85.9
PRE230	6460	B/D	0.167522	100	
PRE230	6210	B/D	1.53049	100	
PRE230	6210	B/D	0.017514	100	
PRE230	6210	D	14.469979	100	
PRE230	6430	B/D	0.199564	100	
PRE230	6430	B/D	4.560241	100	
PRE230	6430	B/D	1.392544	100	
PRE230	4110	B/D	27.489871	80	
PRE230	4110	C	1.427966	74	
PRE230	4110	B/D	9.499157	80	
PRE230	4110	B/D	9.241766	80	
PRE230	4110	C	3.37031	74	
PRE230	4110	B/D	10.105858	80	
PRE230	4110	D	6.141751	80	
PRE230	4110	B/D	11.279254	80	
PRE230	4110	D	0.018489	80	
PRE230	8350	C	0.128886	86	
PRE230	8350	B/D	0.200702	89	
PRE230	8350	B/D	0.016499	89	
PRE230	8350	C	0.22801	86	

Pre-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE230	5100	B/D	0.006631	100	
PRE230	5100	B/D	0.004221	100	
PRE230	5100	B/D	0.168379	100	
PRE230	5100	D	0.000598	100	
PRE230	5100	C	0.062706	100	
PRE230	5100	B/D	0.030862	100	
PRE230	5100	C	0.173193	100	
PRE230	5100	B/D	0.001726	100	84.2
PRE250	6210	B/D	0.818877	100	
PRE250	6210	D	1.42636	100	
PRE250	6430	B/D	0.132427	100	
PRE250	6430	D	1.250698	100	
PRE250	6210	B/D	0.280175	100	
PRE250	6210	D	0.910395	100	
PRE250	1900	B/D	0.000239	80	
PRE250	4110	B/D	8.482755	80	
PRE250	4110	D	2.852905	80	
PRE250	4110	C	3.543163	74	
PRE250	5100	B/D	0.000001	100	
PRE250	8350	B/D	0.112199	89	
PRE250	8350	C	0.003002	86	83.8
PRE260	4110	B/D	2.466644	80	
PRE260	4110	C	0.729992	74	
PRE260	4110	C	3.081241	74	
PRE260	8350	B/D	0.770809	89	
PRE260	8350	C	5.813974	86	
PRE260	8350	C	0.651586	86	81.7
PRE270	6460	B/D	1.001899	100	
PRE270	6460	D	0.693555	100	
PRE270	4110	B/D	5.685619	80	
PRE270	4110	B/D	0.950966	80	
PRE270	4110	D	1.396429	80	
PRE270	5100	B/D	0.010891	100	
PRE270	5100	D	0.010296	100	83.5
PRE280	6170	B/D	0.567363	100	
PRE280	6170	B/D	1.960225	100	
PRE280	6170	D	0.82291	100	
PRE280	3100	B/D	6.105088	80	
PRE280	3100	B/D	14.15638	80	
PRE280	3100	B/D	0.880307	80	
PRE280	3100	D	0.148558	80	
PRE280	3100	D	0.021103	80	
PRE280	6210	B/D	1.268319	100	
PRE280	6210	B/D	0.984599	100	
PRE280	6210	D	0.928723	100	
PRE280	4110	B/D	29.906616	80	
PRE280	4110	B/D	17.230913	80	
PRE280	4110	B/D	15.005179	80	

Pre-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE280	4110	D	0.504605	80	
PRE280	4110	C	9.117664	74	
PRE280	4110	D	3.025305	80	
PRE280	5100	B/D	0.00035	100	
PRE280	5100	B/D	0.004806	100	80.7
PRE300	1900	B/D	0.127341	80	
PRE300	1900	C	0.166797	74	
PRE300	1900	C	0.014126	74	
PRE300	5100	B/D	0.686288	100	
PRE300	5100	C	1.428148	100	
PRE300	5100	C	0.044248	100	97.1
PRE310	1900	B/D	42.294649	80	
PRE310	1900	C	0.112293	74	
PRE310	1900	C	10.532688	74	
PRE310	1900	C	0.709774	74	78.7
PRE330	1900	B/D	1.33104	80	
PRE330	1900	C	1.134972	74	
PRE330	5100	B/D	1.049279	100	
PRE330	5100	C	0.776558	100	86.9
PRE340	3300	B/D	0.003223	80	
PRE340	3300	C	0.006058	74	
PRE340	1900	C	0.000684	74	
PRE340	5100	B/D	0.518814	100	
PRE340	5100	C	0.477023	100	99.8
PRE350	3300	B/D	0.000016	80	
PRE350	5100	B/D	0.081174	100	
PRE350	5100	B/D	1.045734	100	100.0
PRE360	8310	B/D	0.329709	80	
PRE360	8310	C	0.494502	74	
PRE360	1900	B/D	2.254673	80	
PRE360	1900	B/D	3.983389	80	
PRE360	1900	C	67.487482	74	
PRE360	1900	B/D	0.048588	80	
PRE360	4110	B/D	5.567058	80	
PRE360	4110	B/D	3.137986	80	
PRE360	4110	C	0.059266	74	
PRE360	4110	C	0.820267	74	
PRE360	8350	C	0.339947	86	
PRE360	5100	C	0.004283	100	75.3
PRE370	3200	B/D	6.456361	80	
PRE370	6300	B/D	9.012078	100	
PRE370	6460	B/D	0.747893	100	
PRE370	6460	B/D	7.806455	100	
PRE370	6300	D	0.306625	100	
PRE370	6300	B/D	0.037585	100	
PRE370	6300	B/D	1.023945	100	
PRE370	6430	D	0.438032	100	
PRE370	6430	B/D	1.682946	100	

Pre-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE370	6430	B/D	1.509079	100	
PRE370	3200	B/D	0.592852	80	
PRE370	3300	B/D	7.967304	80	
PRE370	3300	B/D	1.057921	80	
PRE370	3300	B/D	0.424103	80	
PRE370	3300	C	1.512823	74	
PRE370	8310	B/D	1.272921	80	
PRE370	8310	B/D	1.845307	80	
PRE370	8310	B/D	0.496748	80	
PRE370	8310	C	2.967504	74	
PRE370	6210	B/D	0.195636	100	
PRE370	6210	D	15.041142	100	
PRE370	6210	B/D	2.079943	100	
PRE370	6210	B/D	0.101035	100	
PRE370	4110	B/D	27.572287	80	
PRE370	4110	D	7.542032	80	
PRE370	4110	B/D	12.366098	80	
PRE370	4110	C	0.047729	74	
PRE370	4110	B/D	19.844442	80	
PRE370	4110	B/D	8.604476	80	
PRE370	1900	B/D	9.563784	80	
PRE370	1900	B/D	2.684083	80	
PRE370	1900	C	7.822557	74	
PRE370	4110	B/D	0.587388	80	
PRE370	4110	C	0.007554	74	
PRE370	3200	B/D	2.494013	80	
PRE370	3200	B/D	0.031449	80	
PRE370	4110	B/D	0.432261	80	
PRE370	4110	B/D	0.793089	80	
PRE370	4110	C	0.590869	74	
PRE370	4110	B/D	0.098364	80	
PRE370	5100	B/D	0.00146	100	
PRE370	5100	B/D	0.005091	100	
PRE370	5100	C	0.002357	100	85.0
PRE400	8350	C	14.665931	86	
PRE400	5100	C	0.010031	100	86.0
PRE410	8350	C	33.110624	86	
PRE410	5100	C	0.012866	100	86.0

Appendix D: Post-Development CN Calculations

Post-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
A05	Landfill Side Slopes	C	3.781593	85	85.0
A10	Landfill Side Slopes	C	7.845837	85	85.0
A100	Landfill Side Slopes	B/D	0.251647	85	
A100	Landfill Side Slopes	C	4.327166	85	85.0
A110	Landfill Side Slopes	B/D	0.680144	85	
A110	Landfill Side Slopes	C	2.793269	85	85.0
A120	Landfill Side Slopes	B/D	0.058565	85	
A120	Landfill Side Slopes	C	3.432542	85	85.0
A20	Landfill Side Slopes	B/D	0.150895	85	
A20	Landfill Side Slopes	C	6.677039	85	85.0
A30	Landfill Side Slopes	B/D	3.308166	85	
A30	Landfill Side Slopes	C	2.682273	85	85.0
A40	Landfill Side Slopes	B/D	0.160496	85	
A40	Landfill Side Slopes	C	6.750515	85	85.0
A50	Landfill Side Slopes	C	6.589191	85	85.0
A60	Landfill Side Slopes	C	6.9778	85	85.0
A70	Landfill Side Slopes	C	7.567817	85	85.0
A80	Landfill Side Slopes	C	7.668058	85	85.0
A90	Landfill Side Slopes	C	6.889174	85	85.0
B10	Landfill Side Slopes	C	4.472431	85	85.0
B20	Landfill Side Slopes	C	7.598812	85	85.0
B30	Landfill Side Slopes	C	8.040879	85	85.0
B40	Landfill Side Slopes	C	3.619675	85	
B40	Landfill Side Slopes	B/D	0.220024	85	85.0
B50	Landfill Side Slopes	C	4.126115	85	
B50	Landfill Side Slopes	B/D	0.562347	85	85.0
B60	Landfill Side Slopes	C	1.819863	85	85.0
POND	4110	B/D	0.00007	80	
POND	5300	B/D	7.713351	100	
POND	5300	C	5.769296	100	
POND	5300	C	6.514761	100	
POND	8140	B/D	1.423447	93	
POND	8140	C	0.840142	92	
POND	8140	D	0.05846	93	
POND	8140	C	0.841883	92	99.0
PRE100	5100	C	1.554868	100	
PRE100	1900	C	0.037132	74	99.8
PRE105	5100	C	3.215	100	100.0
PRE115	5100	C	1.663	100	
PRE115	5100	B/D	0.956	100	
PRE115	5100	D	0.098	100	100.0
PRE120	4110	B/D	0.091821	80	
PRE120	5100	B/D	0.837279	100	
PRE120	5100	C	0.089498	100	
PRE120	8350	B/D	0.028091	89	
PRE120	8350	C	0.006875	86	98.9
PRE130	4110	B/D	0.017745	80	
PRE130	4110	D	0.000395	80	

Post-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE130	5100	B/D	0.580065	100	
PRE130	5100	C	0.710775	100	
PRE130	5100	D	0.005419	100	
PRE130	8140	B/D	0.000029	93	
PRE130	8140	C	0.00642	92	99.7
PRE140	4110	D	0.00023	80	
PRE140	5100	B/D	0.047615	100	
PRE140	5100	B/D	0.356994	100	
PRE140	5100	B/D	0.0184	100	
PRE140	5100	D	0.269565	100	100.0
PRE150	4110	C	0.139058	74	
PRE150	4110	C	0.011536	74	
PRE150	5100	C	1.842373	100	
PRE150	5100	B/D	0.054362	100	
PRE150	5100	C	0.498685	100	98.5
PRE160	4110	C	0.026748	74	
PRE160	4110	B/D	0.006594	80	
PRE160	4110	B/D	0.003257	80	
PRE160	4110	B/D	0.002588	80	
PRE160	5100	C	2.935605	100	
PRE160	5100	B/D	0.100382	100	
PRE160	5100	B/D	0.001666	100	
PRE160	5100	B/D	0.261453	100	
PRE160	5100	B/D	0.000922	100	99.7
PRE170	4110	B/D	0.095313	80	
PRE170	4110	B/D	0.32681	80	
PRE170	4110	D	0.055461	80	
PRE170	5100	B/D	0.012147	100	
PRE170	5100	B/D	0.281765	100	
PRE170	5100	B/D	1.21326	100	
PRE170	5100	D	0.101707	100	95.4
PRE180	4110	B/D	0.193044	80	
PRE180	4110	D	0.133674	80	
PRE180	5100	B/D	0.826913	100	
PRE180	5100	B/D	0.041122	100	
PRE180	5100	D	0.409406	100	95.9
PRE190	4110	B/D	0.247279	80	
PRE190	5100	B/D	0.653073	100	94.5
PRE200	4110	B/D	0.409063	80	
PRE200	5100	B/D	0.652822	100	92.3
PRE210	5300	C	4.0978	100	
PRE210	5300	B/D	0.437523	100	
PRE210	4110	C	1.321836	74	
PRE210	4110	B/D	0.295305	80	
PRE210	4110	C	0.249443	74	
PRE210	5100	C	0.002589	100	92.7
PRE220	6210	B/D	0.145363	100	
PRE220	6210	D	1.25056	100	

Post-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE220	6430	B/D	0.831226	100	
PRE220	6430	D	1.113553	100	
PRE220	6210	B/D	0.742034	100	
PRE220	6210	D	1.316216	100	
PRE220	6210	B/D	0.013526	100	
PRE220	6210	B/D	1.53725	100	
PRE220	6460	B/D	1.345059	100	
PRE220	6460	B/D	0.097223	100	
PRE220	6460	B/D	1.230597	100	
PRE220	3100	B/D	7.716539	80	
PRE220	3100	B/D	0.472656	80	
PRE220	3100	B/D	0.364512	80	
PRE220	3100	D	0.394386	80	
PRE220	6300	B/D	0.234956	100	
PRE220	6300	B/D	1.090514	100	
PRE220	6430	B/D	1.932467	100	
PRE220	6430	B/D	1.704442	100	
PRE220	6210	B/D	0.474674	100	
PRE220	6210	B/D	17.483604	100	
PRE220	6460	B/D	0.338867	100	
PRE220	6460	B/D	2.159467	100	
PRE220	6210	B/D	0.279476	100	
PRE220	6210	B/D	0.937281	100	
PRE220	6170	B/D	0.018637	100	
PRE220	6170	B/D	0.836737	100	
PRE220	6170	C	0.254667	100	
PRE220	6170	B/D	0.425502	100	
PRE220	6170	B/D	0.619989	100	
PRE220	3300	C	1.677443	74	
PRE220	3300	B/D	6.075223	80	
PRE220	3300	B/D	0.379558	80	
PRE220	8310	C	11.063427	74	
PRE220	8310	B/D	0.012081	80	
PRE220	8310	B/D	2.292829	80	
PRE220	8310	B/D	0.080084	80	
PRE220	4110	B/D	4.183286	80	
PRE220	4110	C	0.686575	74	
PRE220	4110	B/D	4.74754	80	
PRE220	4110	C	2.050677	74	
PRE220	4110	B/D	25.819382	80	
PRE220	4110	B/D	23.70686	80	
PRE220	4110	B/D	6.951774	80	
PRE220	4110	B/D	16.247048	80	
PRE220	4110	D	2.098404	80	
PRE220	1900	B/D	0.16061	80	
PRE220	1900	C	0.115251	74	
PRE220	1900	B/D	0.087605	80	85.9
PRE230	6460	B/D	0.167522	100	

Post-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE230	6210	B/D	1.53049	100	
PRE230	6210	B/D	0.017514	100	
PRE230	6210	D	14.46998	100	
PRE230	6430	B/D	0.199565	100	
PRE230	6430	B/D	4.560241	100	
PRE230	6430	B/D	1.392544	100	
PRE230	4110	B/D	27.487809	80	
PRE230	4110	C	1.55685	74	
PRE230	4110	B/D	9.722754	80	
PRE230	4110	B/D	9.258262	80	
PRE230	4110	C	3.598319	74	
PRE230	4110	B/D	10.105857	80	
PRE230	4110	D	6.14175	80	
PRE230	4110	B/D	11.279286	80	
PRE230	4110	D	0.018489	80	
PRE230	5100	C	0.062704	100	
PRE230	5100	B/D	0.030861	100	
PRE230	5100	C	0.173192	100	
PRE230	5100	B/D	0.001755	100	
PRE230	5100	B/D	0.006631	100	
PRE230	5100	B/D	0.00422	100	
PRE230	5100	B/D	0.16865	100	
PRE230	5100	D	0.000598	100	84.2
PRE250	6210	B/D	0.818877	100	
PRE250	6210	D	1.42636	100	
PRE250	6430	B/D	0.132426	100	
PRE250	6430	D	1.250698	100	
PRE250	6210	B/D	0.280176	100	
PRE250	6210	D	0.910395	100	
PRE250	1900	B/D	0.000014	80	
PRE250	4110	B/D	6.082398	80	
PRE250	4110	D	2.794445	80	
PRE250	4110	C	1.375389	74	
PRE250	5100	B/D	0.000001	100	
PRE250	8140	B/D	0.000121	93	
PRE250	8140	C	0.000025	92	85.8
PRE270	6460	B/D	1.001899	100	
PRE270	6460	D	0.693555	100	
PRE270	4110	B/D	3.813632	80	
PRE270	4110	B/D	0.95102	80	
PRE270	4110	D	1.39643	80	
PRE270	5100	B/D	0.011067	100	
PRE270	5100	D	0.010296	100	
PRE270	8140	B/D	0.000133	93	84.4
PRE280	6170	B/D	0.567363	100	
PRE280	6170	B/D	1.960225	100	
PRE280	6170	D	0.822909	100	
PRE280	3100	B/D	6.105088	80	

Post-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE280	3100	B/D	14.156381	80	
PRE280	3100	B/D	0.880307	80	
PRE280	3100	D	0.148558	80	
PRE280	3100	D	0.021103	80	
PRE280	6210	B/D	1.268319	100	
PRE280	6210	B/D	0.984599	100	
PRE280	6210	D	0.928723	100	
PRE280	4110	B/D	28.455122	80	
PRE280	4110	B/D	17.230858	80	
PRE280	4110	B/D	15.005178	80	
PRE280	4110	D	0.504604	80	
PRE280	4110	C	7.661669	74	
PRE280	4110	D	3.025306	80	
PRE280	5100	B/D	0.000174	100	
PRE280	5100	B/D	0.004806	100	80.9
PRE300	5100	B/D	0.686288	100	
PRE300	5100	C	1.428149	100	
PRE300	5100	C	0.044248	100	
PRE300	1900	C	0.03101	74	
PRE300	1900	C	0.003923	74	
PRE300	1900	B/D	0.127342	80	
PRE300	1900	C	0.119189	74	97.3
PRE310	1900	C	0.016598	74	
PRE310	1900	C	0.012781	74	
PRE310	1900	B/D	42.294649	80	
PRE310	1900	C	0.112293	74	
PRE310	1900	C	10.532688	74	
PRE310	1900	C	0.702775	74	78.7
PRE330	5100	B/D	1.049279	100	
PRE330	5100	C	0.776556	100	
PRE330	1900	B/D	1.331041	80	
PRE330	1900	C	1.134972	74	86.9
PRE340	3300	C	0	74	
PRE340	1900	C	0.000413	74	
PRE340	5100	B/D	0.518815	100	
PRE340	5100	C	0.477022	100	
PRE340	3300	B/D	0.003223	80	
PRE340	3300	C	0.006058	74	
PRE340	1900	C	0.00027	74	99.8
PRE350	5100	B/D	0.081174	100	
PRE350	5100	B/D	1.045736	100	
PRE350	3300	B/D	0.000016	80	100.0
PRE360	8310	B/D	0.3299	80	
PRE360	8310	C	0.494502	74	
PRE360	4110	B/D	5.567059	80	
PRE360	4110	B/D	3.138027	80	
PRE360	4110	C	0.059266	74	
PRE360	4110	C	1.460942	74	

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE360	1900	B/D	2.254673	80	
PRE360	1900	B/D	0.363834	80	
PRE360	1900	C	4.233731	74	
PRE360	1900	B/D	0.048786	80	78.7
PRE370	3200	B/D	6.456364	80	
PRE370	6300	B/D	9.012077	100	
PRE370	6460	B/D	0.747893	100	
PRE370	6460	B/D	7.806455	100	
PRE370	6300	D	0.306626	100	
PRE370	6300	B/D	0.037585	100	
PRE370	6300	B/D	1.023945	100	
PRE370	6430	D	0.438032	100	
PRE370	6430	B/D	1.682946	100	
PRE370	6430	B/D	1.509079	100	
PRE370	3200	B/D	0.592852	80	
PRE370	3300	B/D	6.963976	80	
PRE370	3300	B/D	1.057921	80	
PRE370	3300	B/D	0.065531	80	
PRE370	3300	C	0.744436	74	
PRE370	8310	B/D	1.27273	80	
PRE370	8310	B/D	1.845303	80	
PRE370	8310	B/D	0.496747	80	
PRE370	8310	C	2.96493	74	
PRE370	6210	B/D	0.195637	100	
PRE370	6210	D	15.041142	100	
PRE370	6210	B/D	2.079943	100	
PRE370	6210	B/D	0.101035	100	
PRE370	4110	B/D	23.628359	80	
PRE370	4110	D	4.497538	80	
PRE370	4110	B/D	6.401515	80	
PRE370	4110	B/D	19.844445	80	
PRE370	4110	B/D	8.604477	80	
PRE370	1900	B/D	0.897224	80	
PRE370	1900	B/D	0.336319	80	
PRE370	1900	C	7.751868	74	
PRE370	4110	B/D	0.587387	80	
PRE370	4110	C	0.007554	74	
PRE370	3200	B/D	2.494009	80	
PRE370	3200	B/D	0.031449	80	
PRE370	4110	B/D	0.432261	80	
PRE370	4110	B/D	0.793089	80	
PRE370	4110	C	0.589217	74	
PRE370	4110	B/D	0.091517	80	
PRE370	5100	B/D	0.00146	100	
PRE370	5100	B/D	0.00509	100	
PRE370	5100	C	0.002357	100	
PRE370	4110	B/D	3.943928	80	
PRE370	4110	D	3.044492	80	

Post-Development CN Calculations

BASINS_ID	LAND_USE	SOIL_TYPE	AREA	CN	Wght CN
PRE370	4110	B/D	5.964583	80	
PRE370	4110	C	0.047729	74	
PRE370	3300	B/D	1.003328	80	
PRE370	3300	B/D	0.358572	80	
PRE370	3300	C	0.768387	74	
PRE370	1900	B/D	8.66656	80	
PRE370	1900	B/D	2.347762	80	
PRE370	1900	C	0.07069	74	85.0
TOP10	Landfill Top	C	9.297894	80	80.0
TOP20	Landfill Top	C	28.353395	80	80.0
TOP30	Landfill Top	C	12.777302	80	80.0
TOP40	Landfill Top	C	39.132328	80	80.0
TOP50	Landfill Top	C	5.772421	80	80.0
TOP60	Landfill Top	C	18.686543	80	80.0
TOP70	Landfill Top	C	5.058031	80	80.0
TOP80	Landfill Top	C	21.78639	80	80.0

Appendix E: Pre-Development TC Calculations

Project	Water Resources Engineer	Date	Revision
10-0249	SG	November 1, 2011	

CASE #	PRE110	PRE140	PRE220	PRE230	PRE250	PRE260	PRE270	PRE280	PRE310	PRE360	PRE370	PRE400	PRE410
SHEET FLOW CALCULATIONS (LEN <= 300-FT)													
Surface Description	ss-Range Sl	ss-Range Sl	Woods Light	Woods Light	Woods Light	Woods Light	Woods Light	Woods Light	ss-Range Sl	ss-Range Sl	Woods Dens	ss-Range Sl	ss-Range Sl
Manning's Roughness Coefficient	0.15	0.15	0.4	0.4	0.4	0.4	0.4	0.4	0.15	0.15	0.8	0.15	0.15
Upstream Invert Elevation, ft	83.15	150.50	85.80	88.50	89.97	89.20	88.00	90.05	82.30	83.00	81.00	150.50	149.50
Downstream Invert Elevation, ft	83.00	148.00	85.00	88.00	88.90	89.00	87.00	89.97	82.20	82.80	80.00	148.00	146.00
Flow Length, ft	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
2-yr Rain	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40
Sheet Flow Travel Time, min	23.55	7.64	26.42	31.88	23.52	46.00	24.16	66.36	27.69	20.99	42.07	7.64	6.68
SHALLOW CONCENTRATED FLOW CALCULATIONS													
Surface Description	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved
Upstream Invert Elevation, ft	83.00	148.00	85.00	88.00	88.90	89.00	87.00	89.97	82.20	82.80	80.00	148.00	146.00
Downstream Invert Elevation, ft	82.00	89.00	77.00	76.00	87.00	87.00	84.00	82.30	79.00	79.00	74.00	89.00	89.00
Flow Length, ft	1905.00	633.00	1261.00	3623.00	470.00	470.00	265.00	2302.00	2086.00	2613.00	1307.00	633.00	531.00
Shallow Concentrated Flow Travel Time, min	85.89	2.14	16.35	65.03	7.64	7.44	2.57	41.20	55.02	70.78	19.93	2.14	1.67
CHANNEL FLOW CALCULATIONS													
Manning's Roughness Coefficient													
Upstream Invert Elevation, ft													
Downstream Invert Elevation, ft													
Flow Length, ft													
Channel Side Slopes, ft/ft													
Channel Bottom Width, ft													
Depth of Flow, ft													
Channel Flow Travel Time, min													
TOTAL FLOW TRAVEL TIME													
Total Flow Travel Time, min	109.44	9.78	42.77	96.91	31.15	53.44	26.74	107.56	82.71	91.77	62.00	9.78	8.35

Appendix F: Post-Development TC Calculations

Project	Water Resources Engineer	Date	Revision
10-0249	SG	November 1, 2011	

CASE #	TOP10	TOP20	TOP30	TOP40	TOP50	TOP60	TOP70	TOP80		
SHEET FLOW CALCULATIONS (LEN <= 300-FT)										
Surface Description	ss-Range Sh	ss-Range Sh	ss-Range Sh	ss-Range Sh	ss-Range Sh	ss-Range Sh	ss-Range Sh	ss-Range Short		
Manning's Roughness Coefficient	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15		
Upstream Invert Elevation, ft	175.00	175.00	175.00	175.00	175.00	175.00	175.00	175.00		
Downstream Invert Elevation, ft	174.00	174.00	174.00	174.00	174.00	174.00	174.00	174.00		
Flow Length, ft	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00		
2-yr Rain	4.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40		
Sheet Flow Travel Time, min	11.03	11.03	11.03	11.03	11.03	11.03	11.03	11.03		
SHALLOW CONCENTRATED FLOW CALCULATIONS										
Surface Description	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved	Unpaved		
Upstream Invert Elevation, ft	174.00	174.00	174.00	174.00	174.00	174.00	174.00	174.00		
Downstream Invert Elevation, ft	169.00	169.00	169.00	169.00	169.00	169.00	169.00	169.00		
Flow Length, ft	900.00	1300.00	1350.00	1650.00	500.00	1000.00	500.00	1150.00		
Shallow Concentrated Flow Travel Time, min	12.47	21.65	22.91	30.96	5.16	14.61	5.16	18.02		
CHANNEL FLOW CALCULATIONS										
Manning's Roughness Coefficient										
Upstream Invert Elevation, ft										
Downstream Invert Elevation, ft										
Flow Length, ft										
Channel Side Slopes, ft/ft										
Channel Bottom Width, ft										
Depth of Flow, ft										
Channel Flow Travel Time, min										
TOTAL FLOW TRAVEL TIME										
Total Flow Travel Time, min	23.50	32.68	33.94	41.99	16.19	25.63	16.19	29.04		

Project	Water Resources Engineer	Date	Revision
10-0249	JD	November 1, 2011	

CASE #	PRE110	PRE220	PRE230	PRE250	PRE260	PRE270	PRE280	PRE310	PRE360	PRE370
SHEET FLOW CALCULATIONS (LEN <= 300-FT)										
Surface Description		Woods Light	Woods Light	Woods Light		Woods Light	Woods Light	ss-Range Sl	ss-Range Sl	Woods Dense
Manning's Roughness Coefficient		0.4	0.4	0.4		0.4	0.4	0.15	0.15	0.8
Upstream Invert Elevation, ft		85.80	88.50	89.97		86.85	90.05	82.30	89.96	81.00
Downstream Invert Elevation, ft		85.00	88.00	88.90		86.06	89.97	82.20	89.00	80.00
Flow Length, ft		100.00	100.00	100.00		100.00	100.00	100.00	100.00	100.00
2-yr Rain		4.40	4.40	4.40		4.40	4.40	4.40	4.40	4.40
Sheet Flow Travel Time, min		26.42	31.88	23.52		26.55	66.36	27.69	11.21	42.07
SHALLOW CONCENTRATED FLOW CALCULATIONS										
Surface Description		Unpaved	Unpaved	Unpaved		Unpaved	Unpaved	Unpaved	Unpaved	Unpaved
Upstream Invert Elevation, ft		85.00	88.00	88.90		86.06	89.97	82.20	89.00	80.00
Downstream Invert Elevation, ft		77.00	76.00	87.00		85.00	82.30	79.00	79.00	74.00
Flow Length, ft		1261.00	3623.00	470.00		164.00	2302.00	2086.00	1520.00	1307.00
Shallow Concentrated Flow Travel Time, min		16.35	65.03	7.64		2.11	41.20	55.02	19.36	19.93
CHANNEL FLOW CALCULATIONS										
Manning's Roughness Coefficient										
Upstream Invert Elevation, ft										
Downstream Invert Elevation, ft										
Flow Length, ft										
Channel Side Slopes, ft/ft										
Channel Bottom Width, ft										
Depth of Flow, ft										
Channel Flow Travel Time, min										
TOTAL FLOW TRAVEL TIME										
Total Flow Travel Time, min		42.77	96.91	31.15		28.66	107.56	82.71	30.56	62.00

Appendix G: ICPR Input and Output Files, Pre-Development

```
================================================================================
==== Basins ====================================================================
================================================================================

         Name: PRE100                  Node: NPRE100               Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh256                   Peaking Factor: 256.0
          Rainfall File:                  Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
             Area(ac): 1.592                  Time Shift(hrs): 0.00
         Curve Number: 99.79              Max Allowable Q(cfs): 0.000
              DCIA(%): 0.00



--------------------------------------------------------------------------------
         Name: PRE105                  Node: NPRE105               Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh256                   Peaking Factor: 256.0
          Rainfall File:                  Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
             Area(ac): 3.216                  Time Shift(hrs): 0.00
         Curve Number: 100.00             Max Allowable Q(cfs): 999999.000
              DCIA(%): 0.00



--------------------------------------------------------------------------------
         Name: PRE110                  Node: NPRE110               Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh256                   Peaking Factor: 256.0
          Rainfall File:                  Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000              Time of Conc(min): 109.00
             Area(ac): 129.460                Time Shift(hrs): 0.00
         Curve Number: 78.67              Max Allowable Q(cfs): 0.000
              DCIA(%): 0.00



--------------------------------------------------------------------------------
         Name: PRE115                  Node: NPRE115               Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh256                   Peaking Factor: 256.0
          Rainfall File:                  Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
             Area(ac): 2.717                  Time Shift(hrs): 0.00
         Curve Number: 100.00             Max Allowable Q(cfs): 999999.000
              DCIA(%): 0.00



--------------------------------------------------------------------------------
         Name: PRE120                  Node: NPRE120               Status: Onsite
        Group: BASE                    Type: SCS Unit Hydrograph CN

        Unit Hydrograph: Uh256                   Peaking Factor: 256.0
          Rainfall File:                  Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
             Area(ac): 1.054                  Time Shift(hrs): 0.00
         Curve Number: 98.78              Max Allowable Q(cfs): 0.000
```

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE130                  Node: NPRE130               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 6.00
            Area(ac): 3.864                Time Shift(hrs): 0.00
        Curve Number: 90.84            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE140                  Node: NPRE140               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 10.00
            Area(ac): 11.435               Time Shift(hrs): 0.00
        Curve Number: 86.97            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE150                  Node: NPRE150               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 6.00
            Area(ac): 2.879                Time Shift(hrs): 0.00
        Curve Number: 99.17            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE160                  Node: NPRE160               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 6.00
            Area(ac): 10.856               Time Shift(hrs): 0.00
        Curve Number: 89.83            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE170                  Node: NPRE170               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 6.00
            Area(ac): 2.087                Time Shift(hrs): 0.00
        Curve Number: 95.42            Max Allowable Q(cfs): 0.000
```

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE180                  Node: NPRE180               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 1.604                 Time Shift(hrs): 0.00
        Curve Number: 95.93             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE190                  Node: NPRE190               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 0.903                 Time Shift(hrs): 0.00
        Curve Number: 94.50             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE200                  Node: NPRE200               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 1.059                 Time Shift(hrs): 0.00
        Curve Number: 92.29             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE210                  Node: NPRE210               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 6.399                 Time Shift(hrs): 0.00
        Curve Number: 94.49             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE220                  Node: NPRE220               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 43.00
            Area(ac): 155.829               Time Shift(hrs): 0.00
        Curve Number: 85.92             Max Allowable Q(cfs): 0.000
```

DCIA(%): 0.00

Name: PRE230 Node: NPRE230 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 97.00
Area(ac): 101.935 Time Shift(hrs): 0.00
Curve Number: 84.23 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: PRE250 Node: NPRE250 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 31.00
Area(ac): 19.813 Time Shift(hrs): 0.00
Curve Number: 83.84 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: PRE260 Node: NPRE260 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 53.00
Area(ac): 13.514 Time Shift(hrs): 0.00
Curve Number: 81.69 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: PRE270 Node: NPRE270 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 27.00
Area(ac): 9.750 Time Shift(hrs): 0.00
Curve Number: 83.52 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: PRE280 Node: NPRE280 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 107.00
Area(ac): 102.639 Time Shift(hrs): 0.00
Curve Number: 80.74 Max Allowable Q(cfs): 0.000

DCIA(%): 0.00

Name: PRE300 Node: NPRE300 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 6.00
Area(ac): 2.467 Time Shift(hrs): 0.00
Curve Number: 97.06 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: PRE310 Node: NPRE310 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 83.00
Area(ac): 53.649 Time Shift(hrs): 0.00
Curve Number: 78.73 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: PRE330 Node: NPRE330 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 6.00
Area(ac): 4.292 Time Shift(hrs): 0.00
Curve Number: 86.92 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: PRE340 Node: NPRE340 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 6.00
Area(ac): 1.006 Time Shift(hrs): 0.00
Curve Number: 99.76 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: PRE350 Node: NPRE350 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 6.00
Area(ac): 1.127 Time Shift(hrs): 0.00
Curve Number: 100.00 Max Allowable Q(cfs): 0.000

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE360                  Node: NPRE360               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 92.00
            Area(ac): 84.527                 Time Shift(hrs): 0.00
        Curve Number: 75.30              Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE370                  Node: NPRE370               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 62.00
            Area(ac): 165.668                Time Shift(hrs): 0.00
        Curve Number: 85.01              Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE400                  Node: NPRE400               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 10.00
            Area(ac): 14.676                 Time Shift(hrs): 0.00
        Curve Number: 86.01              Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE410                  Node: NPRE410               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 8.00
            Area(ac): 33.123                 Time Shift(hrs): 0.00
        Curve Number: 86.01              Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


===============================================================================================
==== Nodes ====================================================================================
===============================================================================================

     Name: NPRE100            Base Flow(cfs): 0.000         Init Stage(ft): 78.870
    Group: BASE                                             Warn Stage(ft): 85.600
     Type: Stage/Area
```

Stage(ft)	Area(ac)

Name: NPRE105 Base Flow(cfs): 0.000 Init Stage(ft): 81.500
Group: BASE Warn Stage(ft): 85.800
Type: Stage/Area

Stage(ft)	Area(ac)

Name: NPRE110 Base Flow(cfs): 0.000 Init Stage(ft): 80.300
Group: BASE Warn Stage(ft): 81.500
Type: Stage/Area

Stage(ft)	Area(ac)
80.300	1.0500
81.000	1.5800
82.000	17.4800
83.000	96.0300
84.000	105.8200
85.000	107.3900
86.000	108.2600
87.000	109.1300
88.000	109.6400
89.000	110.0300
90.000	110.4100
91.000	110.7700
92.000	111.1300
93.000	111.4700
94.000	111.8100
95.000	112.1600
96.000	112.4900
97.000	112.8100
98.000	113.1300
99.000	113.4500
100.000	113.7800
101.000	114.0900
102.000	114.3800
103.000	114.6900
104.000	115.0600
105.000	115.4000
106.000	115.6900
107.000	115.9800
108.000	116.2500
109.000	116.5100
110.000	116.7800
111.000	117.0400
112.000	117.3000
113.000	117.5600
114.000	117.8200
115.000	118.0800
116.000	118.3400
117.000	118.6000
118.000	118.9200
119.000	119.3100
120.000	119.5900
121.000	119.8200

```
        122.000        120.0600
        123.000        120.2900
        124.000        120.5300
        125.000        120.7600
        126.000        121.0000
        127.000        121.2300
        128.000        121.4700
        129.000        121.7000
        130.000        121.9300
        131.000        122.1600
        132.000        122.3800
        133.000        122.6000
        134.000        122.8200
        135.000        123.0500
        136.000        123.2700
        137.000        123.5000
        138.000        123.7300
        139.000        123.9500
        140.000        124.1800
        141.000        124.4200
        142.000        124.6600
        143.000        124.9100
        144.000        125.1700
        145.000        125.5200
        146.000        126.0800
        147.000        126.4800
        148.000        126.7400
        149.000        127.0000
        150.000        127.2900
        151.000        127.4900
        152.000        127.5600
        153.000        127.6400
        154.000        127.6900
        155.000        127.7600
        155.090        127.7800

-------------------------------------------------------------------------------------------
      Name: NPRE115             Base Flow(cfs): 0.000          Init Stage(ft): 80.650
     Group: BASE                                              Warn Stage(ft): 86.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE120             Base Flow(cfs): 0.000          Init Stage(ft): 80.910
     Group: BASE                                              Warn Stage(ft): 85.700
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE130             Base Flow(cfs): 0.000          Init Stage(ft): 80.100
     Group: BASE                                              Warn Stage(ft): 85.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
```

```
--------------------------------------------------------------------------------------------
      Name: NPRE140             Base Flow(cfs): 0.000         Init Stage(ft): 77.830
     Group: BASE                                             Warn Stage(ft): 85.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
-------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE150             Base Flow(cfs): 0.000         Init Stage(ft): 82.600
     Group: BASE                                             Warn Stage(ft): 86.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
-------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE160             Base Flow(cfs): 0.000         Init Stage(ft): 77.050
     Group: BASE                                             Warn Stage(ft): 83.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
-------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE170             Base Flow(cfs): 0.000         Init Stage(ft): 77.440
     Group: BASE                                             Warn Stage(ft): 81.400
      Type: Stage/Area


      Stage(ft)        Area(ac)
-------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE180             Base Flow(cfs): 0.000         Init Stage(ft): 77.000
     Group: BASE                                             Warn Stage(ft): 80.200
      Type: Stage/Area


      Stage(ft)        Area(ac)
-------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE190             Base Flow(cfs): 0.000         Init Stage(ft): 77.000
     Group: BASE                                             Warn Stage(ft): 79.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
-------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE200             Base Flow(cfs): 0.000         Init Stage(ft): 77.000
     Group: BASE                                             Warn Stage(ft): 77.000
      Type: Stage/Area
```

Stage(ft)	Area(ac)

Name: NPRE210 Base Flow(cfs): 0.000 Init Stage(ft): 78.500
Group: BASE Warn Stage(ft): 83.500
Type: Stage/Area

Stage(ft)	Area(ac)
78.480	0.0100
81.580	3.9900
82.000	4.4000
83.000	4.5400
83.500	4.8000
84.000	4.8000

Name: NPRE220 Base Flow(cfs): 0.000 Init Stage(ft): 77.000
Group: BASE Warn Stage(ft): 86.000
Type: Stage/Area

Stage(ft)	Area(ac)
75.390	0.0100
76.000	5.2300
77.000	27.9300
78.000	64.2400
79.000	83.2400
80.000	107.7800
81.000	120.5900
82.000	129.3000
83.000	135.4500
84.000	141.7500
85.000	146.0900
86.000	149.3000
87.000	152.0600
88.000	154.5500
89.000	155.6900
90.000	155.7400
91.000	155.7800
92.000	155.8300
93.000	155.8300

Name: NPRE230 Base Flow(cfs): 0.000 Init Stage(ft): 77.000
Group: BASE Warn Stage(ft): 77.000
Type: Stage/Area

Stage(ft)	Area(ac)
74.170	0.0100
75.000	0.4300
76.000	7.4400
77.000	19.2300
78.000	33.0400

79.000	45.3200
80.000	50.1900
81.000	58.2600
82.000	72.6300
83.000	81.9700
84.000	89.7100
85.000	92.2400
86.000	95.1800
87.000	99.0500
88.000	101.4100
89.000	101.9300

Name: NPRE250 Base Flow(cfs): 0.000 Init Stage(ft): 86.000
Group: BASE Warn Stage(ft): 86.000
Type: Stage/Area

Stage(ft)	Area(ac)
86.000	1.2000
87.000	4.7700
88.000	7.7900
89.000	14.7200
90.000	18.2500
90.970	19.8100

Name: NPRE260 Base Flow(cfs): 0.000 Init Stage(ft): 88.000
Group: BASE Warn Stage(ft): 88.000
Type: Stage/Area

Stage(ft)	Area(ac)
87.000	0.2300
88.000	4.0500
89.000	10.6400
90.000	12.6200
91.000	12.7700
92.000	13.2000
93.000	13.4900
94.000	13.5000
95.000	13.5100
96.000	13.5100

Name: NPRE270 Base Flow(cfs): 0.000 Init Stage(ft): 84.800
Group: BASE Warn Stage(ft): 84.800
Type: Stage/Area

Stage(ft)	Area(ac)
84.310	0.0100
85.000	5.6300
86.000	7.2600
87.000	9.0000
88.000	9.7400
89.000	9.7500
90.000	9.7500
91.000	9.7500

92.000	9.7500

Name: NPRE280 Base Flow(cfs): 0.000 Init Stage(ft): 81.400
Group: BASE Warn Stage(ft): 81.400
Type: Stage/Area

Stage(ft)	Area(ac)
80.000	0.0100
81.000	1.8700
82.000	17.8300
83.000	43.9300
84.000	72.9400
85.000	81.6900
86.000	84.5200
87.000	86.9900
88.000	89.6800
89.000	93.5400
90.000	97.6000
90.990	102.6400

Name: NPRE300 Base Flow(cfs): 0.000 Init Stage(ft): 78.810
Group: BASE Warn Stage(ft): 83.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: NPRE310 Base Flow(cfs): 0.000 Init Stage(ft): 76.590
Group: BASE Warn Stage(ft): 80.900
Type: Stage/Area

Stage(ft)	Area(ac)
77.660	0.0100
78.000	0.0200
79.000	1.2600
80.000	7.4200
81.000	17.3900
82.000	33.0500
83.000	49.4100
84.000	51.7100
85.000	52.1900
86.000	52.6200
87.000	52.8000
88.000	53.1000
89.000	53.6000
90.000	53.6200
91.000	53.6300
92.000	53.6300
93.000	53.6300
94.000	53.6300
94.950	53.6500

Name: NPRE330 Base Flow(cfs): 0.000 Init Stage(ft): 76.000

```
     Group: BASE                                            Warn Stage(ft): 80.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE340             Base Flow(cfs): 0.000         Init Stage(ft): 76.000
     Group: BASE                                            Warn Stage(ft): 78.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE350             Base Flow(cfs): 0.000         Init Stage(ft): 76.000
     Group: BASE                                            Warn Stage(ft): 76.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE360             Base Flow(cfs): 0.000         Init Stage(ft): 76.000
     Group: BASE                                            Warn Stage(ft): 79.600
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
         77.000          0.0100
         78.000          0.1000
         79.000          1.0700
         80.000          4.7000
         81.000         22.5700
         82.000         49.8500
         83.000         71.0500
         84.000         76.6700
         85.000         79.4900
         86.000         82.5500
         87.000         83.0500
         88.000         83.5500
         89.000         83.9400
         90.000         83.9900
         91.000         84.0300
         92.000         84.0800

-------------------------------------------------------------------------------------------
      Name: NPRE370             Base Flow(cfs): 0.000         Init Stage(ft): 76.000
     Group: BASE                                            Warn Stage(ft): 76.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
         72.650          0.0100
         73.000          1.1800
```

74.000	40.2600
75.000	74.6300
76.000	93.7100
77.000	110.8100
78.000	127.3500
79.000	139.7100
80.000	148.5900
81.000	157.6700
82.000	162.9500
83.000	164.9000
84.000	165.6200
85.000	165.6400
86.000	165.6500
87.000	165.6600
88.000	165.6700
89.000	165.6700
90.000	165.6700

Name: NPRE400 Base Flow(cfs): 0.000 Init Stage(ft): 87.000
Group: BASE Warn Stage(ft): 88.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: NPRE410 Base Flow(cfs): 0.000 Init Stage(ft): 79.090
Group: BASE Warn Stage(ft): 88.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: TPRE240 Base Flow(cfs): 0.000 Init Stage(ft): 77.000
Group: BASE Warn Stage(ft): 77.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	77.000
999.00	77.000

Name: TPRE380 Base Flow(cfs): 0.000 Init Stage(ft): 76.000
Group: BASE Warn Stage(ft): 76.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	76.000
999.00	76.000

Name: TW Base Flow(cfs): 0.000 Init Stage(ft): 71.000
Group: BASE Warn Stage(ft): 71.000

Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	71.000
999.00	71.000

==========
==== Cross Sections ==========
==========

Name: XPRE230 Group: BASE
Encroachment: No

Station(ft)	Elevation(ft)	Manning's N
0.000	78.500	0.000000
430.000	78.500	0.000000
430.000	77.500	0.000000
485.000	77.500	0.000000
485.000	78.500	0.000000
920.000	78.500	0.000000

==========
==== Pipes ==========
==========

Name: RPRE100A From Node: NPRE100 Length(ft): 75.00
Group: BASE To Node: NPRE300 Count: 1
Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Most Restrictive
Span(in):	18.00	18.00	Flow:	Both
Rise(in):	18.00	18.00	Entrance Loss Coef:	0.50
Invert(ft):	78.970	78.970	Exit Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting

Name: RPRE120 From Node: NPRE120 Length(ft): 42.00
Group: BASE To Node: NPRE130 Count: 1
Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Most Restrictive
Span(in):	18.00	18.00	Flow:	Both
Rise(in):	18.00	18.00	Entrance Loss Coef:	0.50
Invert(ft):	80.910	80.910	Exit Loss Coef:	0.00
Manning's N:	0.012000	0.012000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dn
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting

```
         Name: RPRE140             From Node: NPRE140           Length(ft): 50.00
        Group: BASE                  To Node: NPRE160                Count: 2
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                            Flow: Both
     Span(in): 36.00          36.00                     Entrance Loss Coef: 0.90
     Rise(in): 36.00          36.00                         Exit Loss Coef: 0.00
   Invert(ft): 78.520         78.520                        Bend Loss Coef: 0.00
  Manning's N: 0.024000       0.024000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                     Stabilizer Option: None
```

Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting

```
         Name: RPRE160             From Node: NPRE160           Length(ft): 40.00
        Group: BASE                  To Node: NPRE170                Count: 2
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                            Flow: Both
     Span(in): 36.00          36.00                     Entrance Loss Coef: 0.90
     Rise(in): 36.00          36.00                         Exit Loss Coef: 0.00
   Invert(ft): 77.220         77.220                        Bend Loss Coef: 0.00
  Manning's N: 0.024000       0.024000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                     Stabilizer Option: None
```

Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting

```
         Name: RPRE180             From Node: NPRE180           Length(ft): 16.00
        Group: BASE                  To Node: NPRE190                Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                            Flow: Both
     Span(in): 24.00          24.00                     Entrance Loss Coef: 0.50
     Rise(in): 24.00          24.00                         Exit Loss Coef: 0.00
```

```
   Invert(ft): 75.770        75.770                    Bend Loss Coef: 0.00
  Manning's N: 0.012000      0.012000                Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000         0.000                    Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000         0.000                  Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting



-------------------------------------------------------------------------------------------------
         Name: RPRE210             From Node: NPRE210           Length(ft): 4230.00
        Group: BASE                  To Node: TW                     Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                        Flow: Both
     Span(in): 24.00          24.00                     Entrance Loss Coef: 0.50
     Rise(in): 24.00          24.00                         Exit Loss Coef: 1.00
   Invert(ft): 78.500         71.000                        Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

From old model

-------------------------------------------------------------------------------------------------
         Name: RPRE220             From Node: NPRE220           Length(ft): 80.00
        Group: BASE                  To Node: NPRE230                Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Rectangular    Rectangular                     Flow: Both
     Span(in): 360.00         360.00                    Entrance Loss Coef: 0.50
     Rise(in): 60.00          60.00                         Exit Loss Coef: 0.00
   Invert(ft): 76.000         76.000                        Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares



-------------------------------------------------------------------------------------------------
         Name: RPRE310             From Node: NPRE310           Length(ft): 80.00
        Group: BASE                  To Node: NPRE330                Count: 1
                                                          Friction Equation: Automatic
```

```
              UPSTREAM       DOWNSTREAM               Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                              Flow: Both
     Span(in): 24.00          24.00                  Entrance Loss Coef: 0.90
     Rise(in): 24.00          24.00                      Exit Loss Coef: 0.00
   Invert(ft): 76.590         76.590                     Bend Loss Coef: 0.00
  Manning's N: 0.024000       0.024000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting



-------------------------------------------------------------------------------------------------
         Name: RPRE330             From Node: NPRE330           Length(ft): 25.00
        Group: BASE                  To Node: NPRE340                Count: 2
                                                             Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM               Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                              Flow: Both
     Span(in): 36.00          36.00                  Entrance Loss Coef: 0.90
     Rise(in): 36.00          36.00                      Exit Loss Coef: 0.00
   Invert(ft): 74.780         74.780                     Bend Loss Coef: 0.00
  Manning's N: 0.024000       0.024000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting



-------------------------------------------------------------------------------------------------
         Name: RPRE360             From Node: NPRE360           Length(ft): 55.00
        Group: BASE                  To Node: NPRE370                Count: 3
                                                             Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM               Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                              Flow: Both
     Span(in): 24.00          24.00                  Entrance Loss Coef: 0.50
     Rise(in): 24.00          24.00                      Exit Loss Coef: 0.00
   Invert(ft): 75.980         75.980                     Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting
```

```
-------------------------------------------------------------------------------------------------
         Name: RPRE370             From Node: NPRE370           Length(ft): 120.00
        Group: BASE                  To Node: TPRE380                Count: 3
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                 Solution Algorithm: Most Restrictive
     Geometry: Rectangular    Rectangular                              Flow: Both
     Span(in): 96.00          96.00                      Entrance Loss Coef: 0.50
     Rise(in): 36.00          36.00                          Exit Loss Coef: 0.00
   Invert(ft): 74.250         74.250                         Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                     Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                          Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                       Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares



-------------------------------------------------------------------------------------------------
         Name: RPRE410A            From Node: NPRE410           Length(ft): 108.00
        Group: BASE                  To Node: NPRE210                Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                 Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                                 Flow: Both
     Span(in): 30.00          30.00                      Entrance Loss Coef: 0.50
     Rise(in): 30.00          30.00                          Exit Loss Coef: 1.00
   Invert(ft): 79.090         78.480                         Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                     Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                          Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                       Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



-------------------------------------------------------------------------------------------------
         Name: RPRE410B            From Node: NPRE410           Length(ft): 108.00
        Group: BASE                  To Node: NPRE210                Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                 Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                                 Flow: Both
     Span(in): 30.00          30.00                      Entrance Loss Coef: 0.50
     Rise(in): 30.00          30.00                          Exit Loss Coef: 1.00
   Invert(ft): 79.210         78.310                         Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                     Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                          Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                       Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
```

Circular Concrete: Square edge w/ headwall

==========
==== Channels ==========
==========

```
         Name: RPRE100             From Node: NPRE100           Length(ft): 2161.00
        Group: BASE                  To Node: NPRE105                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
   Invert(ft): 78.870         81.500                                Flow: Both
TClpInitZ(ft): 9999.000       9999.000                Contraction Coef: 0.000
  Manning's N: 0.035000       0.035000                  Expansion Coef: 0.000
 Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
    Main XSec:                                        Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                         Inlet Ctrl Spec: Use dn
    Aux XSec1:                                       Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 20.000         20.000
 LtSdSlp(h/v): 3.00           3.00
 RtSdSlp(h/v): 3.00           3.00
```

```
         Name: RPRE105             From Node: NPRE105           Length(ft): 3076.00
        Group: BASE                  To Node: NPRE115                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
   Invert(ft): 81.500         80.650                                Flow: Both
TClpInitZ(ft): 9999.000       9999.000                Contraction Coef: 0.000
  Manning's N: 0.035000       0.035000                  Expansion Coef: 0.000
 Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
    Main XSec:                                        Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                         Inlet Ctrl Spec: Use dc
    Aux XSec1:                                       Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 20.000         20.000
 LtSdSlp(h/v): 3.00           3.00
 RtSdSlp(h/v): 3.00           3.00
```

```
         Name: RPRE115             From Node: NPRE115           Length(ft): 935.00
        Group: BASE                  To Node: NPRE120                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
   Invert(ft): 80.650         80.910                                Flow: Both
TClpInitZ(ft): 9999.000       9999.000                Contraction Coef: 0.000
  Manning's N: 0.035000       0.035000                  Expansion Coef: 0.000
 Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
```

```
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dc
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-----------------------------------------------------------------------------------------------
          Name: RPRE130             From Node: NPRE130           Length(ft): 1134.00
         Group: BASE                  To Node: NPRE140                Count: 1

                UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 80.100         77.830                              Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                  Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                    Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-----------------------------------------------------------------------------------------------
          Name: RPRE150             From Node: NPRE150           Length(ft): 2615.00
         Group: BASE                  To Node: NPRE160                Count: 1

                UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 82.600         77.050                              Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                  Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                    Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-----------------------------------------------------------------------------------------------
          Name: RPRE170             From Node: NPRE170           Length(ft): 1705.00
         Group: BASE                  To Node: NPRE180                Count: 1
```

```
               UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 77.440        75.600                                 Flow: Both
 TClpInitZ(ft): 9999.000      9999.000                    Contraction Coef: 0.000
   Manning's N: 0.035000      0.035000                      Expansion Coef: 0.000
  Top Clip(ft): 0.000         0.000                     Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000         0.000                         Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                         Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RPRE190             From Node: NPRE190           Length(ft): 774.00
         Group: BASE                  To Node: NPRE200                Count: 1

               UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 75.100        75.900                                 Flow: Both
 TClpInitZ(ft): 9999.000      9999.000                    Contraction Coef: 0.000
   Manning's N: 0.035000      0.035000                      Expansion Coef: 0.000
  Top Clip(ft): 0.000         0.000                     Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000         0.000                         Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                         Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RPRE300             From Node: NPRE300           Length(ft): 805.00
         Group: BASE                  To Node: NPRE330                Count: 1

               UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 78.810        74.510                                 Flow: Both
 TClpInitZ(ft): 9999.000      9999.000                    Contraction Coef: 0.000
   Manning's N: 0.035000      0.035000                      Expansion Coef: 0.000
  Top Clip(ft): 0.000         0.000                     Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000         0.000                         Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                         Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
```

```
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RPRE340             From Node: NPRE340           Length(ft): 1206.00
         Group: BASE                  To Node: NPRE350                Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 75.000         73.900                                Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                          Inlet Ctrl Spec: Use dn
     Aux XSec1:                                       Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RPRE400             From Node: NPRE400           Length(ft): 1603.00
         Group: BASE                  To Node: NPRE410                Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Automatic
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 87.000         79.090                                Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                          Inlet Ctrl Spec: Use dc
     Aux XSec1:                                       Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 15.000         15.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00

Channel xsection estimated based on DEM

===============================================================================================
==== Weirs ====================================================================================
===============================================================================================

         Name: Overflow2          From Node: NPRE400
        Group: BASE                 To Node: NPRE160
         Flow: Both                   Count: 1
         Type: Vertical: Mavis     Geometry: Trapezoidal

            Bottom Width(ft): 170.00
       Left Side Slope(h/v): 0.00
      Right Side Slope(h/v): 0.00
                 Invert(ft): 88.300
```

```
       Control Elevation(ft): 88.300
      Struct Opening Dim(ft): 9999.00
                                          TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.600
      Orifice Discharge Coef: 0.600



--------------------------------------------------------------------------------------------------
         Name: Overflow3           From Node: NPRE110
        Group: BASE                  To Node: NPRE360
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 100.00
       Left Side Slope(h/v): 0.00
      Right Side Slope(h/v): 0.00
                  Invert(ft): 81.500
       Control Elevation(ft): 81.500
      Struct Opening Dim(ft): 9999.00
                                          TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.600
      Orifice Discharge Coef: 0.600



--------------------------------------------------------------------------------------------------
         Name: RPRE200             From Node: NPRE200
        Group: BASE                  To Node: NPRE230
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 55.00
       Left Side Slope(h/v): 11.00
      Right Side Slope(h/v): 11.00
                  Invert(ft): 76.000
       Control Elevation(ft): 76.000
      Struct Opening Dim(ft): 9999.00
                                          TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.600
      Orifice Discharge Coef: 0.600



--------------------------------------------------------------------------------------------------
         Name: RPRE230             From Node: NPRE230
        Group: BASE                  To Node: TPRE240
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 55.00
       Left Side Slope(h/v): 280.00
      Right Side Slope(h/v): 280.00
                  Invert(ft): 76.500
       Control Elevation(ft): 76.500
      Struct Opening Dim(ft): 9999.00
                                          TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
```

```
        Weir Discharge Coef: 2.600
      Orifice Discharge Coef: 0.600



-----------------------------------------------------------------------------------------------
         Name: RPRE250             From Node: NPRE250
        Group: BASE                  To Node: NPRE115
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 100.00
       Left Side Slope(h/v): 0.00
      Right Side Slope(h/v): 0.00
                 Invert(ft): 86.000
       Control Elevation(ft): 86.000
      Struct Opening Dim(ft): 9999.00
                                        TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.600
      Orifice Discharge Coef: 0.600



-----------------------------------------------------------------------------------------------
         Name: RPRE260             From Node: NPRE260
        Group: BASE                  To Node: NPRE130
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 100.00
       Left Side Slope(h/v): 0.00
      Right Side Slope(h/v): 0.00
                 Invert(ft): 88.000
       Control Elevation(ft): 88.000
      Struct Opening Dim(ft): 9999.00
                                        TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.600
      Orifice Discharge Coef: 0.600



-----------------------------------------------------------------------------------------------
         Name: RPRE270             From Node: NPRE270
        Group: BASE                  To Node: NPRE140
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 100.00
       Left Side Slope(h/v): 0.00
      Right Side Slope(h/v): 0.00
                 Invert(ft): 84.800
       Control Elevation(ft): 84.800
      Struct Opening Dim(ft): 9999.00
                                        TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.600
      Orifice Discharge Coef: 0.600
```

```
-----------------------------------------------------------------------------------------------
         Name: RPRE280             From Node: NPRE280
        Group: BASE                  To Node: NPRE170
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 100.00
       Left Side Slope(h/v): 0.00
      Right Side Slope(h/v): 0.00
                 Invert(ft): 81.400
       Control Elevation(ft): 81.400
     Struct Opening Dim(ft): 9999.00
                                       TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
          Weir Discharge Coef: 2.600
     Orifice Discharge Coef: 0.600



-----------------------------------------------------------------------------------------------
         Name: RPRE350             From Node: NPRE350
        Group: BASE                  To Node: NPRE370
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 20.00
       Left Side Slope(h/v): 5.00
      Right Side Slope(h/v): 5.00
                 Invert(ft): 74.000
       Control Elevation(ft): 74.000
     Struct Opening Dim(ft): 9999.00
                                       TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
          Weir Discharge Coef: 2.600
     Orifice Discharge Coef: 0.600



-----------------------------------------------------------------------------------------------
         Name: WPRE180             From Node: NPRE180
        Group: BASE                  To Node: NPRE190
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 60.00
       Left Side Slope(h/v): 0.00
      Right Side Slope(h/v): 0.00
                 Invert(ft): 79.700
       Control Elevation(ft): 79.700
     Struct Opening Dim(ft): 9999.00
                                       TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
          Weir Discharge Coef: 2.600
     Orifice Discharge Coef: 0.600



-----------------------------------------------------------------------------------------------
         Name: WPRE210             From Node: NPRE210
        Group: BASE                  To Node: TW
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal
```

```
           Bottom Width(ft): 50.00
        Left Side Slope(h/v): 0.00
       Right Side Slope(h/v): 0.00
                  Invert(ft): 83.500
       Control Elevation(ft): 83.500
      Struct Opening Dim(ft): 9999.00
                                          TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
          Weir Discharge Coef: 2.600
      Orifice Discharge Coef: 0.600



================================================================================
==== Hydrology Simulations =====================================================
================================================================================

         Name: 25Yr
     Filename: W:\Projects\2010\10-0249\ICPR\PRE\20111031_PRE\25Yr.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 8.80

Time(hrs)       Print Inc(min)
--------------- ---------------
60.000          5.00

--------------------------------------------------------------------------------------------------------
         Name: Mean
     Filename: W:\Projects\2010\10-0249\ICPR\PRE\20111031_PRE\Mean.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 4.40

Time(hrs)       Print Inc(min)
--------------- ---------------
60.000          5.00

================================================================================
==== Routing Simulations =======================================================
================================================================================

         Name: 25Yr               Hydrology Sim: 25Yr
     Filename: W:\Projects\2010\10-0249\ICPR\PRE\20111031_PRE\25Yr.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                     End Time(hrs): 35.00
     Min Calc Time(sec): 0.5000               Max Calc Time(sec): 1.0000
        Boundary Stages:                         Boundary Flows:



Time(hrs)       Print Inc(min)
--------------- ---------------
60.000          5.000
```

Group	Run
BASE	Yes

```
         Name: Mean                Hydrology Sim: Mean
     Filename: W:\Projects\2010\10-0249\ICPR\PRE\20111031_PRE\Mean.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 35.00
     Min Calc Time(sec): 0.5000               Max Calc Time(sec): 1.0000
        Boundary Stages:                         Boundary Flows:
```

Time(hrs)	Print Inc(min)
60.000	5.000

Group	Run
BASE	Yes

ICPR Output File
PRE, Mean Annual 24-Hour

			Max Time	Max	Warning	Max Delta	Max Surf	Max Time	Max	Max Time	Max
Name	Group	Simulation	Stage	Stage	Stage	Stage	Area	Inflow	Inflow	Outflow	Outflow
			hrs	ft	ft	ft	ft2	hrs	cfs	hrs	cfs
NPRE100	BASE	Mean	14.2	81.0	85.6	0.0	32622.0	12.0	4.8	15.8	3.11
NPRE105	BASE	Mean	13.2	81.8	85.8	0.0	62656.0	11.9	5.4	12.0	0.35
NPRE110	BASE	Mean	15.0	81.8	81.5	0.0	597638.0	13.3	51.4	15.0	35.17
NPRE115	BASE	Mean	12.9	82.1	86.0	0.0	55275.0	12.1	19.9	12.5	5.24
NPRE120	BASE	Mean	13.0	82.1	85.7	0.0	13107.0	12.4	6.2	13.0	4.82
NPRE130	BASE	Mean	12.1	80.6	85.0	0.0	15151.0	12.0	14.4	12.1	44.33
NPRE140	BASE	Mean	12.2	80.6	85.0	0.0	19083.0	12.1	69.6	12.2	34.27
NPRE150	BASE	Mean	12.1	82.8	86.0	0.0	32212.0	12.0	8.7	12.1	6.75
NPRE160	BASE	Mean	14.4	80.0	83.0	0.0	43725.0	12.0	67.2	12.4	45.73
NPRE170	BASE	Mean	14.4	79.9	81.4	0.0	32200.0	14.2	55.1	14.3	54.5
NPRE180	BASE	Mean	14.4	79.9	80.2	0.0	36671.0	14.3	54.8	14.4	54.63
NPRE190	BASE	Mean	14.4	77.5	79.0	0.0	12808.0	14.4	54.8	14.5	54.8
NPRE200	BASE	Mean	14.2	77.2	77.0	0.0	11485.0	14.5	55.0	14.5	55.03
NPRE210	BASE	Mean	14.1	81.6	83.5	0.0	177375.0	12.1	91.5	14.1	9.05
NPRE220	BASE	Mean	13.4	77.2	86.0	0.0	1564629.0	12.4	153.5	13.2	87.01
NPRE230	BASE	Mean	13.6	77.1	77.0	0.0	920388.0	13.3	181.6	13.6	178.68
NPRE250	BASE	Mean	12.5	86.2	86.0	0.0	81156.0	12.3	21.9	12.5	20.81
NPRE260	BASE	Mean	13.1	88.1	88.0	0.0	204651.0	12.6	10.1	13.1	8.02
NPRE270	BASE	Mean	12.7	84.9	84.8	0.0	209506.0	12.3	11.6	12.7	8.13
NPRE280	BASE	Mean	14.2	81.7	81.4	0.0	549171.0	13.3	45.0	14.2	37.04
NPRE300	BASE	Mean	14.2	79.1	83.0	0.0	9885.0	14.1	9.5	14.2	9.5
NPRE310	BASE	Mean	15.4	79.5	80.9	0.0	194959.0	13.0	26.2	15.4	12.76
NPRE330	BASE	Mean	14.5	76.5	80.0	0.0	12035.0	12.0	24.4	12.1	22.8
NPRE340	BASE	Mean	14.7	76.3	78.0	0.0	17667.0	12.1	25.2	12.1	24.71
NPRE350	BASE	Mean	15.1	76.2	76.0	0.0	19419.0	12.1	27.2	12.1	26.97
NPRE360	BASE	Mean	14.7	78.4	79.6	0.0	21125.0	14.6	56.6	14.7	56.4
NPRE370	BASE	Mean	15.2	76.1	76.0	0.0	4177699.0	12.8	171.7	15.2	125.32
NPRE400	BASE	Mean	12.1	87.8	88.0	0.0	19849.0	12.0	37.3	12.1	33.19
NPRE410	BASE	Mean	12.2	83.3	88.0	0.0	28294.0	12.0	118.4	12.2	77.8
TPRE240	BASE	Mean	0.0	77.0	77.0	0.0	0.0	13.6	178.7	0.0	0
TPRE380	BASE	Mean	0.0	76.0	76.0	0.0	1440.0	15.2	125.3	0.0	0
TW	BASE	Mean	0.0	71.0	71.0	0.0	212.0	14.1	9.1	0.0	0

ICPR Output File
PRE, 25-Year 24-Hour

			Max Time	Max	Warning	Max Delta	Max Surf	Max Time	Max	Max Time	Max
Name	Group	Simulation	Stage	Stage	Stage	Stage	Area	Inflow	Inflow	Outflow	Outflow
			hrs	ft	ft	ft	ft2	hrs	cfs	hrs	cfs
NPRE100	BASE	25Yr	13.8	82.7	85.6	0.0	42499.0	12.0	9.7	17.3	13.78
NPRE105	BASE	25Yr	13.8	82.7	85.8	0.0	78417.0	11.9	2.3	7.6	0.07
NPRE110	BASE	25Yr	14.2	82.1	81.5	0.0	1063711.0	13.3	145.1	14.2	117.33
NPRE115	BASE	25Yr	12.9	83.0	86.0	0.0	64840.0	12.1	31.4	12.3	9.21
NPRE120	BASE	25Yr	12.9	83.0	85.7	0.0	15436.0	12.2	12.8	13.8	9.72
NPRE130	BASE	25Yr	12.8	82.6	85.0	0.0	21975.0	12.0	36.4	11.7	44.88
NPRE140	BASE	25Yr	12.8	82.6	85.0	0.0	25828.0	12.0	91.5	12.1	67.07
NPRE150	BASE	25Yr	12.1	83.0	86.0	0.0	36575.0	12.0	17.5	12.1	14.09
NPRE160	BASE	25Yr	12.6	81.8	83.0	0.0	54665.0	12.0	160.9	12.1	89.89
NPRE170	BASE	25Yr	13.9	80.9	81.4	0.0	36748.0	13.8	162.9	13.9	162.67
NPRE180	BASE	25Yr	13.9	80.6	80.2	0.0	40770.0	13.9	163.3	13.9	163.23
NPRE190	BASE	25Yr	14.0	78.5	79.0	0.0	14800.0	13.9	163.6	14.0	163.56
NPRE200	BASE	25Yr	13.9	77.6	77.0	0.0	12720.0	14.0	164.0	14.0	164.03
NPRE210	BASE	25Yr	13.6	83.8	83.5	0.0	210305.0	12.1	151.7	13.6	31.22
NPRE220	BASE	25Yr	13.7	77.6	86.0	0.0	2159944.0	12.4	369.1	13.6	173.01
NPRE230	BASE	25Yr	13.7	77.4	77.0	0.0	1061689.0	13.5	457.7	13.7	453.38
NPRE250	BASE	25Yr	12.4	86.3	86.0	0.0	105505.0	12.3	54.7	12.4	52.07
NPRE260	BASE	25Yr	13.0	88.2	88.0	0.0	232420.0	12.6	26.4	13.0	22.4
NPRE270	BASE	25Yr	12.6	85.0	84.8	0.0	242669.0	12.3	28.9	12.6	22
NPRE280	BASE	25Yr	14.0	81.9	81.4	0.0	733701.0	13.2	121.3	14.0	102.65
NPRE300	BASE	25Yr	12.1	79.3	83.0	0.0	10656.0	12.0	22.0	12.1	21.31
NPRE310	BASE	25Yr	17.9	80.7	80.9	0.0	615793.0	12.9	73.5	17.9	18
NPRE330	BASE	25Yr	12.1	77.2	80.0	0.0	13458.0	12.0	54.2	12.1	50.04
NPRE340	BASE	25Yr	16.0	76.6	78.0	0.0	19030.0	12.1	55.0	12.2	53.47
NPRE350	BASE	25Yr	16.2	76.5	76.0	0.0	20746.0	12.1	58.4	12.1	57.56
NPRE360	BASE	25Yr	16.2	80.9	79.6	0.0	939817.0	13.6	197.5	16.2	127.28
NPRE370	BASE	25Yr	16.2	76.5	76.0	0.0	4438411.0	12.7	430.7	16.2	238.72
NPRE400	BASE	25Yr	12.1	88.4	88.0	0.0	27200.0	12.0	87.0	12.0	79.34
NPRE410	BASE	25Yr	12.3	87.7	88.0	0.0	44848.0	12.0	264.2	12.2	120.98
TPRE240	BASE	25Yr	0.0	77.0	77.0	0.0	0.0	13.7	453.4	0.0	0
TPRE380	BASE	25Yr	0.0	76.0	76.0	0.0	1440.0	16.2	238.7	0.0	0
TW	BASE	25Yr	0.0	71.0	71.0	0.0	212.0	13.6	31.2	0.0	0

Pre Mass Balance Report

25 Yr 24 HR Storm Event

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	0	0	0	0	0	0
25Yr	0.08	38	0	38	0	0
25Yr	0.17	156.1	0	156.1	0	0
25Yr	0.25	344.6	12.4	332.2	0	0
25Yr	0.33	583.3	55.9	527.5	0	0
25Yr	0.42	862.3	107.1	755.2	0	0
25Yr	0.5	1172.9	164.1	1008.8	0	0
25Yr	0.58	1506.5	225	1281.5	0	0
25Yr	0.67	1856.8	288.2	1568.6	0	0
25Yr	0.75	2220.7	352.6	1868.1	0	0
25Yr	0.83	2596.9	417.8	2179.1	0	0
25Yr	0.92	2984.2	484.1	2500.1	0	0
25Yr	1	3382.2	552.3	2830	0	0
25Yr	1.08	3797	623.3	3173.7	0	0
25Yr	1.17	4234.7	700.4	3534.2	0	0
25Yr	1.25	4694	783.9	3910.1	0	0
25Yr	1.33	5173.2	873.4	4299.8	0	0
25Yr	1.42	5671.2	969.7	4701.5	0	0
25Yr	1.5	6186.8	1071.8	5114.9	0	0
25Yr	1.58	6718.7	1179.8	5538.8	0	0
25Yr	1.67	7265.8	1293.6	5972.1	0	0
25Yr	1.75	7827.3	1413.7	6413.7	0	0
25Yr	1.83	8402.8	1539.7	6863	0	0
25Yr	1.92	8991.6	1671.8	7319.8	0	0
25Yr	2	9594.2	1810.2	7784.1	0	0
25Yr	2.08	10218.3	1955.3	8263	0	0
25Yr	2.17	10872.4	2108.4	8764	0	0
25Yr	2.25	11555.9	2270.2	9285.8	0	0
25Yr	2.33	12265.3	2439.7	9825.6	0	0
25Yr	2.42	12998	2616.2	10381.8	0	0
25Yr	2.5	13752.1	2800.7	10951.4	0	0
25Yr	2.58	14525.9	2992.1	11533.7	0	0
25Yr	2.67	15317.9	3190.8	12127.2	0	0
25Yr	2.75	16127.9	3395.8	12732.1	0	0
25Yr	2.83	16957.5	3606.9	13350.7	0	0
25Yr	2.92	17809.2	3824.6	13984.6	0	0
25Yr	3	18688.9	4049.6	14639.3	0	0
25Yr	3.08	19620.1	4284	15336.1	0	0
25Yr	3.17	20627.2	4531	16096.2	0	0
25Yr	3.25	21710.5	4792.9	16917.7	0	0
25Yr	3.33	22864.7	5068.5	17796.2	0	0
25Yr	3.42	24091.3	5363.9	18727.3	0	0
25Yr	3.5	25394.4	5688.1	19706.4	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	3.58	26779.5	6046	20733.5	0	0
25Yr	3.67	28253	6444.9	21808.1	0	0
25Yr	3.75	29822.6	6891.8	22930.8	0	0
25Yr	3.83	31495.9	7388.6	24107.3	0	0
25Yr	3.92	33280.3	7945.8	25334.5	0	0
25Yr	4	35182.3	8569.9	26612.5	0	0
25Yr	4.08	37246.3	9268.7	27977.6	0	0
25Yr	4.17	39518.1	10053.5	29464.6	0	0
25Yr	4.25	41987.3	10934.1	31053.2	0	0
25Yr	4.33	44636.3	11917.3	32719	0	0
25Yr	4.42	47464.8	13009.7	34455.1	0	0
25Yr	4.5	50476.2	14218.3	36257.9	0	0
25Yr	4.58	53673.8	15549.7	38124.1	0	0
25Yr	4.67	57061.4	17010.4	40051	0	0
25Yr	4.75	60642.8	18605.7	42037.1	0	0
25Yr	4.83	64422.5	20340.8	44081.7	0	0
25Yr	4.92	68404.6	22220.4	46184.1	0	0
25Yr	5	72592.9	24248.6	48344.2	0	0
25Yr	5.08	77017.5	26429.8	50587.7	0	0
25Yr	5.17	81710.3	28770.1	52940.2	0	0
25Yr	5.25	86664	31277.6	55386.3	0	0
25Yr	5.33	91866	33961	57905	0	0
25Yr	5.42	97317.3	36828.4	60488.9	0	0
25Yr	5.5	103021.2	39887.2	63134	0	0
25Yr	5.58	108981.3	43144.1	65837.3	0	0
25Yr	5.67	115200.9	46604.1	68596.7	0	0
25Yr	5.75	121683	50271.6	71411.4	0	0
25Yr	5.83	128431	54149.9	74281.1	0	0
25Yr	5.92	135447.5	58241.5	77206	0	0
25Yr	6	142735.4	62548.5	80186.9	0	0
25Yr	6.08	150390.5	67073.3	83317.2	0	0
25Yr	6.17	158516.8	71823.9	86692.9	0	0
25Yr	6.25	167076.7	76809.7	90267	0	0
25Yr	6.33	176014	82038.8	93975.2	0	0
25Yr	6.42	185321.8	87518.4	97803.3	0	0
25Yr	6.5	195002.8	93257	101745.9	0	0
25Yr	6.58	205059.9	99262.3	105797.6	0	0
25Yr	6.67	215494.6	105541.4	109953.2	0	0
25Yr	6.75	226308.4	112100.1	114208.4	0	0
25Yr	6.83	237503.1	118943	118560.1	0	0
25Yr	6.92	249079.2	126073.9	123005.3	0	0
25Yr	7	261036.6	133495	127541.5	0	0
25Yr	7.08	273481.5	141209.8	132271.7	0	0
25Yr	7.17	286533.4	149225.5	137307.9	0	0
25Yr	7.25	300146.9	157551.3	142595.5	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	7.33	314251.7	166196.8	148054.8	0	0
25Yr	7.42	328836.8	175171.1	153665.7	0	0
25Yr	7.5	343903.5	184483.4	159420.1	0	0
25Yr	7.58	359452.6	194143.3	165309.2	0	0
25Yr	7.67	375483.4	204159.8	171323.6	0	0
25Yr	7.75	391994.6	214540.2	177454.4	0	0
25Yr	7.83	408984.8	225290.7	183694.1	0	0
25Yr	7.92	426451.8	236415.8	190036	0	0
25Yr	8	444391.9	247918.7	196473.2	0	0
25Yr	8.08	462958.9	259802.5	203156.4	0	0
25Yr	8.17	482323.1	272074.5	210248.7	0	0
25Yr	8.25	502414	284744.2	217669.8	0	0
25Yr	8.33	523128.6	297821.2	225307.4	0	0
25Yr	8.42	544450.8	311315.2	233135.6	0	0
25Yr	8.5	566383.4	325236.5	241146.9	0	0
25Yr	8.58	589092.3	339596.9	249495.4	0	0
25Yr	8.67	612760.3	354411.4	258348.8	0	0
25Yr	8.75	637316.8	369696.4	267620.4	0	0
25Yr	8.83	662655.7	385466.9	277188.8	0	0
25Yr	8.92	688761.6	401737.3	287024.4	0	0
25Yr	9	715635.9	418521.5	297114.4	0	0
25Yr	9.08	743363.7	435832.7	307531	0	0
25Yr	9.17	772036.9	453684.1	318352.9	0	0
25Yr	9.25	801614.3	472088	329526.3	0	0
25Yr	9.33	832035.4	491054.9	340980.5	0	0
25Yr	9.42	863285.9	510594	352691.9	0	0
25Yr	9.5	895361.3	530712.2	364649	0	0
25Yr	9.58	928519.5	551416.7	377102.8	0	0
25Yr	9.67	963049.5	572718.7	390330.8	0	0
25Yr	9.75	998832.4	594631.8	404200.6	0	0
25Yr	9.83	1035691	617168.4	418522.3	0	0
25Yr	9.92	1073596	640343.1	433253.1	0	0
25Yr	10	1112551	664177.6	448373.7	0	0
25Yr	10.08	1153017	688692.6	464324.7	0	0
25Yr	10.17	1195511	713916	481594.6	0	0
25Yr	10.25	1239836	739887	499948.9	0	0
25Yr	10.33	1285695	766646.1	519049	0	0
25Yr	10.42	1333050	794188.9	538860.9	0	0
25Yr	10.5	1381915	822505	559410.4	0	0
25Yr	10.58	1432962	851605.1	581356.6	0	0
25Yr	10.67	1486939	881520.9	605417.7	0	0
25Yr	10.75	1543571	912297.1	631274	0	0
25Yr	10.83	1602432	943979.8	658451.7	0	0
25Yr	10.92	1663468	976611.7	686856.1	0	0
25Yr	11	1726694	1010233	716461.4	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	11.08	1792311	1044880	747430.4	0	0
25Yr	11.17	1860529	1080590	779939.2	0	0
25Yr	11.25	1931274	1117390	813884.2	0	0
25Yr	11.33	2007605	1155304	852301.5	0	0
25Yr	11.42	2093134	1194347	898786.5	0	0
25Yr	11.5	2186719	1234629	952089.9	0	0
25Yr	11.58	2302600	1276358	1026242.5	0	0
25Yr	11.67	2459517	1319871	1139646.2	0	0
25Yr	11.75	2651966	1365627	1286338.3	0	0
25Yr	11.83	2886461	1414145	1472316	0	0
25Yr	11.92	3181429	1466139	1715289.6	0	0
25Yr	12	3532344	1522426	2009917.9	0	0
25Yr	12.08	3905699	1583804	2321894.4	0	0
25Yr	12.17	4273089	1651455	2621634.3	0	0
25Yr	12.25	4645386	1727114	2918271.2	0	0
25Yr	12.33	5029456	1811620	3217836.8	0	0
25Yr	12.42	5415910	1905461	3510449.1	0	0
25Yr	12.5	5806347	2008559	3797787.8	0	0
25Yr	12.58	6201427	2120556	4080871	0	0
25Yr	12.67	6596182	2240991	4355190.7	0	0
25Yr	12.75	6989373	2369336	4620037	0	0
25Yr	12.83	7379508	2504995	4874513.2	0	0
25Yr	12.92	7763716	2647311	5116404.5	0	0
25Yr	13	8140794	2795937	5344856.9	0	0
25Yr	13.08	8509393	2951146	5558247.2	0	0
25Yr	13.17	8867921	3112431	5755490	0	0
25Yr	13.25	9216114	3278965	5937149.1	0	0
25Yr	13.33	9554210	3449836	6104374	0	0
25Yr	13.42	9882295	3624170	6258124.5	0	0
25Yr	13.5	10200474	3801193	6399280.2	0	0
25Yr	13.58	10508244	3980245	6527999	0	0
25Yr	13.67	10805099	4160756	6644342.5	0	0
25Yr	13.75	11091722	4342233	6749489.4	0	0
25Yr	13.83	11369045	4524262	6844782	0	0
25Yr	13.92	11637576	4706512	6931064.4	0	0
25Yr	14	11897737	4888718	7009019.3	0	0
25Yr	14.08	12149607	5070672	7078934.6	0	0
25Yr	14.17	12393189	5252199	7140990.6	0	0
25Yr	14.25	12629018	5433140	7195877.9	0	0
25Yr	14.33	12857735	5613362	7244373.2	0	0
25Yr	14.42	13079774	5792753	7287021.7	0	0
25Yr	14.5	13295502	5971222	7324280.3	0	0
25Yr	14.58	13504952	6148681	7356270.9	0	0
25Yr	14.67	13708112	6325035	7383077.2	0	0
25Yr	14.75	13905426	6500184	7405242.5	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	14.83	14097341	6674040	7423301.3	0	0
25Yr	14.92	14284072	6846532	7437540.3	0	0
25Yr	15	14465806	7017607	7448199	0	0
25Yr	15.08	14642629	7187224	7455405.3	0	0
25Yr	15.17	14814608	7355348	7459259.8	0	0
25Yr	15.25	14981979	7521942	7460036.4	0	0
25Yr	15.33	15145012	7686980	7458031.8	0	0
25Yr	15.42	15303917	7850441	7453476.8	0	0
25Yr	15.5	15458879	8012309	7446569.8	0	0
25Yr	15.58	15609826	8172574	7437252.1	0	0
25Yr	15.67	15756650	8331220	7425429.8	0	0
25Yr	15.75	15899574	8488230	7411344.6	0	0
25Yr	15.83	16038857	8643591	7395265.9	0	0
25Yr	15.92	16174652	8797304	7377348.3	0	0
25Yr	16	16307096	8949377	7357718.5	0	0
25Yr	16.08	16436209	9099835	7336374.6	0	0
25Yr	16.17	16562027	9248702	7313324.6	0	0
25Yr	16.25	16684787	9396001	7288785.5	0	0
25Yr	16.33	16804764	9541753	7263010.3	0	0
25Yr	16.42	16922129	9685981	7236148	0	0
25Yr	16.5	17037021	9828707	7208314.9	0	0
25Yr	16.58	17149480	9969970	7179510.6	0	0
25Yr	16.67	17259513	10109806	7149706.4	0	0
25Yr	16.75	17367289	10248209	7119079.2	0	0
25Yr	16.83	17473008	10385163	7087844.6	0	0
25Yr	16.92	17576792	10520661	7056131.2	0	0
25Yr	17	17678729	10654708	7024020.8	0	0
25Yr	17.08	17778892	10787327	6991565.2	0	0
25Yr	17.17	17877343	10918543	6958799.9	0	0
25Yr	17.25	17974140	11048383	6925756.6	0	0
25Yr	17.33	18069337	11176877	6892459.7	0	0
25Yr	17.42	18162976	11304115	6858860.9	0	0
25Yr	17.5	18255096	11430231	6824865.2	0	0
25Yr	17.58	18345512	11555321	6790191.3	0	0
25Yr	17.67	18433992	11679443	6754549.1	0	0
25Yr	17.75	18520653	11802598	6718055	0	0
25Yr	17.83	18605681	11924648	6681032.9	0	0
25Yr	17.92	18689122	12045461	6643660.2	0	0
25Yr	18	18771000	12164975	6606025	0	0
25Yr	18.08	18851477	12283170	6568306.5	0	0
25Yr	18.17	18930753	12400055	6530698.2	0	0
25Yr	18.25	19008857	12515655	6493201.9	0	0
25Yr	18.33	19085767	12630002	6455764.3	0	0
25Yr	18.42	19161524	12743129	6418394.9	0	0
25Yr	18.5	19236184	12855067	6381116.1	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	18.58	19309568	12965848	6343719.8	0	0
25Yr	18.67	19381461	13075494	6305966.3	0	0
25Yr	18.75	19451988	13184022	6267966.7	0	0
25Yr	18.83	19521326	13291445	6229881.2	0	0
25Yr	18.92	19589513	13397780	6191732.9	0	0
25Yr	19	19656560	13503045	6153515.1	0	0
25Yr	19.08	19722590	13607256	6115334	0	0
25Yr	19.17	19787750	13710433	6077317.1	0	0
25Yr	19.25	19852018	13812600	6039418	0	0
25Yr	19.33	19915346	13913781	6001564.8	0	0
25Yr	19.42	19977755	14013995	5963760	0	0
25Yr	19.5	20039281	14113261	5926020.1	0	0
25Yr	19.58	20099849	14211598	5888251.6	0	0
25Yr	19.67	20159366	14309025	5850341.2	0	0
25Yr	19.75	20217909	14405561	5812347.6	0	0
25Yr	19.83	20275578	14501225	5774353.1	0	0
25Yr	19.92	20332405	14596035	5736370.5	0	0
25Yr	20	20388403	14690007	5698396.2	0	0
25Yr	20.08	20443471	14783159	5660312.3	0	0
25Yr	20.17	20497497	14875504	5621993.1	0	0
25Yr	20.25	20550554	14967056	5583498.2	0	0
25Yr	20.33	20602741	15057827	5544913.3	0	0
25Yr	20.42	20654087	15147830	5506256.7	0	0
25Yr	20.5	20704614	15237079	5467534.9	0	0
25Yr	20.58	20754347	15325592	5428755.5	0	0
25Yr	20.67	20803310	15413393	5389917.3	0	0
25Yr	20.75	20851526	15500512	5351014.1	0	0
25Yr	20.83	20899017	15586970	5312046.6	0	0
25Yr	20.92	20945802	15672783	5273018.5	0	0
25Yr	21	20991904	15757964	5233939.5	0	0
25Yr	21.08	21037350	15842524	5194826.2	0	0
25Yr	21.17	21082168	15926470	5155698.3	0	0
25Yr	21.25	21126387	16009811	5116575	0	0
25Yr	21.33	21170030	16092557	5077472.7	0	0
25Yr	21.42	21213122	16174717	5038404.6	0	0
25Yr	21.5	21255686	16256302	4999384.5	0	0
25Yr	21.58	21297752	16337323	4960428.7	0	0
25Yr	21.67	21339352	16417798	4921554.2	0	0
25Yr	21.75	21380517	16497746	4882771.4	0	0
25Yr	21.83	21421270	16577185	4844085	0	0
25Yr	21.92	21461630	16656131	4805498.6	0	0
25Yr	22	21501614	16734603	4767011.5	0	0
25Yr	22.08	21541235	16812613	4728621.3	0	0
25Yr	22.17	21580502	16890177	4690324.9	0	0
25Yr	22.25	21619424	16967306	4652118.2	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	22.33	21658008	17044012	4613996.5	0	0
25Yr	22.42	21696261	17120305	4575956.5	0	0
25Yr	22.5	21734194	17196195	4537998.8	0	0
25Yr	22.58	21771713	17271692	4500021.3	0	0
25Yr	22.67	21808712	17346801	4461911.6	0	0
25Yr	22.75	21845263	17421528	4423735.5	0	0
25Yr	22.83	21881464	17495877	4385586.7	0	0
25Yr	22.92	21917346	17569853	4347492.4	0	0
25Yr	23	21952919	17643458	4309461.4	0	0
25Yr	23.08	21988190	17716691	4271498.7	0	0
25Yr	23.17	22023166	17789554	4233611.8	0	0
25Yr	23.25	22057856	17862044	4195811.5	0	0
25Yr	23.33	22092269	17934162	4158106.4	0	0
25Yr	23.42	22126413	18005908	4120505.2	0	0
25Yr	23.5	22160298	18077281	4083016.8	0	0
25Yr	23.58	22193823	18148284	4045539	0	0
25Yr	23.67	22226869	18218915	4007953.4	0	0
25Yr	23.75	22259490	18289176	3970314.9	0	0
25Yr	23.83	22291770	18359066	3932704	0	0
25Yr	23.92	22323721	18428584	3895136.5	0	0
25Yr	24	22355343	18497728	3857614.5	0	0
25Yr	24.08	22386060	18566495	3819565.2	0	0
25Yr	24.17	22415224	18634871	3780352.8	0	0
25Yr	24.25	22443074	18702842	3740232	0	0
25Yr	24.33	22469967	18770387	3699580	0	0
25Yr	24.42	22495936	18837485	3658451.3	0	0
25Yr	24.5	22520948	18904104	3616844.5	0	0
25Yr	24.58	22544980	18970209	3574770.9	0	0
25Yr	24.67	22568024	19035765	3532258.9	0	0
25Yr	24.75	22590083	19100739	3489344.1	0	0
25Yr	24.83	22611161	19165098	3446062.8	0	0
25Yr	24.92	22631274	19228815	3402459	0	0
25Yr	25	22650450	19291865	3358584.6	0	0
25Yr	25.08	22668723	19354232	3314490.9	0	0
25Yr	25.17	22686128	19415902	3270226.3	0	0
25Yr	25.25	22702705	19476866	3225838.4	0	0
25Yr	25.33	22718493	19537116	3181376.8	0	0
25Yr	25.42	22733534	19596645	3136888.3	0	0
25Yr	25.5	22747865	19655450	3092414.8	0	0
25Yr	25.58	22761523	19713524	3047998.4	0	0
25Yr	25.67	22774541	19770857	3003683.2	0	0
25Yr	25.75	22786952	19827438	2959514.6	0	0
25Yr	25.83	22798793	19883253	2915539.1	0	0
25Yr	25.92	22810093	19938281	2871811.8	0	0
25Yr	26	22820881	19992501	2828379.7	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	26.08	22831183	20045919	2785263.9	0	0
25Yr	26.17	22841024	20098548	2742476.7	0	0
25Yr	26.25	22850428	20150399	2700028.3	0	0
25Yr	26.33	22859415	20201486	2657928.8	0	0
25Yr	26.42	22868007	20251818	2616188.7	0	0
25Yr	26.5	22876223	20301407	2574816.1	0	0
25Yr	26.58	22884080	20350262	2533818.2	0	0
25Yr	26.67	22891598	20398396	2493202	0	0
25Yr	26.75	22898791	20445820	2452971.1	0	0
25Yr	26.83	22905674	20492546	2413127.7	0	0
25Yr	26.92	22912260	20538588	2373672.7	0	0
25Yr	27	22918562	20583949	2334613.1	0	0
25Yr	27.08	22924593	20628593	2295999.6	0	0
25Yr	27.17	22930364	20672508	2257856.2	0	0
25Yr	27.25	22935888	20715706	2220182.3	0	0
25Yr	27.33	22941176	20758200	2182975.8	0	0
25Yr	27.42	22946238	20800000	2146237.3	0	0
25Yr	27.5	22951084	20841115	2109969.5	0	0
25Yr	27.58	22955724	20881549	2074174.9	0	0
25Yr	27.67	22960167	20921310	2038856.9	0	0
25Yr	27.75	22964421	20960402	2004019.4	0	0
25Yr	27.83	22968495	20998829	1969666.5	0	0
25Yr	27.92	22972397	21036596	1935800.2	0	0
25Yr	28	22976133	21073711	1902421.9	0	0
25Yr	28.08	22979713	21110179	1869533.3	0	0
25Yr	28.17	22983142	21146006	1837136.3	0	0
25Yr	28.25	22986430	21181198	1805231.1	0	0
25Yr	28.33	22989581	21215764	1773817.1	0	0
25Yr	28.42	22992604	21249711	1742892.8	0	0
25Yr	28.5	22995502	21283044	1712457.6	0	0
25Yr	28.58	22998280	21315771	1682509.5	0	0
25Yr	28.67	23000944	21347898	1653045.6	0	0
25Yr	28.75	23003496	21379432	1624064.1	0	0
25Yr	28.83	23005942	21410377	1595564.4	0	0
25Yr	28.92	23008284	21440739	1567544.6	0	0
25Yr	29	23010527	21470525	1540001.8	0	0
25Yr	29.08	23012673	21499739	1512933.6	0	0
25Yr	29.17	23014726	21528387	1486338.8	0	0
25Yr	29.25	23016688	21556472	1460216.3	0	0
25Yr	29.33	23018563	21583999	1434563.8	0	0
25Yr	29.42	23020353	21610974	1409379.6	0	0
25Yr	29.5	23022062	21637399	1384662.8	0	0
25Yr	29.58	23023691	21663278	1360412.9	0	0
25Yr	29.67	23025245	21688616	1336628.4	0	0
25Yr	29.75	23026724	21713417	1313307.6	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	29.83	23028133	21737683	1290449.8	0	0
25Yr	29.92	23029473	21761418	1268054.8	0	0
25Yr	30	23030747	21784626	1246121	0	0
25Yr	30.08	23031958	21807311	1224646.8	0	0
25Yr	30.17	23033109	21829477	1203631.6	0	0
25Yr	30.25	23034202	21851127	1183075.3	0	0
25Yr	30.33	23035240	21872264	1162976	0	0
25Yr	30.42	23036225	21892895	1143330.6	0	0
25Yr	30.5	23037159	21913022	1124136.9	0	0
25Yr	30.58	23038042	21932649	1105393.5	0	0
25Yr	30.67	23038878	21951781	1087097.6	0	0
25Yr	30.75	23039669	21970423	1069245.3	0	0
25Yr	30.83	23040415	21988581	1051833.6	0	0
25Yr	30.92	23041119	22006258	1034860.2	0	0
25Yr	31	23041782	22023460	1018321.3	0	0
25Yr	31.08	23042405	22040194	1002211.8	0	0
25Yr	31.17	23042992	22056464	986527.5	0	0
25Yr	31.25	23043542	22072278	971264.8	0	0
25Yr	31.33	23044059	22087640	956418.7	0	0
25Yr	31.42	23044542	22102559	941982.8	0	0
25Yr	31.5	23044994	22117043	927951.3	0	0
25Yr	31.58	23045417	22131098	914318.9	0	0
25Yr	31.67	23045810	22144731	901079.1	0	0
25Yr	31.75	23046177	22157953	888224.1	0	0
25Yr	31.83	23046518	22170772	875746	0	0
25Yr	31.92	23046835	22183197	863637.6	0	0
25Yr	32	23047128	22195237	851890.7	0	0
25Yr	32.08	23047399	22206904	840495.1	0	0
25Yr	32.17	23047650	22218208	829441.4	0	0
25Yr	32.25	23047881	22229161	818720.1	0	0
25Yr	32.33	23048094	22239773	808321.2	0	0
25Yr	32.42	23048289	22250057	798232.4	0	0
25Yr	32.5	23048469	22260027	788441.9	0	0
25Yr	32.58	23048633	22269695	778938.3	0	0
25Yr	32.67	23048784	22279075	769709	0	0
25Yr	32.75	23048920	22288180	760740.4	0	0
25Yr	32.83	23049045	22297026	752018.5	0	0
25Yr	32.92	23049157	22305627	743530.3	0	0
25Yr	33	23049259	22313996	735262.4	0	0
25Yr	33.08	23049350	22322150	727200.1	0	0
25Yr	33.17	23049432	22330102	719329.6	0	0
25Yr	33.25	23049505	22337866	711638.3	0	0
25Yr	33.33	23049570	22345457	704113.3	0	0
25Yr	33.42	23049628	22352887	696740.9	0	0
25Yr	33.5	23049679	22360170	689508.9	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	33.58	23049723	22367316	682406.8	0	0
25Yr	33.67	23049762	22374338	675424.2	0	0
25Yr	33.75	23049796	22381246	668550.5	0	0
25Yr	33.83	23049825	22388049	661776.6	0	0
25Yr	33.92	23049850	22394755	655095.4	0	0
25Yr	34	23049871	22401371	648499.8	0	0
25Yr	34.08	23049888	22407905	641982.6	0	0
25Yr	34.17	23049902	22414363	635538.6	0	0
25Yr	34.25	23049913	22420748	629164.2	0	0
25Yr	34.33	23049921	22427066	622855.2	0	0
25Yr	34.42	23049927	22433319	616607.8	0	0
25Yr	34.5	23049931	22439511	610419.9	0	0
25Yr	34.58	23049933	22445643	604290.4	0	0
25Yr	34.67	23049934	22451717	598217.8	0	0
25Yr	34.75	23049935	22457734	592200.8	0	0
25Yr	34.83	23049935	22463695	586240.3	0	0
25Yr	34.92	23049935	22469598	580337.6	0	0
25Yr	35	23049935	22475422	574512.9	0	0

Appendix H: ICPR Input and Output Files, Post-Development

```
================================================================================
==== Basins ====================================================================
================================================================================

        Name: A05                    Node: NA05                  Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                 Peaking Factor: 484.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 6.00
            Area(ac): 3.779                Time Shift(hrs): 0.00
        Curve Number: 85.00            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00



--------------------------------------------------------------------------------
        Name: A10                    Node: NA10                  Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                 Peaking Factor: 484.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 6.00
            Area(ac): 7.840                Time Shift(hrs): 0.00
        Curve Number: 85.00            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00



--------------------------------------------------------------------------------
        Name: A100                   Node: NA100                 Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                 Peaking Factor: 484.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 6.00
            Area(ac): 4.576                Time Shift(hrs): 0.00
        Curve Number: 85.00            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00



--------------------------------------------------------------------------------
        Name: A110                   Node: NA110                 Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                 Peaking Factor: 484.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 6.00
            Area(ac): 3.471                Time Shift(hrs): 0.00
        Curve Number: 85.00            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00



--------------------------------------------------------------------------------
        Name: A120                   Node: NA120                 Status: Onsite
       Group: BASE                   Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                 Peaking Factor: 484.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 6.00
            Area(ac): 3.489                Time Shift(hrs): 0.00
        Curve Number: 85.00            Max Allowable Q(cfs): 0.000
```

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: A20                     Node: NA20                   Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
             Area(ac): 6.823                 Time Shift(hrs): 0.00
        Curve Number: 85.00             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: A30                     Node: NA30                   Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
             Area(ac): 5.986                 Time Shift(hrs): 0.00
        Curve Number: 85.00             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: A40                     Node: NA40                   Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
             Area(ac): 6.906                 Time Shift(hrs): 0.00
        Curve Number: 85.00             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: A50                     Node: NA50                   Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
             Area(ac): 6.585                 Time Shift(hrs): 0.00
        Curve Number: 85.00             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: A60                     Node: NA60                   Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
             Area(ac): 6.973                 Time Shift(hrs): 0.00
        Curve Number: 85.00             Max Allowable Q(cfs): 0.000
```

DCIA(%): 0.00

Name: A70 Node: NA70 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 6.00
Area(ac): 7.563 Time Shift(hrs): 0.00
Curve Number: 85.00 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: A80 Node: NA80 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 6.00
Area(ac): 7.663 Time Shift(hrs): 0.00
Curve Number: 85.00 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: A90 Node: NA90 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 6.00
Area(ac): 6.884 Time Shift(hrs): 0.00
Curve Number: 85.00 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: B10 Node: NB10 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 6.00
Area(ac): 4.469 Time Shift(hrs): 0.00
Curve Number: 85.00 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: B20 Node: NB20 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh484 Peaking Factor: 484.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 6.00
Area(ac): 7.594 Time Shift(hrs): 0.00
Curve Number: 85.00 Max Allowable Q(cfs): 0.000

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: B30                     Node: NB30                   Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 8.035                 Time Shift(hrs): 0.00
        Curve Number: 85.00             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: B40                     Node: NB40                   Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 3.837                 Time Shift(hrs): 0.00
        Curve Number: 85.00             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: B50                     Node: NB50                   Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 4.685                 Time Shift(hrs): 0.00
        Curve Number: 85.00             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: B60                     Node: NB60                   Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh484                  Peaking Factor: 484.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 1.819                 Time Shift(hrs): 0.00
        Curve Number: 85.00             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: POND                    Node: NPOND                  Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 23.146                Time Shift(hrs): 0.00
        Curve Number: 98.97             Max Allowable Q(cfs): 0.000
```

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE100                  Node: NPRE100               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 1.592                 Time Shift(hrs): 0.00
        Curve Number: 99.79             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE105                  Node: NPRE105               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 3.216                 Time Shift(hrs): 0.00
        Curve Number: 100.00            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE115                  Node: NPRE115               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 2.717                 Time Shift(hrs): 0.00
        Curve Number: 100.00            Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE120                  Node: NPRE120               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 1.054                 Time Shift(hrs): 0.00
        Curve Number: 98.93             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE130                  Node: NPRE130               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 1.320                 Time Shift(hrs): 0.00
        Curve Number: 99.69             Max Allowable Q(cfs): 0.000
```

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE140                  Node: NPRE140               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 0.692                 Time Shift(hrs): 0.00
        Curve Number: 99.99             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE150                  Node: NPRE150               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 2.544                 Time Shift(hrs): 0.00
        Curve Number: 98.46             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE160                  Node: NPRE160               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 3.337                 Time Shift(hrs): 0.00
        Curve Number: 99.72             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE170                  Node: NPRE170               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 2.085                 Time Shift(hrs): 0.00
        Curve Number: 95.42             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE180                  Node: NPRE180               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 1.603                 Time Shift(hrs): 0.00
        Curve Number: 95.93             Max Allowable Q(cfs): 0.000
```

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE190                  Node: NPRE190               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 0.900                 Time Shift(hrs): 0.00
        Curve Number: 94.51             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE200                  Node: NPRE200               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 1.061                 Time Shift(hrs): 0.00
        Curve Number: 92.30             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE210                  Node: NPRE210               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 6.400                 Time Shift(hrs): 0.00
        Curve Number: 92.70             Max Allowable Q(cfs): 999999.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE220                  Node: NPRE220               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 43.00
            Area(ac): 155.691               Time Shift(hrs): 0.00
        Curve Number: 85.88             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE230                  Node: NPRE230               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 97.00
            Area(ac): 101.886               Time Shift(hrs): 0.00
        Curve Number: 84.17             Max Allowable Q(cfs): 0.000
```

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE250                  Node: NPRE250               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 31.10
            Area(ac): 15.061                 Time Shift(hrs): 0.00
        Curve Number: 85.85              Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE270                  Node: NPRE270               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 28.66
            Area(ac): 7.873                  Time Shift(hrs): 0.00
        Curve Number: 84.36              Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE280                  Node: NPRE280               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 107.00
            Area(ac): 99.663                 Time Shift(hrs): 0.00
        Curve Number: 80.85              Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE300                  Node: NPRE300               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 2.438                  Time Shift(hrs): 0.00
        Curve Number: 97.31              Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE310                  Node: NPRE310               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 83.00
            Area(ac): 53.635                 Time Shift(hrs): 0.00
        Curve Number: 78.73              Max Allowable Q(cfs): 0.000
```

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE330                  Node: NPRE330               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 4.289                 Time Shift(hrs): 0.00
        Curve Number: 86.92             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE340                  Node: NPRE340               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 1.005                 Time Shift(hrs): 0.00
        Curve Number: 99.76             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE350                  Node: NPRE350               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 6.00
            Area(ac): 1.126                 Time Shift(hrs): 0.00
        Curve Number: 100.00            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE360                  Node: NPRE360               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 31.00
            Area(ac): 17.938                Time Shift(hrs): 0.00
        Curve Number: 78.69             Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: PRE370                  Node: NPRE370               Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                  Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000              Time of Conc(min): 62.00
            Area(ac): 165.543               Time Shift(hrs): 0.00
        Curve Number: 85.01             Max Allowable Q(cfs): 0.000
```

```
               DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: TOP10                   Node: NTOP10                Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 23.50
            Area(ac): 9.292                Time Shift(hrs): 0.00
        Curve Number: 80.00            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: TOP20                   Node: NTOP20                Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 32.68
            Area(ac): 28.334               Time Shift(hrs): 0.00
        Curve Number: 80.00            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: TOP30                   Node: NTOP30                Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 33.94
            Area(ac): 12.769               Time Shift(hrs): 0.00
        Curve Number: 80.00            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: TOP40                   Node: NTOP40                Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 41.99
            Area(ac): 39.106               Time Shift(hrs): 0.00
        Curve Number: 80.00            Max Allowable Q(cfs): 0.000
             DCIA(%): 0.00


-----------------------------------------------------------------------------------------------
        Name: TOP50                   Node: NTOP50                Status: Onsite
       Group: BASE                    Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh256                  Peaking Factor: 256.0
         Rainfall File:                 Storm Duration(hrs): 0.00
   Rainfall Amount(in): 0.000             Time of Conc(min): 16.19
            Area(ac): 5.768                Time Shift(hrs): 0.00
        Curve Number: 80.00            Max Allowable Q(cfs): 0.000
```

DCIA(%): 0.00

Name: TOP60 Node: NTOP60 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 25.63
Area(ac): 18.674 Time Shift(hrs): 0.00
Curve Number: 80.00 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: TOP70 Node: NTOP70 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 16.19
Area(ac): 5.055 Time Shift(hrs): 0.00
Curve Number: 80.00 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

Name: TOP80 Node: NTOP80 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh256 Peaking Factor: 256.0
Rainfall File: Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 29.04
Area(ac): 21.772 Time Shift(hrs): 0.00
Curve Number: 80.00 Max Allowable Q(cfs): 0.000
DCIA(%): 0.00

==========

==== Nodes ====

==========

Name: NA05 Base Flow(cfs): 0.000 Init Stage(ft): 85.000
Group: BASE Warn Stage(ft): 93.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: NA10 Base Flow(cfs): 0.000 Init Stage(ft): 85.000
Group: BASE Warn Stage(ft): 93.000
Type: Stage/Area

Stage(ft)	Area(ac)

```
--------------------------------------------------------------------------------------------
      Name: NA100               Base Flow(cfs): 0.000          Init Stage(ft): 85.000
     Group: BASE                                              Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NA110               Base Flow(cfs): 0.000          Init Stage(ft): 85.000
     Group: BASE                                              Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NA120               Base Flow(cfs): 0.000          Init Stage(ft): 85.000
     Group: BASE                                              Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NA121A              Base Flow(cfs): 0.000          Init Stage(ft): 81.500
     Group: BASE                                              Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
         76.000          0.0010
         93.000          0.0010

--------------------------------------------------------------------------------------------
      Name: NA121B              Base Flow(cfs): 0.000          Init Stage(ft): 81.500
     Group: BASE                                              Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
         76.000          0.0010
         93.000          0.0010

--------------------------------------------------------------------------------------------
      Name: NA20                Base Flow(cfs): 0.000          Init Stage(ft): 85.000
     Group: BASE                                              Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
```

```
--------------------------------------------------------------------------------
      Name: NA30               Base Flow(cfs): 0.000         Init Stage(ft): 85.000
     Group: BASE                                            Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------
      Name: NA40               Base Flow(cfs): 0.000         Init Stage(ft): 85.000
     Group: BASE                                            Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------
      Name: NA50               Base Flow(cfs): 0.000         Init Stage(ft): 85.000
     Group: BASE                                            Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------
      Name: NA60               Base Flow(cfs): 0.000         Init Stage(ft): 85.000
     Group: BASE                                            Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------
      Name: NA70               Base Flow(cfs): 0.000         Init Stage(ft): 85.000
     Group: BASE                                            Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------
      Name: NA80               Base Flow(cfs): 0.000         Init Stage(ft): 85.000
     Group: BASE                                            Warn Stage(ft): 93.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------
      Name: NA90               Base Flow(cfs): 0.000         Init Stage(ft): 85.000
     Group: BASE                                            Warn Stage(ft): 93.000
      Type: Stage/Area
```

```
      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NB10               Base Flow(cfs): 0.000          Init Stage(ft): 90.000
     Group: BASE                                             Warn Stage(ft): 95.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NB20               Base Flow(cfs): 0.000          Init Stage(ft): 90.000
     Group: BASE                                             Warn Stage(ft): 95.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NB30               Base Flow(cfs): 0.000          Init Stage(ft): 90.000
     Group: BASE                                             Warn Stage(ft): 95.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NB40               Base Flow(cfs): 0.000          Init Stage(ft): 90.000
     Group: BASE                                             Warn Stage(ft): 95.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NB50               Base Flow(cfs): 0.000          Init Stage(ft): 90.000
     Group: BASE                                             Warn Stage(ft): 95.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NB60               Base Flow(cfs): 0.000          Init Stage(ft): 90.000
     Group: BASE                                             Warn Stage(ft): 95.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
```

```
--------------------------------------------------------------------------------------------
      Name: NPOND              Base Flow(cfs): 0.000         Init Stage(ft): 81.500
     Group: BASE                                            Warn Stage(ft): 88.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------
         69.500         15.5800
         81.500         20.0000
         88.000         22.4700

--------------------------------------------------------------------------------------------
      Name: NPRE100            Base Flow(cfs): 0.000         Init Stage(ft): 78.870
     Group: BASE                                            Warn Stage(ft): 85.600
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE105            Base Flow(cfs): 0.000         Init Stage(ft): 81.500
     Group: BASE                                            Warn Stage(ft): 85.800
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE115            Base Flow(cfs): 0.000         Init Stage(ft): 80.650
     Group: BASE                                            Warn Stage(ft): 86.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE120            Base Flow(cfs): 0.000         Init Stage(ft): 80.800
     Group: BASE                                            Warn Stage(ft): 85.700
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE130            Base Flow(cfs): 0.000         Init Stage(ft): 80.100
     Group: BASE                                            Warn Stage(ft): 87.100
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

--------------------------------------------------------------------------------------------
      Name: NPRE140            Base Flow(cfs): 0.000         Init Stage(ft): 77.830
```

```
     Group: BASE                                            Warn Stage(ft): 85.000
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE150             Base Flow(cfs): 0.000         Init Stage(ft): 82.600
     Group: BASE                                            Warn Stage(ft): 87.500
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE160             Base Flow(cfs): 0.000         Init Stage(ft): 77.050
     Group: BASE                                            Warn Stage(ft): 84.300
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE170             Base Flow(cfs): 0.000         Init Stage(ft): 77.440
     Group: BASE                                            Warn Stage(ft): 83.900
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE180             Base Flow(cfs): 0.000         Init Stage(ft): 75.800
     Group: BASE                                            Warn Stage(ft): 80.200
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE190             Base Flow(cfs): 0.000         Init Stage(ft): 77.000
     Group: BASE                                            Warn Stage(ft): 79.900
      Type: Stage/Area


      Stage(ft)        Area(ac)
--------------- ---------------

-------------------------------------------------------------------------------------------
      Name: NPRE200             Base Flow(cfs): 0.000         Init Stage(ft): 77.000
     Group: BASE                                            Warn Stage(ft): 77.000
      Type: Stage/Area
```

Stage(ft)	Area(ac)

Name: NPRE210 Base Flow(cfs): 0.000 Init Stage(ft): 78.500
Group: BASE Warn Stage(ft): 84.000
Type: Stage/Area

Stage(ft)	Area(ac)
78.480	0.0100
81.580	3.9900
82.000	4.4000
83.000	4.5400
83.500	4.8000
84.000	4.8000

Name: NPRE220 Base Flow(cfs): 0.000 Init Stage(ft): 77.000
Group: BASE Warn Stage(ft): 86.000
Type: Stage/Area

Stage(ft)	Area(ac)
75.390	0.0100
76.000	5.2300
77.000	27.9300
78.000	64.2400
79.000	83.2400
80.000	107.7800
81.000	120.5900
82.000	129.3000
83.000	135.4500
84.000	141.7500
85.000	146.0900
86.000	149.3000
87.000	152.0600
88.000	154.5500
89.000	155.6900
90.000	155.7400
91.000	155.7800
92.000	155.8300
93.000	155.8300

Name: NPRE230 Base Flow(cfs): 0.000 Init Stage(ft): 77.000
Group: BASE Warn Stage(ft): 77.000
Type: Stage/Area

Stage(ft)	Area(ac)
74.170	0.0100
75.000	0.4300
76.000	7.4400
77.000	19.2000
78.000	33.0400
79.000	45.3200
80.000	50.1900
81.000	58.2600

82.000	72.6300
83.000	81.0700
84.000	89.3200
85.000	92.5900
86.000	95.0100
87.000	98.9700
88.000	101.3000
89.000	101.8600
90.000	101.8800
90.510	101.8800

Name: NPRE250 Base Flow(cfs): 0.000 Init Stage(ft): 86.000
Group: BASE Warn Stage(ft): 86.000
Type: Stage/Area

Stage(ft)	Area(ac)
86.000	1.2000
87.000	4.7700
88.000	7.7000
89.000	12.3800
90.000	13.7300
90.970	15.0700

Name: NPRE270 Base Flow(cfs): 0.000 Init Stage(ft): 84.800
Group: BASE Warn Stage(ft): 84.800
Type: Stage/Area

Stage(ft)	Area(ac)
84.310	0.0100
85.000	5.6300
86.000	7.1400
87.000	7.8700
88.000	7.8700
89.000	7.8700
90.000	7.8800
91.000	7.8800
92.000	7.8800

Name: NPRE280 Base Flow(cfs): 0.000 Init Stage(ft): 81.400
Group: BASE Warn Stage(ft): 81.400
Type: Stage/Area

Stage(ft)	Area(ac)
80.000	0.0100
81.000	1.8700
82.000	17.8300
83.000	43.9300
84.000	72.9400
85.000	81.6900
86.000	84.5200
87.000	86.9800
88.000	89.0600
89.000	91.7900

90.000	94.6900
90.990	99.7300

Name: NPRE300 Base Flow(cfs): 0.000 Init Stage(ft): 78.810
Group: BASE Warn Stage(ft): 86.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: NPRE310 Base Flow(cfs): 0.000 Init Stage(ft): 76.590
Group: BASE Warn Stage(ft): 80.900
Type: Stage/Area

Stage(ft)	Area(ac)
76.400	0.0100
77.660	0.0100
78.000	0.0200
79.000	1.2600
80.000	7.4200
81.000	17.3800
82.000	32.7500
83.000	49.2400
84.000	51.3700
85.000	51.8600
86.000	52.3000
87.000	52.6400
88.000	53.0000
89.000	53.4000
90.000	53.6200
91.000	53.6300
92.000	53.6300
93.000	53.6300
94.000	53.6300
94.950	53.6500

Name: NPRE330 Base Flow(cfs): 0.000 Init Stage(ft): 76.000
Group: BASE Warn Stage(ft): 80.900
Type: Stage/Area

Stage(ft)	Area(ac)

Name: NPRE340 Base Flow(cfs): 0.000 Init Stage(ft): 76.000
Group: BASE Warn Stage(ft): 79.500
Type: Stage/Area

Stage(ft)	Area(ac)

Name: NPRE350 Base Flow(cfs): 0.000 Init Stage(ft): 76.000

Group: BASE Warn Stage(ft): 77.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: NPRE360 Base Flow(cfs): 0.000 Init Stage(ft): 76.000
Group: BASE Warn Stage(ft): 79.600
Type: Stage/Area

Stage(ft)	Area(ac)
75.980	0.0100
77.000	0.0100
78.000	0.1000
79.000	1.0700
80.000	2.8800
81.000	7.0500
82.000	8.9700
83.000	10.6900
84.000	12.3200
85.000	14.5500
86.000	17.3000
87.000	17.5700
88.000	17.7100
89.000	17.7800
90.000	17.8600
91.000	17.9000
92.000	17.9500

Name: NPRE370 Base Flow(cfs): 0.000 Init Stage(ft): 76.000
Group: BASE Warn Stage(ft): 78.000
Type: Stage/Area

Stage(ft)	Area(ac)
72.000	0.0100
73.000	1.1800
74.000	40.2600
75.000	74.6600
76.000	93.7200
77.000	110.8100
78.000	127.3600
79.000	139.3900
80.000	147.1500
81.000	153.3400
82.000	158.3600
83.000	160.0300
84.000	160.6200
85.000	160.6800
86.000	160.7200
87.000	160.7400
88.000	160.7400
89.000	160.7400
90.000	160.7400

Name: NTOP10 Base Flow(cfs): 0.000 Init Stage(ft): 169.100
Group: BASE Warn Stage(ft): 175.000
Type: Stage/Area

Stage(ft)	Area(ac)
169.000	0.1000
170.000	1.7200
171.000	3.9700
172.000	5.2100
173.000	6.5300
174.000	7.8900
175.000	9.3000

Name: NTOP20 Base Flow(cfs): 0.000 Init Stage(ft): 169.100
Group: BASE Warn Stage(ft): 175.000
Type: Stage/Area

Stage(ft)	Area(ac)
169.000	0.1000
170.000	5.2500
171.000	12.1000
172.000	15.8900
173.000	19.9000
174.000	24.0500
175.000	28.3500

Name: NTOP30 Base Flow(cfs): 0.000 Init Stage(ft): 169.100
Group: BASE Warn Stage(ft): 175.000
Type: Stage/Area

Stage(ft)	Area(ac)
169.000	0.1000
170.000	2.3600
171.000	5.4500
172.000	7.1600
173.000	8.9700
174.000	10.8400
175.000	12.7800

Name: NTOP40 Base Flow(cfs): 0.000 Init Stage(ft): 169.100
Group: BASE Warn Stage(ft): 175.000
Type: Stage/Area

Stage(ft)	Area(ac)
169.000	0.1000
170.000	7.2400
171.000	16.7000
172.000	21.9300
173.000	27.4600
174.000	33.2000

```
       175.000         39.1300

-------------------------------------------------------------------------------------------
     Name: NTOP50              Base Flow(cfs): 0.000          Init Stage(ft): 169.100
    Group: BASE                                              Warn Stage(ft): 175.000
     Type: Stage/Area


     Stage(ft)        Area(ac)
-------------- ---------------
       169.000          0.1000
       170.000          0.7100
       171.000          1.7300
       172.000          2.4700
       173.000          3.1500
       174.000          3.8500
       175.000          4.5700

-------------------------------------------------------------------------------------------
     Name: NTOP60              Base Flow(cfs): 0.000          Init Stage(ft): 169.100
    Group: BASE                                              Warn Stage(ft): 175.000
     Type: Stage/Area


     Stage(ft)        Area(ac)
-------------- ---------------
       169.000          0.1000
       170.000          3.4600
       171.000          7.9700
       172.000         10.4700
       173.000         13.1100
       174.000         15.8500
       175.000         18.6900

-------------------------------------------------------------------------------------------
     Name: NTOP70              Base Flow(cfs): 0.000          Init Stage(ft): 169.100
    Group: BASE                                              Warn Stage(ft): 175.000
     Type: Stage/Area


     Stage(ft)        Area(ac)
-------------- ---------------
       169.000          0.1000
       170.000          0.7200
       171.000          1.6600
       172.000          2.1800
       173.000          2.7300
       174.000          3.3000
       175.000          3.8900

-------------------------------------------------------------------------------------------
     Name: NTOP80              Base Flow(cfs): 0.000          Init Stage(ft): 169.100
    Group: BASE                                              Warn Stage(ft): 175.000
     Type: Stage/Area


     Stage(ft)        Area(ac)
-------------- ---------------
       169.000          0.1000
       170.000          4.0300
       171.000          9.3000
```

172.000	12.2100
173.000	15.2900
174.000	18.4800
175.000	21.7900

Name: OUTBOXA Base Flow(cfs): 0.000 Init Stage(ft): 80.000
Group: BASE Warn Stage(ft): 88.000
Type: Stage/Area

Stage(ft)	Area(ac)
80.000	0.0010
88.000	0.0010

Name: OUTBOXB Base Flow(cfs): 0.000 Init Stage(ft): 80.000
Group: BASE Warn Stage(ft): 88.000
Type: Stage/Area

Stage(ft)	Area(ac)
80.000	0.0010
88.000	0.0010

Name: TPRE240 Base Flow(cfs): 0.000 Init Stage(ft): 77.000
Group: BASE Warn Stage(ft): 77.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	77.000
999.00	77.000

Name: TPRE380 Base Flow(cfs): 0.000 Init Stage(ft): 76.000
Group: BASE Warn Stage(ft): 76.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	76.000
999.00	76.000

Name: TW Base Flow(cfs): 0.000 Init Stage(ft): 71.000
Group: BASE Warn Stage(ft): 71.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	71.000
999.00	71.000

```
================================================================================
==== Cross Sections ============================================================
================================================================================

             Name:                              Group: BASE
      Encroachment: No


    Station(ft)   Elevation(ft)     Manning's N
--------------- --------------- ---------------

================================================================================
==== Pipes =====================================================================
================================================================================

         Name: OUTPIPEA            From Node: OUTBOXA           Length(ft): 60.00
        Group: BASE                  To Node: NPRE140               Count: 1
                                                        Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                        Flow: Both
     Span(in): 32.57          32.57                     Entrance Loss Coef: 0.50
     Rise(in): 32.57          32.57                         Exit Loss Coef: 1.00
   Invert(ft): 80.000         80.000                        Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


--------------------------------------------------------------------------------------------------
         Name: OUTPIPEB            From Node: OUTBOXB           Length(ft): 60.00
        Group: BASE                  To Node: NPRE140               Count: 1
                                                        Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                        Flow: Both
     Span(in): 32.57          32.57                     Entrance Loss Coef: 0.50
     Rise(in): 32.57          32.57                         Exit Loss Coef: 1.00
   Invert(ft): 80.000         80.000                        Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


--------------------------------------------------------------------------------------------------
         Name: RA121A              From Node: NA121A            Length(ft): 165.00
        Group: BASE                  To Node: NPOND                 Count: 1
                                                        Friction Equation: Automatic
```

```
              UPSTREAM       DOWNSTREAM               Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                              Flow: Both
     Span(in): 32.57          32.57                  Entrance Loss Coef: 0.50
     Rise(in): 32.57          32.57                      Exit Loss Coef: 1.00
   Invert(ft): 75.500         75.500                     Bend Loss Coef: 0.00
  Manning's N: 0.010000       0.010000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



-------------------------------------------------------------------------------------------------
         Name: RA121B              From Node: NA121B            Length(ft): 165.00
        Group: BASE                  To Node: NPOND                 Count: 1
                                                             Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM               Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                              Flow: Both
     Span(in): 32.57          32.57                  Entrance Loss Coef: 0.50
     Rise(in): 32.57          32.57                      Exit Loss Coef: 1.00
   Invert(ft): 75.500         75.500                     Bend Loss Coef: 0.00
  Manning's N: 0.010000       0.010000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



-------------------------------------------------------------------------------------------------
         Name: RPRE100A            From Node: NPRE100           Length(ft): 75.00
        Group: BASE                  To Node: NPRE300               Count: 1
                                                             Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM               Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                              Flow: Both
     Span(in): 18.00          18.00                  Entrance Loss Coef: 0.50
     Rise(in): 18.00          18.00                      Exit Loss Coef: 1.00
   Invert(ft): 78.970         78.970                     Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting
```

```
-------------------------------------------------------------------------------------------------
         Name: RPRE120             From Node: NPRE120           Length(ft): 42.00
        Group: BASE                  To Node: NPRE130                Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                                Flow: Both
     Span(in): 18.00          18.00                     Entrance Loss Coef: 0.50
     Rise(in): 18.00          18.00                         Exit Loss Coef: 0.00
   Invert(ft): 80.910         80.910                        Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting



-------------------------------------------------------------------------------------------------
         Name: RPRE140             From Node: NPRE140           Length(ft): 50.00
        Group: BASE                  To Node: NPRE160                Count: 2
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                                Flow: Both
     Span(in): 36.00          36.00                     Entrance Loss Coef: 0.90
     Rise(in): 36.00          36.00                         Exit Loss Coef: 0.00
   Invert(ft): 78.520         78.520                        Bend Loss Coef: 0.00
  Manning's N: 0.024000       0.024000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting



-------------------------------------------------------------------------------------------------
         Name: RPRE160             From Node: NPRE160           Length(ft): 40.00
        Group: BASE                  To Node: NPRE170                Count: 2
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                                Flow: Both
     Span(in): 36.00          36.00                     Entrance Loss Coef: 0.90
     Rise(in): 36.00          36.00                         Exit Loss Coef: 0.00
   Invert(ft): 77.220         77.220                        Bend Loss Coef: 0.00
  Manning's N: 0.024000       0.024000                    Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                        Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Downstream FHWA Inlet Edge Description:
```

Circular CMP: Projecting

```
-------------------------------------------------------------------------------------------------
         Name: RPRE180             From Node: NPRE180           Length(ft): 16.00
        Group: BASE                  To Node: NPRE190                Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                             Flow: Both
     Span(in): 24.00          24.00                     Entrance Loss Coef: 0.50
     Rise(in): 24.00          24.00                         Exit Loss Coef: 0.00
   Invert(ft): 75.770         75.770                        Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                   Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dn
 Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting


-------------------------------------------------------------------------------------------------
         Name: RPRE210             From Node: NPRE210           Length(ft): 4230.00
        Group: BASE                  To Node: TW                     Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                             Flow: Both
     Span(in): 24.00          24.00                     Entrance Loss Coef: 0.50
     Rise(in): 24.00          24.00                         Exit Loss Coef: 1.00
   Invert(ft): 78.500         71.000                        Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                   Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


-------------------------------------------------------------------------------------------------
         Name: RPRE220             From Node: NPRE220           Length(ft): 80.00
        Group: BASE                  To Node: NPRE230                Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Rectangular    Rectangular                          Flow: Both
     Span(in): 360.00         360.00                    Entrance Loss Coef: 0.50
     Rise(in): 60.00          60.00                         Exit Loss Coef: 0.00
   Invert(ft): 76.000         76.000                        Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                   Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                     Stabilizer Option: None
```

Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Name:	RPRE310	From Node:	NPRE310	Length(ft):	80.00
Group:	BASE	To Node:	NPRE330	Count:	1
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Most Restrictive
Geometry:	Circular	Circular		Flow:	Both
Span(in):	24.00	24.00		Entrance Loss Coef:	0.90
Rise(in):	24.00	24.00		Exit Loss Coef:	0.00
Invert(ft):	76.590	76.590		Bend Loss Coef:	0.00
Manning's N:	0.024000	0.024000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Name:	RPRE330	From Node:	NPRE330	Length(ft):	25.00
Group:	BASE	To Node:	NPRE340	Count:	2
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Most Restrictive
Geometry:	Circular	Circular		Flow:	Both
Span(in):	36.00	36.00		Entrance Loss Coef:	0.90
Rise(in):	36.00	36.00		Exit Loss Coef:	0.00
Invert(ft):	74.780	74.780		Bend Loss Coef:	0.00
Manning's N:	0.024000	0.024000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn
Bot Clip(in):	0.000	0.000		Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Downstream FHWA Inlet Edge Description:
Circular CMP: Projecting

Name:	RPRE360	From Node:	NPRE360	Length(ft):	55.00
Group:	BASE	To Node:	NPRE370	Count:	3
				Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm:	Most Restrictive
Geometry:	Circular	Circular		Flow:	Both
Span(in):	24.00	24.00		Entrance Loss Coef:	0.50
Rise(in):	24.00	24.00		Exit Loss Coef:	0.00
Invert(ft):	75.980	75.980		Bend Loss Coef:	0.00
Manning's N:	0.012000	0.012000		Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec:	Use dn

```
 Bot Clip(in): 0.000          0.000                      Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting

Downstream FHWA Inlet Edge Description:
Circular Concrete: Groove end projecting


-------------------------------------------------------------------------------------------------
         Name: RPRE370             From Node: NPRE370           Length(ft): 120.00
        Group: BASE                  To Node: TPRE380                Count: 3
                                                             Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                 Solution Algorithm: Most Restrictive
     Geometry: Rectangular    Rectangular                           Flow: Both
     Span(in): 96.00          96.00                      Entrance Loss Coef: 0.50
     Rise(in): 36.00          36.00                          Exit Loss Coef: 0.00
   Invert(ft): 74.250         74.250                         Bend Loss Coef: 0.00
  Manning's N: 0.012000       0.012000                     Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                          Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                       Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares

Downstream FHWA Inlet Edge Description:
Rectangular Box: 30° to 75° wingwall flares


-------------------------------------------------------------------------------------------------
         Name: RTOP10              From Node: NTOP10            Length(ft): 50.00
        Group: BASE                  To Node: NA10                   Count: 1
                                                             Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                 Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                              Flow: Both
     Span(in): 36.00          36.00                      Entrance Loss Coef: 0.50
     Rise(in): 36.00          36.00                          Exit Loss Coef: 0.00
   Invert(ft): 169.100        168.000                        Bend Loss Coef: 0.00
  Manning's N: 0.010000       0.010000                     Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                          Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                       Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


-------------------------------------------------------------------------------------------------
         Name: RTOP20              From Node: NTOP20            Length(ft): 50.00
        Group: BASE                  To Node: NA60                   Count: 1
                                                             Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                 Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                              Flow: Both
     Span(in): 36.00          36.00                      Entrance Loss Coef: 0.50
```

```
     Rise(in): 36.00          36.00                      Exit Loss Coef: 0.00
   Invert(ft): 169.100        168.000                    Bend Loss Coef: 0.00
  Manning's N: 0.010000       0.010000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



-------------------------------------------------------------------------------------------------
         Name: RTOP30             From Node: NTOP30            Length(ft): 50.00
        Group: BASE                 To Node: NB20                 Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                        Flow: Both
     Span(in): 36.00          36.00                     Entrance Loss Coef: 0.50
     Rise(in): 36.00          36.00                         Exit Loss Coef: 0.00
   Invert(ft): 169.100        168.000                    Bend Loss Coef: 0.00
  Manning's N: 0.010000       0.010000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



-------------------------------------------------------------------------------------------------
         Name: RTOP40             From Node: NTOP40            Length(ft): 50.00
        Group: BASE                 To Node: NA80                 Count: 1
                                                          Friction Equation: Automatic
               UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                        Flow: Both
     Span(in): 36.00          36.00                     Entrance Loss Coef: 0.50
     Rise(in): 36.00          36.00                         Exit Loss Coef: 0.00
   Invert(ft): 169.100        168.000                    Bend Loss Coef: 0.00
  Manning's N: 0.010000       0.010000                 Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                     Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                   Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



-------------------------------------------------------------------------------------------------
         Name: RTOP50             From Node: NTOP50            Length(ft): 50.00
        Group: BASE                 To Node: NB30                 Count: 1
```

```
                                                 Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM          Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                      Flow: Both
     Span(in): 36.00          36.00               Entrance Loss Coef: 0.50
     Rise(in): 36.00          36.00                   Exit Loss Coef: 0.00
   Invert(ft): 169.100        168.000                 Bend Loss Coef: 0.00
  Manning's N: 0.010000       0.010000              Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                  Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



-------------------------------------------------------------------------------------------------
         Name: RTOP60              From Node: NTOP60            Length(ft): 50.00
        Group: BASE                  To Node: NA90                 Count: 1
                                                 Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM          Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                      Flow: Both
     Span(in): 36.00          36.00               Entrance Loss Coef: 0.50
     Rise(in): 36.00          36.00                   Exit Loss Coef: 0.00
   Invert(ft): 169.100        168.000                 Bend Loss Coef: 0.00
  Manning's N: 0.010000       0.010000              Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                  Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



-------------------------------------------------------------------------------------------------
         Name: RTOP70              From Node: NTOP70            Length(ft): 50.00
        Group: BASE                  To Node: NB50                 Count: 1
                                                 Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM          Solution Algorithm: Most Restrictive
     Geometry: Circular       Circular                      Flow: Both
     Span(in): 36.00          36.00               Entrance Loss Coef: 0.50
     Rise(in): 36.00          36.00                   Exit Loss Coef: 0.00
   Invert(ft): 169.100        168.000                 Bend Loss Coef: 0.00
  Manning's N: 0.010000       0.010000              Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000          0.000                  Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000          0.000                Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall
```

```
-----------------------------------------------------------------------------------------------
        Name: RTOP80              From Node: NTOP80             Length(ft): 50.00
       Group: BASE                  To Node: NA110                  Count: 1
                                                          Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
    Geometry: Circular       Circular                        Flow: Both
    Span(in): 36.00          36.00                     Entrance Loss Coef: 0.50
    Rise(in): 36.00          36.00                         Exit Loss Coef: 0.00
  Invert(ft): 169.100        168.000                       Bend Loss Coef: 0.00
 Manning's N: 0.010000       0.010000                   Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


===============================================================================================
==== Channels =================================================================================
===============================================================================================

         Name: RA05                From Node: NA05               Length(ft): 908.00
        Group: BASE                  To Node: NA10                    Count: 1

              UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
    Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
   Invert(ft): 85.000        85.000                          Flow: Both
TClpInitZ(ft): 9999.000      9999.000                  Contraction Coef: 0.000
  Manning's N: 0.035000      0.035000                    Expansion Coef: 0.000
 Top Clip(ft): 0.000         0.000                     Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000         0.000                         Exit Loss Coef: 0.000
    Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
    Aux XSec1:                                        Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 10.000        10.000
 LtSdSlp(h/v): 3.00          3.00
 RtSdSlp(h/v): 3.00          3.00


-----------------------------------------------------------------------------------------------
         Name: RA10                From Node: NA10               Length(ft): 908.00
        Group: BASE                  To Node: NA20                    Count: 1

              UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
    Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
   Invert(ft): 85.000        85.000                          Flow: Both
TClpInitZ(ft): 9999.000      9999.000                  Contraction Coef: 0.000
  Manning's N: 0.035000      0.035000                    Expansion Coef: 0.000
 Top Clip(ft): 0.000         0.000                     Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000         0.000                         Exit Loss Coef: 0.000
    Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
    Aux XSec1:                                        Stabilizer Option: None
```

```
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 10.000         10.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00



-------------------------------------------------------------------------------------------------
          Name: RA100               From Node: NA100              Length(ft): 500.00
         Group: BASE                  To Node: NA110                   Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 85.000         85.000                               Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                            Inlet Ctrl Spec: Use dn
     Aux XSec1:                                         Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 5.000          5.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00



-------------------------------------------------------------------------------------------------
          Name: RA110               From Node: NA110              Length(ft): 500.00
         Group: BASE                  To Node: NA120                   Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 85.000         85.000                               Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                            Inlet Ctrl Spec: Use dn
     Aux XSec1:                                         Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 5.000          5.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00



-------------------------------------------------------------------------------------------------
          Name: RA20                From Node: NA20               Length(ft): 908.00
         Group: BASE                  To Node: NA30                   Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 85.000         85.000                               Flow: Both
```

```
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                          Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 10.000         10.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RA30                From Node: NA30              Length(ft): 908.00
         Group: BASE                  To Node: NA40                   Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 85.000         85.000                               Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                          Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 10.000         10.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RA40                From Node: NA40              Length(ft): 908.00
         Group: BASE                  To Node: NA50                   Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 85.000         85.000                               Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                          Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 10.000         10.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00
```

```
-----------------------------------------------------------------------------------------------
          Name: RA50                From Node: NA50              Length(ft): 1036.00
         Group: BASE                  To Node: NA60                   Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 85.000         85.000                               Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                         Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 10.000         10.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-----------------------------------------------------------------------------------------------
          Name: RA60                From Node: NA60              Length(ft): 1036.00
         Group: BASE                  To Node: NA70                   Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 85.000         85.000                               Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                         Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 10.000         10.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-----------------------------------------------------------------------------------------------
          Name: RA70                From Node: NA70              Length(ft): 1036.00
         Group: BASE                  To Node: NA80                   Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 85.000         85.000                               Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                         Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
```

```
     Depth(ft):
 Bot Width(ft): 10.000         10.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RA80               From Node: NA80              Length(ft): 1036.00
         Group: BASE                 To Node: NA90                   Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 85.000         85.000                             Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                    Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
     Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                          Inlet Ctrl Spec: Use dn
     Aux XSec1:                                       Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 10.000         10.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RA90               From Node: NA90              Length(ft): 1036.00
         Group: BASE                 To Node: NA100                  Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 85.000         85.000                             Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                    Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
     Main XSec:                                         Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                          Inlet Ctrl Spec: Use dn
     Aux XSec1:                                       Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 10.000         10.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RB10               From Node: NB10              Length(ft): 850.00
         Group: BASE                 To Node: NB20                   Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 90.000         90.000                             Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                    Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
```

```
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 0.100          0.100
  LtSdSlp(h/v): 1.50           1.50
  RtSdSlp(h/v): 1.50           1.50


-------------------------------------------------------------------------------------------------
          Name: RB20                From Node: NB20              Length(ft): 850.00
         Group: BASE                  To Node: NB30                   Count: 1

                UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 90.000         90.000                              Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                  Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                    Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 0.100          0.100
  LtSdSlp(h/v): 1.50           1.50
  RtSdSlp(h/v): 1.50           1.50


-------------------------------------------------------------------------------------------------
          Name: RB30                From Node: NB30              Length(ft): 850.00
         Group: BASE                  To Node: NB40                   Count: 1

                UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 90.000         90.000                              Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                  Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                    Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 0.100          0.100
  LtSdSlp(h/v): 1.50           1.50
  RtSdSlp(h/v): 1.50           1.50


-------------------------------------------------------------------------------------------------
          Name: RB40                From Node: NB40              Length(ft): 540.00
         Group: BASE                  To Node: NB50                   Count: 1
```

```
               UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 90.000         90.000                                Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 0.100          0.100
  LtSdSlp(h/v): 1.50           1.50
  RtSdSlp(h/v): 1.50           1.50


-------------------------------------------------------------------------------------------------
          Name: RB50                From Node: NB50              Length(ft): 552.00
         Group: BASE                  To Node: NB60                   Count: 1

               UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 90.000         90.000                                Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 0.100          0.100
  LtSdSlp(h/v): 1.50           1.50
  RtSdSlp(h/v): 1.50           1.50


-------------------------------------------------------------------------------------------------
          Name: RPRE100             From Node: NPRE100           Length(ft): 2161.00
         Group: BASE                  To Node: NPRE105                Count: 1

               UPSTREAM       DOWNSTREAM                 Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 78.870         81.500                                Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                   Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                     Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dn
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
```

```
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
         Name: RPRE105             From Node: NPRE105           Length(ft): 3076.00
        Group: BASE                  To Node: NPRE115                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 81.500        80.650                             Flow: Both
 TClpInitZ(ft): 9999.000      9999.000                 Contraction Coef: 0.000
   Manning's N: 0.035000      0.035000                   Expansion Coef: 0.000
  Top Clip(ft): 0.000         0.000                  Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000         0.000                      Exit Loss Coef: 0.000
     Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                        Inlet Ctrl Spec: Use dc
     Aux XSec1:                                     Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000        20.000
  LtSdSlp(h/v): 3.00          3.00
  RtSdSlp(h/v): 3.00          3.00


-------------------------------------------------------------------------------------------------
         Name: RPRE115             From Node: NPRE115           Length(ft): 935.00
        Group: BASE                  To Node: NPRE120                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 80.650        80.800                             Flow: Both
 TClpInitZ(ft): 9999.000      9999.000                 Contraction Coef: 0.000
   Manning's N: 0.035000      0.035000                   Expansion Coef: 0.000
  Top Clip(ft): 0.000         0.000                  Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000         0.000                      Exit Loss Coef: 0.000
     Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                        Inlet Ctrl Spec: Use dc
     Aux XSec1:                                     Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000        20.000
  LtSdSlp(h/v): 3.00          3.00
  RtSdSlp(h/v): 3.00          3.00


-------------------------------------------------------------------------------------------------
         Name: RPRE130             From Node: NPRE130           Length(ft): 1134.00
        Group: BASE                  To Node: NPRE140                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 80.100        77.830                             Flow: Both
 TClpInitZ(ft): 9999.000      9999.000                 Contraction Coef: 0.000
   Manning's N: 0.035000      0.035000                   Expansion Coef: 0.000
  Top Clip(ft): 0.000         0.000                  Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000         0.000                      Exit Loss Coef: 0.000
     Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                        Inlet Ctrl Spec: Use dn
```

```
    Aux XSec1:                                          Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 20.000         20.000
 LtSdSlp(h/v): 3.00           3.00
 RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
         Name: RPRE150             From Node: NPRE150           Length(ft): 2615.00
        Group: BASE                  To Node: NPRE160                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
   Invert(ft): 82.600         77.050                                Flow: Both
TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
  Manning's N: 0.035000       0.035000                   Expansion Coef: 0.000
 Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
    Main XSec:                                        Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                         Inlet Ctrl Spec: Use dn
    Aux XSec1:                                        Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 20.000         20.000
 LtSdSlp(h/v): 3.00           3.00
 RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
         Name: RPRE170             From Node: NPRE170           Length(ft): 1705.00
        Group: BASE                  To Node: NPRE180                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
   Invert(ft): 77.440         75.600                                Flow: Both
TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
  Manning's N: 0.035000       0.035000                   Expansion Coef: 0.000
 Top Clip(ft): 0.000          0.000                   Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
    Main XSec:                                        Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                         Inlet Ctrl Spec: Use dn
    Aux XSec1:                                        Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 20.000         20.000
 LtSdSlp(h/v): 3.00           3.00
 RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
         Name: RPRE190             From Node: NPRE190           Length(ft): 774.00
        Group: BASE                  To Node: NPRE200                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
     Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
```

```
    Invert(ft): 75.100         75.900                              Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                   Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                  Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
     Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                        Inlet Ctrl Spec: Use dn
     Aux XSec1:                                     Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RPRE300             From Node: NPRE300           Length(ft): 805.00
         Group: BASE                  To Node: NPRE330                Count: 1

                UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 78.810         74.510                              Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                   Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                  Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
     Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                        Inlet Ctrl Spec: Use dn
     Aux XSec1:                                     Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
          Name: RPRE340             From Node: NPRE340           Length(ft): 1206.00
         Group: BASE                  To Node: NPRE350                Count: 1

                UPSTREAM       DOWNSTREAM                Friction Equation: Average Conveyance
      Geometry: Trapezoidal    Trapezoidal              Solution Algorithm: Automatic
    Invert(ft): 75.000         73.900                              Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                 Contraction Coef: 0.000
   Manning's N: 0.035000       0.035000                   Expansion Coef: 0.000
  Top Clip(ft): 0.000          0.000                  Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                      Exit Loss Coef: 0.000
     Main XSec:                                       Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                        Inlet Ctrl Spec: Use dn
     Aux XSec1:                                     Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000         20.000
  LtSdSlp(h/v): 3.00           3.00
  RtSdSlp(h/v): 3.00           3.00
```

```
================================================================================
==== Weirs =====================================================================
================================================================================

        Name: ORIF_A             From Node: NPOND
       Group: BASE                 To Node: OUTBOXA
        Flow: Both                   Count: 2
        Type: Vertical: Mavis     Geometry: Circular

                  Span(in): 10.00
                  Rise(in): 10.00
                Invert(ft): 81.500
     Control Elevation(ft): 81.500
                                          TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
       Weir Discharge Coef: 3.000
    Orifice Discharge Coef: 0.600



--------------------------------------------------------------------------------------------------
        Name: ORIF_B             From Node: NPOND
       Group: BASE                 To Node: OUTBOXB
        Flow: Both                   Count: 2
        Type: Vertical: Mavis     Geometry: Circular

                  Span(in): 10.00
                  Rise(in): 10.00
                Invert(ft): 81.500
     Control Elevation(ft): 81.500
                                          TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
       Weir Discharge Coef: 3.000
    Orifice Discharge Coef: 0.600



--------------------------------------------------------------------------------------------------
        Name: RA120A             From Node: NA120
       Group: BASE                 To Node: NA121A
        Flow: Both                   Count: 1
        Type: Horizontal          Geometry: Rectangular

                  Span(in): 24.00
                  Rise(in): 36.00
                Invert(ft): 85.000
     Control Elevation(ft): 85.000
                                          TABLE
           Bottom Clip(in): 0.000
              Top Clip(in): 0.000
       Weir Discharge Coef: 3.000
    Orifice Discharge Coef: 0.600



--------------------------------------------------------------------------------------------------
        Name: RA120B             From Node: NA120
       Group: BASE                 To Node: NA121B
        Flow: Both                   Count: 1
        Type: Horizontal          Geometry: Rectangular

                  Span(in): 24.00
```

```
                  Rise(in): 36.00
                Invert(ft): 85.000
       Control Elevation(ft): 85.000
                                       TABLE
             Bottom Clip(in): 0.000
                Top Clip(in): 0.000
          Weir Discharge Coef: 3.000
      Orifice Discharge Coef: 0.600



--------------------------------------------------------------------------------------------------
         Name: RB10W               From Node: NB10
        Group: BASE                  To Node: NA05
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 0.10
       Left Side Slope(h/v): 1.50
      Right Side Slope(h/v): 1.50
                Invert(ft): 90.000
       Control Elevation(ft): 90.000
     Struct Opening Dim(ft): 9999.00
                                       TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
          Weir Discharge Coef: 2.500
      Orifice Discharge Coef: 0.600



--------------------------------------------------------------------------------------------------
         Name: RB60                From Node: NB60
        Group: BASE                  To Node: NA120
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 0.10
       Left Side Slope(h/v): 1.50
      Right Side Slope(h/v): 1.50
                Invert(ft): 90.000
       Control Elevation(ft): 90.000
     Struct Opening Dim(ft): 9999.00
                                       TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
          Weir Discharge Coef: 2.500
      Orifice Discharge Coef: 0.600



--------------------------------------------------------------------------------------------------
         Name: RPONDA              From Node: NPOND
        Group: BASE                  To Node: OUTBOXA
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 4.00
       Left Side Slope(h/v): 0.00
      Right Side Slope(h/v): 0.00
                Invert(ft): 84.500
       Control Elevation(ft): 84.500
     Struct Opening Dim(ft): 9999.00
                                       TABLE
             Bottom Clip(ft): 0.000
```

```
               Top Clip(ft): 0.000
        Weir Discharge Coef: 3.000
     Orifice Discharge Coef: 0.600


-----------------------------------------------------------------------------------------------
         Name: RPONDB              From Node: NPOND
        Group: BASE                  To Node: OUTBOXB
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 4.00
      Left Side Slope(h/v): 0.00
     Right Side Slope(h/v): 0.00
                Invert(ft): 84.500
     Control Elevation(ft): 84.500
     Struct Opening Dim(ft): 9999.00
                                       TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 3.000
     Orifice Discharge Coef: 0.600


-----------------------------------------------------------------------------------------------
         Name: RPRE200             From Node: NPRE200
        Group: BASE                  To Node: NPRE230
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 55.00
      Left Side Slope(h/v): 11.00
     Right Side Slope(h/v): 11.00
                Invert(ft): 76.000
     Control Elevation(ft): 76.000
     Struct Opening Dim(ft): 9999.00
                                       TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.600
     Orifice Discharge Coef: 0.600


-----------------------------------------------------------------------------------------------
         Name: RPRE230             From Node: NPRE230
        Group: BASE                  To Node: TPRE240
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 55.00
      Left Side Slope(h/v): 280.00
     Right Side Slope(h/v): 280.00
                Invert(ft): 76.500
     Control Elevation(ft): 76.500
     Struct Opening Dim(ft): 9999.00
                                       TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
        Weir Discharge Coef: 2.600
     Orifice Discharge Coef: 0.600
```

```
-----------------------------------------------------------------------------------------------
        Name: RPRE250             From Node: NPRE250
       Group: BASE                  To Node: NPRE115
        Flow: Both                    Count: 1
        Type: Vertical: Mavis      Geometry: Trapezoidal

           Bottom Width(ft): 100.00
      Left Side Slope(h/v): 0.00
     Right Side Slope(h/v): 0.00
                Invert(ft): 86.000
     Control Elevation(ft): 86.000
    Struct Opening Dim(ft): 9999.00
                                      TABLE
           Bottom Clip(ft): 0.000
              Top Clip(ft): 0.000
       Weir Discharge Coef: 2.600
    Orifice Discharge Coef: 0.600



-----------------------------------------------------------------------------------------------
        Name: RPRE270             From Node: NPRE270
       Group: BASE                  To Node: NPRE140
        Flow: Both                    Count: 1
        Type: Vertical: Mavis      Geometry: Trapezoidal

           Bottom Width(ft): 100.00
      Left Side Slope(h/v): 0.00
     Right Side Slope(h/v): 0.00
                Invert(ft): 84.800
     Control Elevation(ft): 84.800
    Struct Opening Dim(ft): 9999.00
                                      TABLE
           Bottom Clip(ft): 0.000
              Top Clip(ft): 0.000
       Weir Discharge Coef: 2.600
    Orifice Discharge Coef: 0.600



-----------------------------------------------------------------------------------------------
        Name: RPRE280             From Node: NPRE280
       Group: BASE                  To Node: NPRE170
        Flow: Both                    Count: 1
        Type: Vertical: Mavis      Geometry: Trapezoidal

           Bottom Width(ft): 100.00
      Left Side Slope(h/v): 0.00
     Right Side Slope(h/v): 0.00
                Invert(ft): 81.400
     Control Elevation(ft): 81.400
    Struct Opening Dim(ft): 9999.00
                                      TABLE
           Bottom Clip(ft): 0.000
              Top Clip(ft): 0.000
       Weir Discharge Coef: 2.600
    Orifice Discharge Coef: 0.600



-----------------------------------------------------------------------------------------------
        Name: RPRE350             From Node: NPRE350
       Group: BASE                  To Node: NPRE370
        Flow: Both                    Count: 1
```

```
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 20.00
        Left Side Slope(h/v): 5.00
       Right Side Slope(h/v): 5.00
                  Invert(ft): 74.000
       Control Elevation(ft): 74.000
      Struct Opening Dim(ft): 9999.00
                                          TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
          Weir Discharge Coef: 2.600
      Orifice Discharge Coef: 0.600



--------------------------------------------------------------------------------------------------
         Name: WPRE180             From Node: NPRE180
        Group: BASE                  To Node: NPRE190
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 60.00
        Left Side Slope(h/v): 0.00
       Right Side Slope(h/v): 0.00
                  Invert(ft): 79.700
       Control Elevation(ft): 79.700
      Struct Opening Dim(ft): 9999.00
                                          TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
          Weir Discharge Coef: 2.600
      Orifice Discharge Coef: 0.600



==========================================================================================
==== Hydrology Simulations ===============================================================
==========================================================================================

         Name: 100Yr
     Filename: W:\Projects\2010\10-0249\ICPR\POST\20111101_POST\100Yr.R32

       Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 11.40

Time(hrs)       Print Inc(min)
--------------- ---------------
30.000          5.00

--------------------------------------------------------------------------------------------------
         Name: 25Yr
     Filename: W:\Projects\2010\10-0249\ICPR\POST\20111101_POST\25Yr.R32

       Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 8.80

Time(hrs)       Print Inc(min)
--------------- ---------------
60.000          5.00
```

```
------------------------------------------------------------------------------------------------
         Name: Mean
     Filename: W:\Projects\2010\10-0249\ICPR\POST\20111101_POST\Mean.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Flmod
    Rainfall Amount(in): 4.40

Time(hrs)       Print Inc(min)
--------------- ---------------
60.000          5.00

================================================================================================
==== Routing Simulations ======================================================================
================================================================================================

         Name: 100Yr               Hydrology Sim: 100Yr
     Filename: W:\Projects\2010\10-0249\ICPR\POST\20111101_POST\100Yr.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 100.00
     Min Calc Time(sec): 0.5000              Max Calc Time(sec): 1.0000
        Boundary Stages:                        Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
999.000         15.000

Group           Run
--------------- -----
BASE            Yes


------------------------------------------------------------------------------------------------
         Name: 25Yr                Hydrology Sim: 25Yr
     Filename: W:\Projects\2010\10-0249\ICPR\POST\20111101_POST\25Yr.I32

      Execute: Yes         Restart: No            Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 100.00
     Min Calc Time(sec): 0.5000              Max Calc Time(sec): 1.0000
        Boundary Stages:                        Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
100.000         5.000

Group           Run
--------------- -----
BASE            Yes


------------------------------------------------------------------------------------------------
```

```
         Name: Mean               Hydrology Sim: Mean
     Filename: W:\Projects\2010\10-0249\ICPR\POST\20111101_POST\Mean.I32

      Execute: Yes         Restart: No           Patch: No
  Alternative: No

       Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
       Start Time(hrs): 0.000                    End Time(hrs): 60.00
     Min Calc Time(sec): 0.5000              Max Calc Time(sec): 1.0000
       Boundary Stages:                        Boundary Flows:


Time(hrs)       Print Inc(min)
--------------- ---------------
60.000          5.000

Group           Run
--------------- -----
BASE            Yes
```

ICPR Output File
POST, Mean Annual 24-Hour

Name	Group	Simulation	Max Time Stage	Max Stage	Warning Stage	Max Delta Stage	Max Surf Area	Max Time Inflow	Max Inflow	Max Time Outflow	Max Outflow
			hrs	ft	ft	ft	ft2	hrs	cfs	hrs	cfs
NA05	BASE	Mean	13.7	88.0	93.0	0.0	12891.0	12.0	39.9	12.1	31.13
NA10	BASE	Mean	13.7	88.0	93.0	0.0	25697.0	12.0	49.5	12.1	31.8
NA100	BASE	Mean	14.4	87.6	93.0	0.0	18654.0	14.0	36.8	14.4	36.76
NA110	BASE	Mean	14.4	87.4	93.0	0.0	9441.0	14.4	42.2	14.4	42.22
NA120	BASE	Mean	12.1	85.9	93.0	0.0	3094.0	12.1	54.2	12.1	54.22
NA121A	BASE	Mean	24.1	83.4	93.0	0.0	120.0	12.1	27.1	12.1	27.1
NA121B	BASE	Mean	24.1	83.4	93.0	0.0	120.0	12.1	27.1	12.1	27.1
NA20	BASE	Mean	14.0	88.0	93.0	0.0	25590.0	12.0	44.3	12.2	29.72
NA30	BASE	Mean	14.0	88.0	93.0	0.0	25523.0	12.0	37.8	12.3	27.51
NA40	BASE	Mean	14.1	88.0	93.0	0.0	25446.0	12.3	34.9	12.4	26.35
NA50	BASE	Mean	14.1	88.0	93.0	0.0	27131.0	12.3	32.5	12.5	24.86
NA60	BASE	Mean	14.1	88.0	93.0	0.0	28820.0	12.3	31.4	12.6	26.57
NA70	BASE	Mean	14.2	87.9	93.0	0.0	28511.0	12.5	30.1	12.7	26.06
NA80	BASE	Mean	14.3	87.9	93.0	0.0	28238.0	12.8	31.4	14.2	30.39
NA90	BASE	Mean	14.3	87.8	93.0	0.0	27683.0	14.0	36.3	14.2	36.1
NB10	BASE	Mean	12.1	92.5	95.0	0.0	3671.0	12.0	11.6	12.0	9.49
NB20	BASE	Mean	12.1	93.4	95.0	0.0	8727.0	11.8	4.6	26.0	0.09
NB30	BASE	Mean	12.1	93.5	95.0	0.0	9108.0	11.9	15.9	12.0	8.68
NB40	BASE	Mean	12.1	93.4	95.0	0.0	7331.0	12.0	18.5	12.1	14.56
NB50	BASE	Mean	12.1	93.3	95.0	0.0	5456.0	12.0	26.1	12.1	24.24
NB60	BASE	Mean	12.1	92.4	95.0	0.0	2313.0	12.1	27.6	12.1	27.44
NPOND	BASE	Mean	27.5	83.4	88.0	0.0	902348.0	12.0	119.7	27.5	12.7
NPRE100	BASE	Mean	14.2	80.8	85.6	0.0	31494.0	12.0	4.8	16.0	2.79
NPRE105	BASE	Mean	13.1	81.8	85.8	0.0	61747.0	11.9	5.5	12.0	0.4
NPRE115	BASE	Mean	13.0	82.0	86.0	0.0	54329.0	12.1	18.1	12.5	4.44
NPRE120	BASE	Mean	13.0	82.0	85.7	0.0	13073.0	12.3	5.5	13.0	4.17
NPRE130	BASE	Mean	12.1	80.3	87.1	0.0	13253.0	12.0	5.3	12.1	4.92
NPRE140	BASE	Mean	24.1	79.9	85.0	0.0	17082.0	13.0	14.4	24.1	14.12
NPRE150	BASE	Mean	12.1	82.8	87.5	0.0	29779.0	12.0	7.7	12.1	5.97
NPRE160	BASE	Mean	16.0	79.6	84.3	0.0	41573.0	12.1	19.2	19.6	15.56
NPRE170	BASE	Mean	15.9	79.6	83.9	0.0	30445.0	14.3	45.0	14.9	42.02
NPRE180	BASE	Mean	15.9	79.5	80.2	0.0	34917.0	14.9	42.3	15.9	41.18
NPRE190	BASE	Mean	15.3	77.4	79.9	0.0	12503.0	15.9	41.3	16.0	41.33

ICPR Output File
POST, Mean Annual 24-Hour

			Max Time	Max	Warning	Max Delta	Max Surf	Max Time	Max	Max Time	Max
Name	Group	Simulation	Stage	Stage	Stage	Stage	Area	Inflow	Inflow	Outflow	Outflow
			hrs	ft	ft	ft	ft2	hrs	cfs	hrs	cfs
NPRE200	BASE	Mean	13.8	77.2	77.0	0.0	11316.0	16.0	41.5	15.9	41.53
NPRE210	BASE	Mean	12.5	79.5	84.0	0.0	64000.0	12.0	17.9	12.5	4.39
NPRE220	BASE	Mean	13.4	77.2	86.0	0.0	1552781.0	12.4	153.2	13.1	88.82
NPRE230	BASE	Mean	13.6	77.1	77.0	0.0	912039.0	13.3	169.2	13.6	166.6
NPRE250	BASE	Mean	12.5	86.2	86.0	0.0	77338.0	12.3	17.8	12.5	16.83
NPRE270	BASE	Mean	12.8	84.9	84.8	0.0	204576.0	12.3	9.3	12.8	6.49
NPRE280	BASE	Mean	14.2	81.7	81.4	0.0	545902.0	13.3	43.8	14.2	36.08
NPRE300	BASE	Mean	12.1	79.1	86.0	0.0	9843.0	12.0	9.1	12.1	8.6
NPRE310	BASE	Mean	15.4	79.5	80.9	0.0	194871.0	13.0	26.1	15.4	12.76
NPRE330	BASE	Mean	12.1	76.5	80.9	0.0	11978.0	12.0	24.4	12.1	22.73
NPRE340	BASE	Mean	14.2	76.2	79.5	0.0	17512.0	12.1	25.2	12.1	24.64
NPRE350	BASE	Mean	13.9	76.1	77.0	0.0	19269.0	12.1	27.2	12.1	26.88
NPRE360	BASE	Mean	12.3	77.2	79.6	0.0	1202.0	12.3	16.5	12.3	16.44
NPRE370	BASE	Mean	13.8	76.1	78.0	0.0	4148539.0	12.6	157.4	13.8	104.17
NTOP10	BASE	Mean	13.4	169.9	175.0	0.0	66416.0	12.2	10.4	13.4	3.69
NTOP20	BASE	Mean	14.8	170.1	175.0	0.0	243524.0	12.3	26.6	14.7	5.3
NTOP30	BASE	Mean	14.1	169.9	175.0	0.0	93943.0	12.3	11.7	14.0	3.96
NTOP40	BASE	Mean	15.8	170.1	175.0	0.0	351774.0	12.4	31.6	15.7	5.7
NTOP50	BASE	Mean	12.7	169.9	175.0	0.0	28455.0	12.1	7.7	12.7	3.92
NTOP60	BASE	Mean	14.0	170.0	175.0	0.0	150087.0	12.3	20.0	13.9	4.76
NTOP70	BASE	Mean	12.7	169.8	175.0	0.0	27180.0	12.1	6.8	12.7	3.38
NTOP80	BASE	Mean	14.3	170.0	175.0	0.0	178861.0	12.3	21.8	14.2	4.95
OUTBOXA	BASE	Mean	27.5	81.2	88.0	0.0	258.0	27.5	6.4	27.5	6.35
OUTBOXB	BASE	Mean	27.5	81.2	88.0	0.0	258.0	27.5	6.4	27.5	6.35
TPRE240	BASE	Mean	0.0	77.0	77.0	0.0	0.0	13.6	166.6	0.0	0
TPRE380	BASE	Mean	0.0	76.0	76.0	0.0	1440.0	13.8	104.2	0.0	0
TW	BASE	Mean	0.0	71.0	71.0	0.0	212.0	12.5	4.4	0.0	0

ICPR Output File
POST, 25-Year 24-Hour

			Max Time	Max	Warning	Max Delta	Max Surf	Max Time	Max	Max Time	Max
Name	Group	Simulation	Stage	Stage	Stage	Stage	Area	Inflow	Inflow	Outflow	Outflow
			hrs	ft	ft	ft	ft2	hrs	cfs	hrs	cfs
NA05	BASE	25Yr	14.6	90.6	93.0	0.0	19908.0	12.0	106.4	12.1	86.3
NA10	BASE	25Yr	14.6	90.6	93.0	0.0	39757.0	12.0	133.9	12.1	92.94
NA100	BASE	25Yr	14.6	90.5	93.0	0.0	31825.0	14.5	84.6	15.0	84.85
NA110	BASE	25Yr	14.6	90.5	93.0	0.0	19018.0	14.8	98.4	14.8	98.53
NA120	BASE	25Yr	14.6	90.4	93.0	0.0	9482.0	12.0	124.1	12.6	118.09
NA121A	BASE	25Yr	19.7	87.1	93.0	0.0	120.0	12.6	59.0	12.6	59.02
NA121B	BASE	25Yr	19.7	87.1	93.0	0.0	120.0	12.6	59.0	12.6	59.02
NA20	BASE	25Yr	14.6	90.6	93.0	0.0	39679.0	12.0	127.9	12.1	90.02
NA30	BASE	25Yr	14.6	90.6	93.0	0.0	39658.0	12.0	117.5	12.1	83.35
NA40	BASE	25Yr	14.6	90.6	93.0	0.0	39634.0	12.0	112.7	12.1	79.11
NA50	BASE	25Yr	14.6	90.6	93.0	0.0	42390.0	12.0	106.9	12.2	70.92
NA60	BASE	25Yr	14.6	90.6	93.0	0.0	45195.0	12.0	105.1	12.2	67.23
NA70	BASE	25Yr	14.6	90.6	93.0	0.0	45049.0	12.0	100.8	12.3	60.69
NA80	BASE	25Yr	14.6	90.6	93.0	0.0	45014.0	12.0	100.6	15.0	69.23
NA90	BASE	25Yr	14.6	90.5	93.0	0.0	44850.0	12.0	95.3	14.8	83.28
NB10	BASE	25Yr	12.0	93.8	95.0	0.0	5326.0	12.0	27.2	12.0	23.67
NB20	BASE	25Yr	12.1	94.8	95.0	0.0	12276.0	11.6	6.9	16.8	0.68
NB30	BASE	25Yr	12.1	94.9	95.0	0.0	12721.0	11.9	35.4	12.0	23.51
NB40	BASE	25Yr	12.1	94.8	95.0	0.0	10249.0	12.0	46.7	12.1	40.6
NB50	BASE	25Yr	12.1	94.7	95.0	0.0	7684.0	12.0	71.1	12.1	67.98
NB60	BASE	25Yr	12.1	93.6	95.0	0.0	3363.0	12.0	77.1	12.1	76.66
NPOND	BASE	25Yr	25.0	85.9	88.0	0.0	943271.0	12.0	251.5	25.0	56.36
NPRE100	BASE	25Yr	13.7	82.4	85.6	0.0	40329.0	12.0	9.7	16.2	13.78
NPRE105	BASE	25Yr	13.7	82.4	85.8	0.0	73280.0	11.9	3.6	8.8	0.07
NPRE115	BASE	25Yr	12.7	82.7	86.0	0.0	61708.0	12.0	26.9	12.4	8.72
NPRE120	BASE	25Yr	12.7	82.7	85.7	0.0	14940.0	12.3	11.4	12.7	8.84
NPRE130	BASE	25Yr	24.9	81.4	87.1	0.0	17846.0	12.0	13.1	12.6	44.13
NPRE140	BASE	25Yr	24.9	81.4	85.0	0.0	21973.0	12.6	71.3	25.0	58.24
NPRE150	BASE	25Yr	12.1	82.9	87.5	0.0	32411.0	12.0	15.4	12.1	12.6
NPRE160	BASE	25Yr	14.3	80.8	84.3	0.0	48842.0	24.9	58.3	25.3	58.51
NPRE170	BASE	25Yr	14.2	80.7	83.9	0.0	35672.0	14.1	129.7	14.2	129.45
NPRE180	BASE	25Yr	14.2	80.5	80.2	0.0	39867.0	14.1	130.0	14.2	129.95
NPRE190	BASE	25Yr	14.2	78.3	79.9	0.0	14287.0	14.2	130.3	14.2	130.26

ICPR Output File
POST, 25-Year 24-Hour

			Max Time	Max	Warning	Max Delta	Max Surf	Max Time	Max	Max Time	Max
Name	Group	Simulation	Stage	Stage	Stage	Stage	Area	Inflow	Inflow	Outflow	Outflow
			hrs	ft	ft	ft	ft2	hrs	cfs	hrs	cfs
NPRE200	BASE	25Yr	14.1	77.5	77.0	0.0	12428.0	14.2	130.6	14.2	130.71
NPRE210	BASE	25Yr	12.6	80.1	84.0	0.0	94194.0	12.0	37.9	12.6	7.92
NPRE220	BASE	25Yr	13.6	77.6	86.0	0.0	2135726.0	12.4	368.6	13.5	174.53
NPRE230	BASE	25Yr	13.9	77.3	77.0	0.0	1042472.0	13.6	416.6	13.9	412.27
NPRE250	BASE	25Yr	12.4	86.3	86.0	0.0	97383.0	12.3	42.7	12.4	40.62
NPRE270	BASE	25Yr	12.7	85.0	84.8	0.0	232684.0	12.3	22.8	12.7	17.36
NPRE280	BASE	25Yr	14.0	81.9	81.4	0.0	726877.0	13.2	118.0	14.0	99.86
NPRE300	BASE	25Yr	12.1	79.3	86.0	0.0	10626.0	12.0	21.3	12.1	20.56
NPRE310	BASE	25Yr	17.9	80.7	80.9	0.0	615394.0	12.9	73.5	17.9	18
NPRE330	BASE	25Yr	12.1	77.2	80.9	0.0	13416.0	12.0	53.5	12.1	49.31
NPRE340	BASE	25Yr	12.2	76.6	79.5	0.0	18516.0	12.1	54.3	12.2	52.75
NPRE350	BASE	25Yr	14.3	76.4	77.0	0.0	20191.0	12.1	57.7	12.1	56.85
NPRE360	BASE	25Yr	12.4	78.1	79.6	0.0	7835.0	12.3	45.4	12.4	45.05
NPRE370	BASE	25Yr	14.3	76.3	78.0	0.0	4315116.0	12.6	385.4	14.3	193.93
NTOP10	BASE	25Yr	13.3	170.5	175.0	0.0	118758.0	12.2	28.0	13.3	9.93
NTOP20	BASE	25Yr	14.7	170.7	175.0	0.0	442576.0	12.3	71.3	14.6	13.63
NTOP30	BASE	25Yr	13.9	170.5	175.0	0.0	169459.0	12.3	31.5	13.9	10.56
NTOP40	BASE	25Yr	15.6	170.8	175.0	0.0	634663.0	12.4	85.5	15.5	14.47
NTOP50	BASE	25Yr	12.7	170.5	175.0	0.0	52495.0	12.1	20.8	12.7	10.42
NTOP60	BASE	25Yr	13.9	170.6	175.0	0.0	275084.0	12.3	53.5	13.9	12.44
NTOP70	BASE	25Yr	12.7	170.4	175.0	0.0	47469.0	12.1	18.2	12.7	9.23
NTOP80	BASE	25Yr	14.2	170.7	175.0	0.0	327478.0	12.3	58.7	14.2	12.84
OUTBOXA	BASE	25Yr	25.0	82.7	88.0	0.0	154.0	25.0	28.2	25.0	28.18
OUTBOXB	BASE	25Yr	25.0	82.7	88.0	0.0	154.0	25.0	28.2	25.0	28.18
TPRE240	BASE	25Yr	0.0	77.0	77.0	0.0	0.0	13.9	412.3	0.0	0
TPRE380	BASE	25Yr	0.0	76.0	76.0	0.0	1440.0	14.3	193.9	0.0	0
TW	BASE	25Yr	0.0	71.0	71.0	0.0	212.0	12.6	7.9	0.0	0

Post Mass Balance Report

25Yr 24 Hr Storm Event

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	0	0	0	0	0	0
25Yr	0.08	41.5	-223.9	265.4	0	0
25Yr	0.17	178.8	-772.8	951.5	0	0
25Yr	0.25	415.3	-1523	1938.2	0	0
25Yr	0.33	749.2	-2391	3140.3	0	0
25Yr	0.42	1194.2	-3356.9	4551.1	0	0
25Yr	0.5	1750.2	-4389.1	6139.3	0	0
25Yr	0.58	2405.8	-5466.1	7871.9	0	0
25Yr	0.67	3148	-6573.6	9721.7	0	0
25Yr	0.75	3965.1	-7702.8	11667.8	0	0
25Yr	0.83	4846.4	-8859.2	13705.7	0	0
25Yr	0.92	5782.6	-10053.2	15835.9	0	0
25Yr	1	6766.1	-11277.4	18043.6	0	0
25Yr	1.08	7806.7	-12506.8	20313.6	0	0
25Yr	1.17	8915.3	-13699.1	22614.4	0	0
25Yr	1.25	10081.4	-14810.7	24892.1	0	0
25Yr	1.33	11292.4	-15778.1	27070.4	0	0
25Yr	1.42	12540.7	-16538.8	29079.5	0	0
25Yr	1.5	13821	-17053.6	30874.6	0	0
25Yr	1.58	15129.2	-17368	32497.3	0	0
25Yr	1.67	16463.3	-17540.7	34004	0	0
25Yr	1.75	17822	-17612.3	35434.3	0	0
25Yr	1.83	19204	-17613.3	36817.3	0	0
25Yr	1.92	20608.1	-17566	38174.2	0	0
25Yr	2	22032.9	-17484.8	39517.7	0	0
25Yr	2.08	23494	-17378.6	40872.6	0	0
25Yr	2.17	25006.3	-17252.1	42258.3	0	0
25Yr	2.25	26560.4	-17110.1	43670.5	0	0
25Yr	2.33	28144.7	-16955.4	45100.2	0	0
25Yr	2.42	29753.4	-16790.5	46543.9	0	0
25Yr	2.5	31382.6	-16617.1	47999.7	0	0
25Yr	2.58	33028.8	-16436.4	49465.2	0	0
25Yr	2.67	34689.7	-16249.1	50938.8	0	0
25Yr	2.75	36364.2	-16055.7	52419.9	0	0
25Yr	2.83	38051.9	-15855.9	53907.7	0	0
25Yr	2.92	39752.9	-15649.4	55402.3	0	0
25Yr	3	41467.2	-15436	56903.2	0	0
25Yr	3.08	43217.8	-15213.7	58431.5	0	0
25Yr	3.17	45039.9	-14979.3	60019.2	0	0
25Yr	3.25	46951.5	-14731.4	61682.9	0	0
25Yr	3.33	48959.3	-14471.1	63430.4	0	0
25Yr	3.42	51065.6	-14193.5	65259.1	0	0
25Yr	3.5	53272.5	-13889.3	67161.8	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	3.58	55583.4	-13552	69135.4	0	0
25Yr	3.67	58002.9	-13175	71177.9	0	0
25Yr	3.75	60537.2	-12751.6	73288.8	0	0
25Yr	3.83	63193	-12279.5	75472.5	0	0
25Yr	3.92	65976.8	-11748.5	77725.3	0	0
25Yr	4	68894.4	-11152.7	80047	0	0
25Yr	4.08	72016.7	-10484.5	82501.2	0	0
25Yr	4.17	75407.7	-9732.9	85140.5	0	0
25Yr	4.25	79038.7	-8888.7	87927.4	0	0
25Yr	4.33	82881.5	-7945.4	90826.9	0	0
25Yr	4.42	86933.6	-6897	93830.6	0	0
25Yr	4.5	91198.8	-5737.3	96936.1	0	0
25Yr	4.58	95681.8	-4460.6	100142.3	0	0
25Yr	4.67	100388.9	-3061.3	103450.3	0	0
25Yr	4.75	105327.6	-1534.6	106862.2	0	0
25Yr	4.83	110505.8	125.7	110380.1	0	0
25Yr	4.92	115930.7	1926.1	114004.6	0	0
25Yr	5	121608.6	3872.3	117736.4	0	0
25Yr	5.08	127592.7	5969.7	121623	0	0
25Yr	5.17	133927.3	8225.2	125702.1	0	0
25Yr	5.25	140590.7	10645.1	129945.6	0	0
25Yr	5.33	147564.8	13234.2	134330.6	0	0
25Yr	5.42	154849.2	15997	138852.2	0	0
25Yr	5.5	162445.4	18937.3	143508.1	0	0
25Yr	5.58	170354.3	22058.4	148295.9	0	0
25Yr	5.67	178576.8	25363.7	153213.2	0	0
25Yr	5.75	187114.1	28856	158258.1	0	0
25Yr	5.83	195967.5	32537.7	163429.8	0	0
25Yr	5.92	205137.9	36410.3	168727.5	0	0
25Yr	6	214625.8	40474.8	174151	0	0
25Yr	6.08	224606	44732.6	179873.3	0	0
25Yr	6.17	235218	49190	186027.9	0	0
25Yr	6.25	246361.3	53854.9	192506.4	0	0
25Yr	6.33	257961.3	58734.2	199227.1	0	0
25Yr	6.42	270000.6	63831.7	206168.9	0	0
25Yr	6.5	282493.4	69161.9	213331.5	0	0
25Yr	6.58	295408.5	74720.7	220687.8	0	0
25Yr	6.67	308764.9	80524.6	228240.3	0	0
25Yr	6.75	322540.4	86570.4	235970.1	0	0
25Yr	6.83	336737.9	92863.6	243874.4	0	0
25Yr	6.92	351328.4	99395	251933.5	0	0
25Yr	7	366383.3	106199.6	260183.7	0	0
25Yr	7.08	382025.3	113243.1	268782.1	0	0
25Yr	7.17	398442.5	120544	277898.6	0	0
25Yr	7.25	415512.3	128108.8	287403.5	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	7.33	433142.5	135943.6	297198.9	0	0
25Yr	7.42	451319.4	144054.4	307265	0	0
25Yr	7.5	470036.6	152447.9	317588.7	0	0
25Yr	7.58	489284.8	161130.7	328154.1	0	0
25Yr	7.67	509054	170108.7	338945.3	0	0
25Yr	7.75	529335.7	179386.6	349949.1	0	0
25Yr	7.83	550123	188967.7	361155.3	0	0
25Yr	7.92	571408.6	198854.4	372554.2	0	0
25Yr	8	593184.9	209047.7	384137.2	0	0
25Yr	8.08	615752.6	219548.6	396204	0	0
25Yr	8.17	639337.7	230362.6	408975.1	0	0
25Yr	8.25	663750.8	241497	422253.9	0	0
25Yr	8.33	688861.7	252958.4	435903.3	0	0
25Yr	8.42	714653	264754.5	449898.5	0	0
25Yr	8.5	741119.2	276893.9	464225.2	0	0
25Yr	8.58	768571.7	289386.5	479185.1	0	0
25Yr	8.67	797242.5	302246.3	494996.2	0	0
25Yr	8.75	826927.8	315488.1	511439.7	0	0
25Yr	8.83	857486.8	329124.9	528361.9	0	0
25Yr	8.92	888899.3	343169.7	545729.6	0	0
25Yr	9	921152.5	357634.8	563517.7	0	0
25Yr	9.08	954398.7	372532.2	581866.5	0	0
25Yr	9.17	988745.9	387874.5	600871.4	0	0
25Yr	9.25	1024073	403673.2	620399.5	0	0
25Yr	9.33	1060295	419937.8	640357.1	0	0
25Yr	9.42	1097391	436676.9	660713.8	0	0
25Yr	9.5	1135346	453897	681448.6	0	0
25Yr	9.58	1174671	471605.1	703066.3	0	0
25Yr	9.67	1215746	489812.6	725933.1	0	0
25Yr	9.75	1258234	508532.1	749701.3	0	0
25Yr	9.83	1301909	527774.6	774134.1	0	0
25Yr	9.92	1346742	547550.6	799191	0	0
25Yr	10	1392717	567871.7	824845.1	0	0
25Yr	10.08	1440743	588751.5	851991.1	0	0
25Yr	10.17	1491487	610212.2	881274.6	0	0
25Yr	10.25	1544365	632278.3	912086.4	0	0
25Yr	10.33	1598994	654972.2	944022.2	0	0
25Yr	10.42	1655334	678317.1	977016.8	0	0
25Yr	10.5	1713370	702335.4	1011034.9	0	0
25Yr	10.58	1774413	727052.3	1047360.6	0	0
25Yr	10.67	1839421	752502.3	1086919	0	0
25Yr	10.75	1907549	778732.7	1128816.5	0	0
25Yr	10.83	1978239	805805.3	1172433.8	0	0
25Yr	10.92	2051431	833740.2	1217690.3	0	0
25Yr	11	2127084	862545	1264538.7	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	11.08	2205530	892241.2	1313289.2	0	0
25Yr	11.17	2286985	922860	1364125.5	0	0
25Yr	11.25	2371176	954432.1	1416744.3	0	0
25Yr	11.33	2464486	986996.3	1477489.7	0	0
25Yr	11.42	2571742	1020639	1551103.8	0	0
25Yr	11.5	2689325	1055459	1633866.5	0	0
25Yr	11.58	2848348	1091603	1756745	0	0
25Yr	11.67	3074405	1129461	1944944.8	0	0
25Yr	11.75	3348917	1169515	2179402	0	0
25Yr	11.83	3693417	1212280	2481137.4	0	0
25Yr	11.92	4133475	1258487	2874988.5	0	0
25Yr	12	4649972	1308941	3341031.4	0	0
25Yr	12.08	5177649	1364342	3813307.5	0	0
25Yr	12.17	5676752	1425104	4251647.8	0	0
25Yr	12.25	6176758	1491569	4685189.1	0	0
25Yr	12.33	6674349	1564112	5110237.3	0	0
25Yr	12.42	7152637	1643010	5509627	0	0
25Yr	12.5	7620264	1728471	5891793.6	0	0
25Yr	12.58	8076195	1820993	6255201.9	0	0
25Yr	12.67	8514885	1921116	6593769.2	0	0
25Yr	12.75	8939311	2029028	6910282.7	0	0
25Yr	12.83	9349256	2144568	7204687.3	0	0
25Yr	12.92	9743175	2267300	7475874.9	0	0
25Yr	13	10122390	2396598	7725792.1	0	0
25Yr	13.08	10486504	2531756	7954747.7	0	0
25Yr	13.17	10834898	2672036	8162862.4	0	0
25Yr	13.25	11169063	2816725	8352337.2	0	0
25Yr	13.33	11490313	2965162	8525150.7	0	0
25Yr	13.42	11799467	3116732	8682735.1	0	0
25Yr	13.5	12097273	3270883	8826390.1	0	0
25Yr	13.58	12382973	3427113	8955860.3	0	0
25Yr	13.67	12656195	3584972	9071222.5	0	0
25Yr	13.75	12918545	3744054	9174490.9	0	0
25Yr	13.83	13171268	3903998	9267269.5	0	0
25Yr	13.92	13414986	4064489	9350497.5	0	0
25Yr	14	13650236	4225252	9424983.7	0	0
25Yr	14.08	13876810	4386061	9490749	0	0
25Yr	14.17	14094662	4546722	9547940.3	0	0
25Yr	14.25	14304681	4707070	9597610.5	0	0
25Yr	14.33	14507585	4866966	9640619.4	0	0
25Yr	14.42	14703829	5026288	9677541.7	0	0
25Yr	14.5	14893819	5184927	9708891.5	0	0
25Yr	14.58	15077269	5342783	9734486	0	0
25Yr	14.67	15254070	5499758	9754311.7	0	0
25Yr	14.75	15425002	5655763	9769238.8	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	14.83	15590625	5810719	9779906	0	0
25Yr	14.92	15751210	5964562	9786647.2	0	0
25Yr	15	15907008	6117233	9789775.9	0	0
25Yr	15.08	16058053	6268678	9789375	0	0
25Yr	15.17	16204444	6418852	9785591.8	0	0
25Yr	15.25	16346606	6567717	9778888.9	0	0
25Yr	15.33	16484899	6715236	9769663.3	0	0
25Yr	15.42	16619583	6861378	9758205	0	0
25Yr	15.5	16750868	7006114	9744753.5	0	0
25Yr	15.58	16878450	7149421	9729028.8	0	0
25Yr	15.67	17002134	7291273	9710861.3	0	0
25Yr	15.75	17122341	7431650	9690691.2	0	0
25Yr	15.83	17239356	7570535	9668820.9	0	0
25Yr	15.92	17353312	7707916	9645395.8	0	0
25Yr	16	17464348	7843790	9620557.7	0	0
25Yr	16.08	17572374	7978158	9594215.8	0	0
25Yr	16.17	17677403	8111024	9566379.4	0	0
25Yr	16.25	17779800	8242395	9537404.2	0	0
25Yr	16.33	17879861	8372282	9507579.3	0	0
25Yr	16.42	17977755	8500694	9477061.7	0	0
25Yr	16.5	18073616	8627641	9445974.9	0	0
25Yr	16.58	18167346	8753133	9414213.3	0	0
25Yr	16.67	18258898	8877177	9381720.7	0	0
25Yr	16.75	18348530	8999781	9348749.7	0	0
25Yr	16.83	18436447	9120951	9315495.3	0	0
25Yr	16.92	18522751	9240697	9282054.8	0	0
25Yr	17	18607535	9359026	9248509.5	0	0
25Yr	17.08	18690875	9475948	9214926.1	0	0
25Yr	17.17	18772835	9591475	9181360.5	0	0
25Yr	17.25	18853480	9705616	9147864.4	0	0
25Yr	17.33	18932862	9818382	9114479.8	0	0
25Yr	17.42	19011026	9929788	9081238.7	0	0
25Yr	17.5	19088010	10039846	9048164.6	0	0
25Yr	17.58	19163372	10148570	9014802.1	0	0
25Yr	17.67	19236791	10255976	8980815.5	0	0
25Yr	17.75	19308582	10362074	8946507.9	0	0
25Yr	17.83	19378962	10466880	8912082.7	0	0
25Yr	17.92	19447969	10570404	8877565.1	0	0
25Yr	18	19515641	10672661	8842979.1	0	0
25Yr	18.08	19582288	10773665	8808622.7	0	0
25Yr	18.17	19648182	10873431	8774751.5	0	0
25Yr	18.25	19713270	10971976	8741294.1	0	0
25Yr	18.33	19777529	11069317	8708211.6	0	0
25Yr	18.42	19841018	11165472	8675546	0	0
25Yr	18.5	19903792	11260456	8643336	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	18.58	19965411	11354286	8611125.3	0	0
25Yr	18.67	20025560	11446977	8578583.1	0	0
25Yr	18.75	20084558	11538542	8546015.8	0	0
25Yr	18.83	20142604	11628993	8513610.4	0	0
25Yr	18.92	20199722	11718345	8481376.4	0	0
25Yr	19	20255927	11806611	8449316.4	0	0
25Yr	19.08	20311489	11893802	8417687.6	0	0
25Yr	19.17	20366617	11979931	8386685.6	0	0
25Yr	19.25	20421196	12065012	8356183.3	0	0
25Yr	19.33	20475169	12149059	8326110.1	0	0
25Yr	19.42	20528568	12232086	8296482	0	0
25Yr	19.5	20581424	12314109	8267314.2	0	0
25Yr	19.58	20633523	12395147	8238376.1	0	0
25Yr	19.67	20684716	12475218	8209498.6	0	0
25Yr	19.75	20735171	12554342	8180829.4	0	0
25Yr	19.83	20784996	12632540	8152456.4	0	0
25Yr	19.92	20834211	12709833	8124378.2	0	0
25Yr	20	20882828	12786239	8096588.7	0	0
25Yr	20.08	20930622	12861777	8068845.1	0	0
25Yr	20.17	20977445	12936462	8040983.9	0	0
25Yr	20.25	21023477	13010306	8013171	0	0
25Yr	20.33	21068833	13083322	7985510.3	0	0
25Yr	20.42	21113540	13155522	7958017.5	0	0
25Yr	20.5	21157623	13226916	7930707.4	0	0
25Yr	20.58	21201116	13297515	7903600.8	0	0
25Yr	20.67	21244048	13367330	7876718.1	0	0
25Yr	20.75	21286446	13436371	7850075.1	0	0
25Yr	20.83	21328335	13504650	7823685.4	0	0
25Yr	20.92	21369738	13572177	7797560.3	0	0
25Yr	21	21410675	13638965	7771710	0	0
25Yr	21.08	21451165	13705024	7746141.1	0	0
25Yr	21.17	21491224	13770367	7720857	0	0
25Yr	21.25	21530868	13835006	7695862	0	0
25Yr	21.33	21570115	13898954	7671161.1	0	0
25Yr	21.42	21608982	13962225	7646757	0	0
25Yr	21.5	21647486	14024832	7622653.6	0	0
25Yr	21.58	21685652	14086794	7598858.6	0	0
25Yr	21.67	21723509	14148129	7575380.7	0	0
25Yr	21.75	21761083	14208859	7552224.5	0	0
25Yr	21.83	21798395	14269006	7529389.2	0	0
25Yr	21.92	21835461	14328589	7506871.5	0	0
25Yr	22	21872294	14387629	7484665.7	0	0
25Yr	22.08	21908906	14446142	7462764.2	0	0
25Yr	22.17	21945305	14504146	7441158.6	0	0
25Yr	22.25	21981497	14561657	7419840.4	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	22.33	22017491	14618688	7398803.1	0	0
25Yr	22.42	22053294	14675253	7378041.8	0	0
25Yr	22.5	22088916	14731363	7357552.6	0	0
25Yr	22.58	22124132	14787032	7337100.5	0	0
25Yr	22.67	22158790	14842270	7316520.3	0	0
25Yr	22.75	22193049	14897087	7295962.1	0	0
25Yr	22.83	22227007	14951492	7275515.4	0	0
25Yr	22.92	22260674	15005492	7255182.7	0	0
25Yr	23	22294058	15059093	7234964.7	0	0
25Yr	23.08	22327164	15112301	7214863.8	0	0
25Yr	23.17	22360006	15165118	7194887.6	0	0
25Yr	23.25	22392600	15217549	7175050.2	0	0
25Yr	23.33	22424959	15269597	7155362.2	0	0
25Yr	23.42	22457096	15321264	7135832.2	0	0
25Yr	23.5	22489023	15372556	7116466.8	0	0
25Yr	23.58	22520512	15423476	7097035.6	0	0
25Yr	23.67	22551402	15474030	7077372.5	0	0
25Yr	23.75	22581848	15524220	7057628.5	0	0
25Yr	23.83	22611946	15574049	7037897.4	0	0
25Yr	23.92	22641706	15623519	7018186.6	0	0
25Yr	24	22671125	15672634	6998490.1	0	0
25Yr	24.08	22698971	15721393	6977578	0	0
25Yr	24.17	22724372	15769787	6954585.1	0	0
25Yr	24.25	22748085	15817800	6930284.9	0	0
25Yr	24.33	22770573	15865415	6905158.4	0	0
25Yr	24.42	22791874	15912608	6879265.3	0	0
25Yr	24.5	22812002	15959355	6852646.9	0	0
25Yr	24.58	22831002	16005626	6825375.4	0	0
25Yr	24.67	22848928	16051390	6797537.9	0	0
25Yr	24.75	22865836	16096617	6769219.5	0	0
25Yr	24.83	22881775	16141281	6740494.5	0	0
25Yr	24.92	22896794	16185357	6711436.5	0	0
25Yr	25	22910948	16228828	6682120.1	0	0
25Yr	25.08	22924292	16271679	6652612.6	0	0
25Yr	25.17	22936873	16313901	6622972.1	0	0
25Yr	25.25	22948738	16355486	6593252.5	0	0
25Yr	25.33	22959935	16396431	6563504.3	0	0
25Yr	25.42	22970508	16436736	6533772.1	0	0
25Yr	25.5	22980496	16476403	6504093.7	0	0
25Yr	25.58	22989935	16515435	6474499.9	0	0
25Yr	25.67	22998855	16553837	6445018.1	0	0
25Yr	25.75	23007291	16591618	6415673.7	0	0
25Yr	25.83	23015275	16628784	6386490.5	0	0
25Yr	25.92	23022834	16665346	6357487.7	0	0
25Yr	26	23029994	16701314	6328679.9	0	0

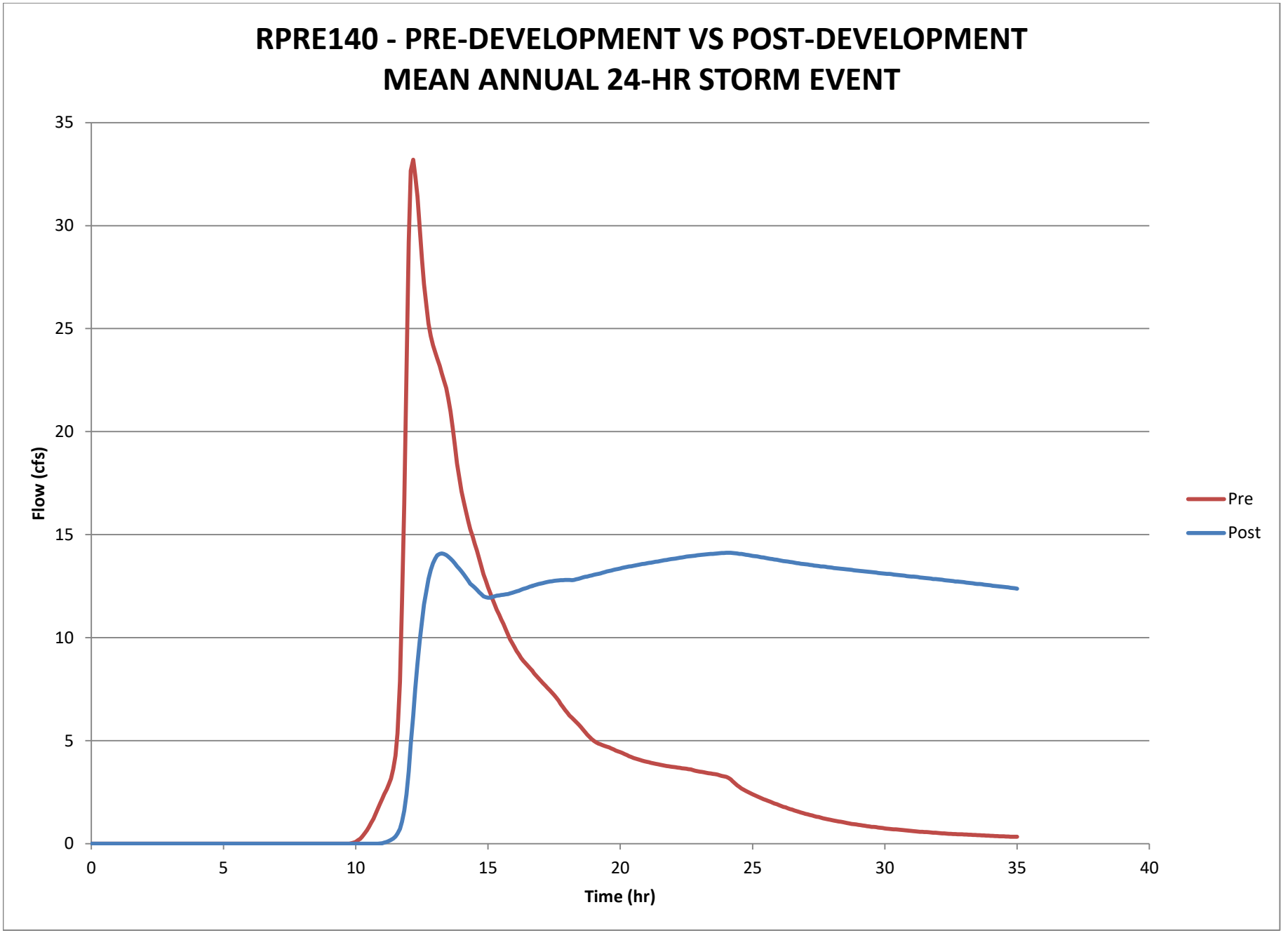
Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	26.08	23036778	16736699	6300079.2	0	0
25Yr	26.17	23043208	16771512	6271695.6	0	0
25Yr	26.25	23049303	16805766	6243537.4	0	0
25Yr	26.33	23055083	16839471	6215611.9	0	0
25Yr	26.42	23060567	16872641	6187925.7	0	0
25Yr	26.5	23065772	16905288	6160483.7	0	0
25Yr	26.58	23070713	16937423	6133289.8	0	0
25Yr	26.67	23075406	16969059	6106346.9	0	0
25Yr	26.75	23079866	17000210	6079656.4	0	0
25Yr	26.83	23084105	17030886	6053218.5	0	0
25Yr	26.92	23088134	17061102	6027031.7	0	0
25Yr	27	23091964	17090870	6001094	0	0
25Yr	27.08	23095605	17120202	5975403	0	0
25Yr	27.17	23099069	17149113	5949956.4	0	0
25Yr	27.25	23102364	17177613	5924751.1	0	0
25Yr	27.33	23105499	17205716	5899783.6	0	0
25Yr	27.42	23108484	17233434	5875049.8	0	0
25Yr	27.5	23111326	17260781	5850544.9	0	0
25Yr	27.58	23114031	17287767	5826263.8	0	0
25Yr	27.67	23116607	17314406	5802200.8	0	0
25Yr	27.75	23119059	17340708	5778350.6	0	0
25Yr	27.83	23121393	17366686	5754707.7	0	0
25Yr	27.92	23123616	17392349	5731266.9	0	0
25Yr	28	23125734	17417711	5708022.8	0	0
25Yr	28.08	23127751	17442781	5684970.3	0	0
25Yr	28.17	23129674	17467570	5662104.5	0	0
25Yr	28.25	23131509	17492088	5639420.8	0	0
25Yr	28.33	23133260	17516345	5616914.7	0	0
25Yr	28.42	23134933	17540352	5594580.4	0	0
25Yr	28.5	23136529	17564117	5572411.9	0	0
25Yr	28.58	23138054	17587650	5550403.5	0	0
25Yr	28.67	23139508	17610958	5528549.9	0	0
25Yr	28.75	23140896	17634050	5506845.8	0	0
25Yr	28.83	23142220	17656933	5485286.4	0	0
25Yr	28.92	23143482	17679615	5463866.7	0	0
25Yr	29	23144685	17702103	5442582.2	0	0
25Yr	29.08	23145832	17724404	5421428	0	0
25Yr	29.17	23146924	17746524	5400399.6	0	0
25Yr	29.25	23147963	17768470	5379492.6	0	0
25Yr	29.33	23148951	17790248	5358703.3	0	0
25Yr	29.42	23149890	17811862	5338028.3	0	0
25Yr	29.5	23150782	17833317	5317464.8	0	0
25Yr	29.58	23151629	17854619	5297010	0	0
25Yr	29.67	23152432	17875770	5276662.2	0	0
25Yr	29.75	23153194	17896774	5256419.3	0	0

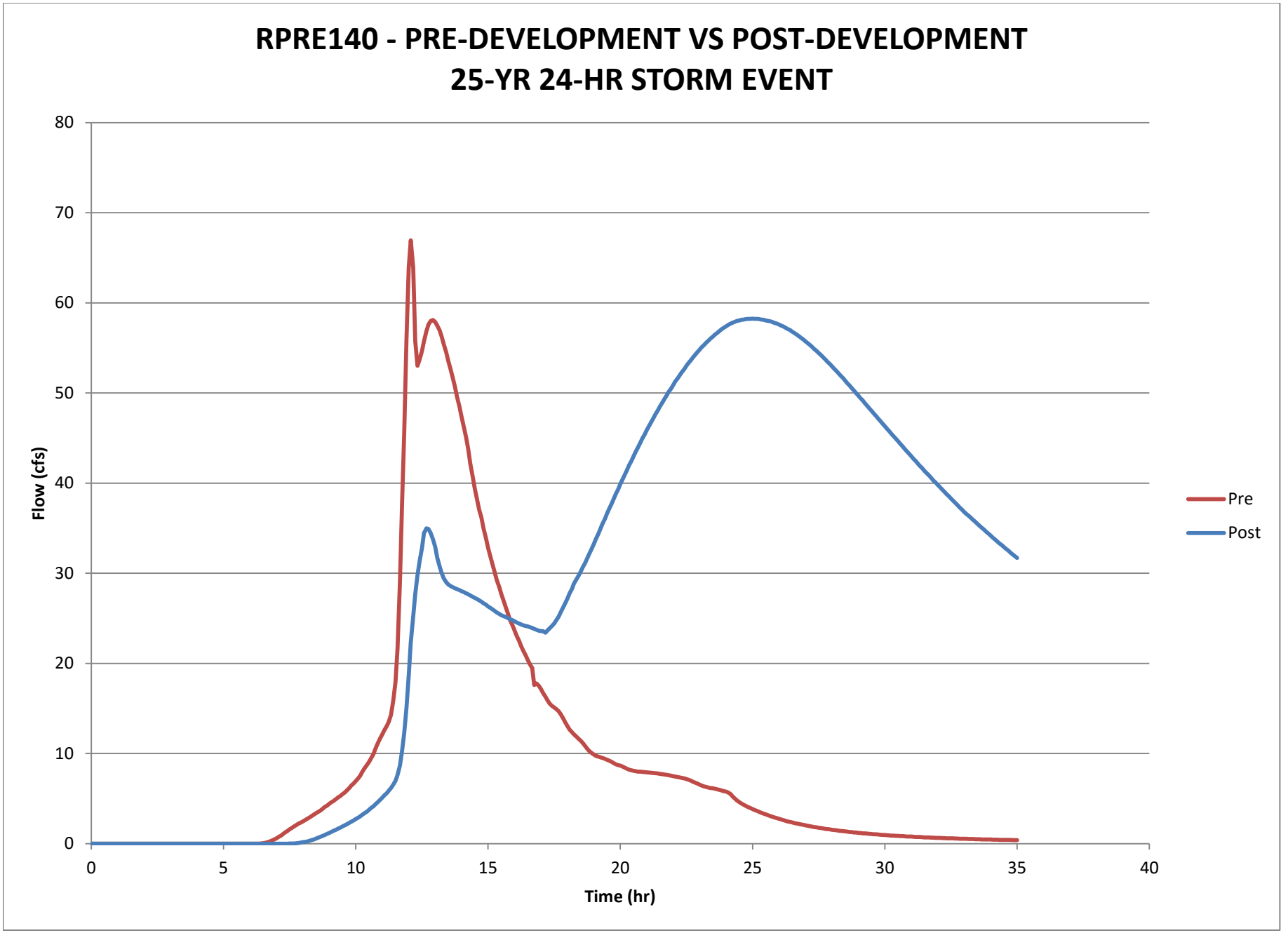
Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	29.83	23153916	17917636	5236279.5	0	0
25Yr	29.92	23154600	17938359	5216240.7	0	0
25Yr	30	23155248	17958947	5196301.3	0	0
25Yr	30.08	23155861	17979401	5176460.4	0	0
25Yr	30.17	23156443	17999724	5156718.2	0	0
25Yr	30.25	23156993	18019919	5137074.9	0	0
25Yr	30.33	23157515	18039985	5117530.6	0	0
25Yr	30.42	23158009	18059924	5098085.8	0	0
25Yr	30.5	23158476	18079735	5078741.2	0	0
25Yr	30.58	23158918	18099420	5059497.9	0	0
25Yr	30.67	23159334	18118977	5040356.8	0	0
25Yr	30.75	23159727	18138407	5021319	0	0
25Yr	30.83	23160096	18157710	5002385.8	0	0
25Yr	30.92	23160444	18176885	4983558.2	0	0
25Yr	31	23160770	18195933	4964837.2	0	0
25Yr	31.08	23161076	18214852	4946224	0	0
25Yr	31.17	23161363	18233643	4927719.7	0	0
25Yr	31.25	23161631	18252306	4909325	0	0
25Yr	31.33	23161882	18270841	4891041	0	0
25Yr	31.42	23162115	18289247	4872868.2	0	0
25Yr	31.5	23162333	18307525	4854807.3	0	0
25Yr	31.58	23162535	18325676	4836859.2	0	0
25Yr	31.67	23162722	18343698	4819024.3	0	0
25Yr	31.75	23162897	18361593	4801303.3	0	0
25Yr	31.83	23163058	18379361	4783696.8	0	0
25Yr	31.92	23163207	18397002	4766204.9	0	0
25Yr	32	23163345	18414517	4748827.7	0	0
25Yr	32.08	23163472	18431906	4731565.6	0	0
25Yr	32.17	23163588	18449170	4714418.6	0	0
25Yr	32.25	23163695	18466308	4697386.9	0	0
25Yr	32.33	23163794	18483323	4680470.5	0	0
25Yr	32.42	23163884	18500215	4663669.1	0	0
25Yr	32.5	23163966	18516984	4646982.4	0	0
25Yr	32.58	23164042	18533631	4630410.2	0	0
25Yr	32.67	23164110	18550158	4613952	0	0
25Yr	32.75	23164172	18566564	4597607.4	0	0
25Yr	32.83	23164227	18582852	4581375.7	0	0
25Yr	32.92	23164277	18599021	4565256.3	0	0
25Yr	33	23164321	18615073	4549248.8	0	0
25Yr	33.08	23164361	18631008	4533352.5	0	0
25Yr	33.17	23164395	18646828	4517567.1	0	0
25Yr	33.25	23164426	18662534	4501891.9	0	0
25Yr	33.33	23164452	18678126	4486326.4	0	0
25Yr	33.42	23164475	18693605	4470870	0	0
25Yr	33.5	23164495	18708973	4455522.2	0	0

Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	33.58	23164512	18724229	4440282.5	0	0
25Yr	33.67	23164526	18739375	4425150.9	0	0
25Yr	33.75	23164538	18754411	4410126.7	0	0
25Yr	33.83	23164548	18769339	4395209.3	0	0
25Yr	33.92	23164557	18784159	4380397.8	0	0
25Yr	34	23164564	18798872	4365691.2	0	0
25Yr	34.08	23164569	18813481	4351088.3	0	0
25Yr	34.17	23164573	18827985	4336588.7	0	0
25Yr	34.25	23164577	18842384	4322192.2	0	0
25Yr	34.33	23164579	18856680	4307898.8	0	0
25Yr	34.42	23164580	18870871	4293709.3	0	0
25Yr	34.5	23164581	18884956	4279624.6	0	0
25Yr	34.58	23164581	18898936	4265645.6	0	0
25Yr	34.67	23164581	18912808	4251773.5	0	0
25Yr	34.75	23164581	18926572	4238009.5	0	0
25Yr	34.83	23164581	18940227	4224354.6	0	0
25Yr	34.92	23164581	18953770	4210810.9	0	0
25Yr	35	23164581	18967200	4197380.9	0	0
25Yr	35.08	23164581	18980514	4184067.6	0	0
25Yr	35.17	23164581	18993707	4170874.1	0	0
25Yr	35.25	23164581	19006778	4157803.4	0	0
25Yr	35.33	23164581	19019723	4144858	0	0
25Yr	35.42	23164581	19032540	4132040.8	0	0
25Yr	35.5	23164581	19045227	4119354.6	0	0
25Yr	35.58	23164581	19057779	4106802.2	0	0
25Yr	35.67	23164581	19070198	4094383.4	0	0
25Yr	35.75	23164581	19082484	4082096.8	0	0
25Yr	35.83	23164581	19094634	4069947	0	0
25Yr	35.92	23164581	19106637	4057944.6	0	0
25Yr	36	23164581	19118474	4046107.2	0	0
25Yr	36.08	23164581	19130094	4034487.3	0	0
25Yr	36.17	23164581	19141266	4023315	0	0
25Yr	36.25	23164581	19151825	4012756.5	0	0
25Yr	36.33	23164581	19161774	4002807.2	0	0
25Yr	36.42	23164581	19171398	3993183.3	0	0
25Yr	36.5	23164581	19180956	3983625	0	0
25Yr	36.58	23164581	19190452	3974129.1	0	0
25Yr	36.67	23164581	19199888	3964693.2	0	0
25Yr	36.75	23164581	19209264	3955316.8	0	0
25Yr	36.83	23164581	19218583	3945998.6	0	0
25Yr	36.92	23164581	19227843	3936737.8	0	0
25Yr	37	23164581	19237048	3927533.4	0	0
25Yr	37.08	23164581	19246197	3918384.1	0	0
25Yr	37.17	23164581	19255292	3909289.7	0	0
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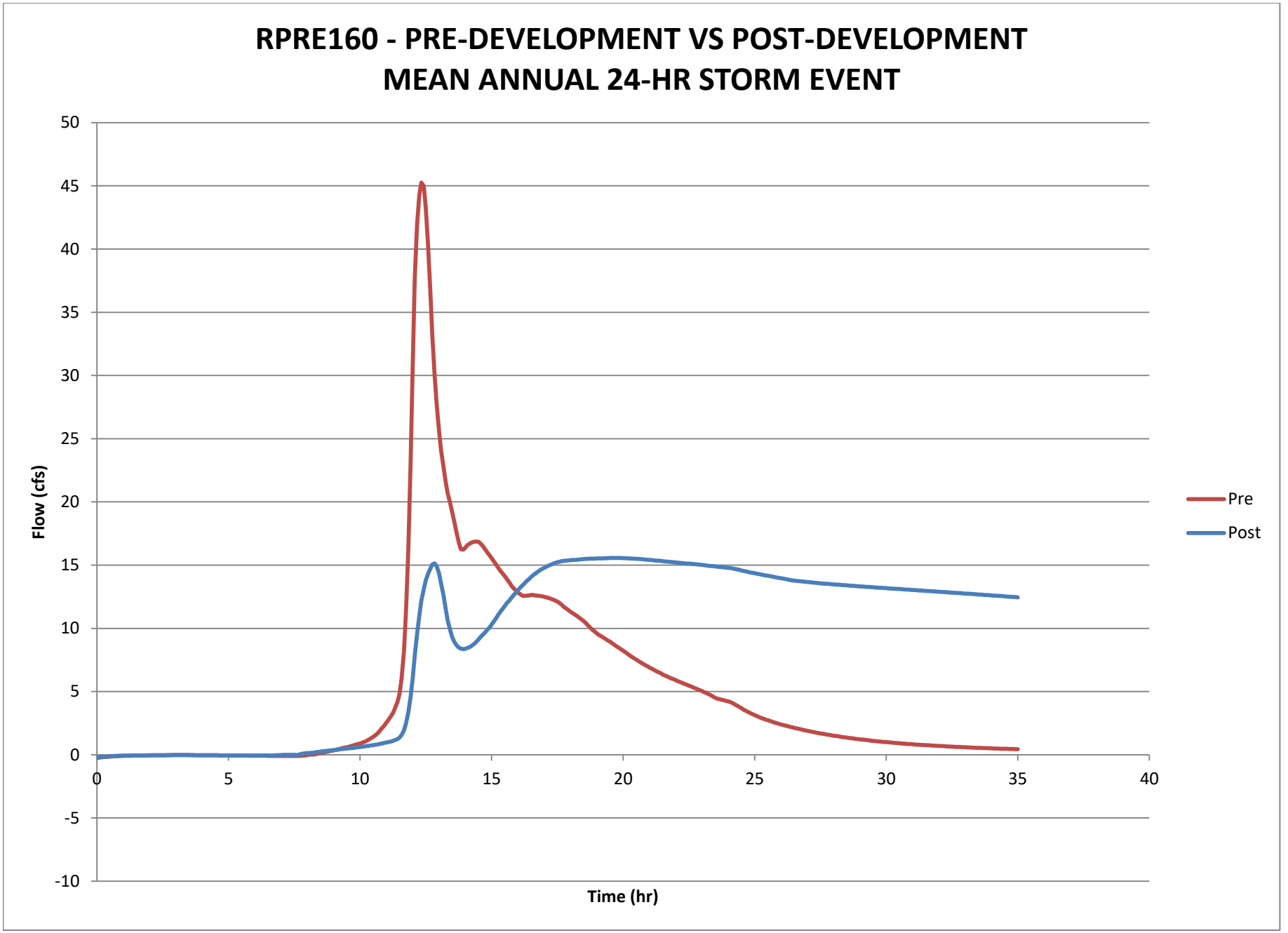
Simulation	Time hrs	Inflow Volume ft3	Outflow Volume ft3	Change in Sys Storage ft3	Difference ft3	Error %
25Yr	37.33	23164581	19273319	3891262.6	0	0
25Yr	37.42	23164581	19282253	3882328	0	0
25Yr	37.5	23164581	19291137	3873444.7	0	0
25Yr	37.58	23164581	19299969	3864612.5	0	0
25Yr	37.67	23164581	19308751	3855830.7	0	0
25Yr	37.75	23164581	19317483	3847098.4	0	0
25Yr	37.83	23164581	19326167	3838414.6	0	0
25Yr	37.92	23164581	19334803	3829778.7	0	0
25Yr	38	23164581	19343392	3821189.5	0	0
25Yr	38.08	23164581	19351934	3812646.9	0	0
25Yr	38.17	23164581	19360432	3804149.5	0	0
25Yr	38.25	23164581	19368885	3795696.4	0	0
25Yr	38.33	23164581	19377295	3787286.3	0	0
25Yr	38.42	23164581	19385662	3778918.9	0	0
25Yr	38.5	23164581	19393989	3770592.1	0	0
25Yr	38.58	23164581	19402277	3762304.6	0	0
25Yr	38.67	23164581	19410527	3754054.7	0	0
25Yr	38.75	23164581	19418741	3745840.1	0	0
25Yr	38.83	23164581	19426924	3737657	0	0
25Yr	38.92	23164581	19435081	3729500.1	0	0
25Yr	39	23164581	19443216	3721365.5	0	0
25Yr	39.08	23164581	19451331	3713250.6	0	0
25Yr	39.17	23164581	19459428	3705153.4	0	0
25Yr	39.25	23164581	19467509	3697072.3	0	0
25Yr	39.33	23164581	19475574	3689006.8	0	0
25Yr	39.42	23164581	19483625	3680956.2	0	0
25Yr	39.5	23164581	19491661	3672920.7	0	0
25Yr	39.58	23164581	19499682	3664899.6	0	0
25Yr	39.67	23164581	19507687	3656894.2	0	0
25Yr	39.75	23164581	19515678	3648903.5	0	0
25Yr	39.83	23164581	19523653	3640928.8	0	0
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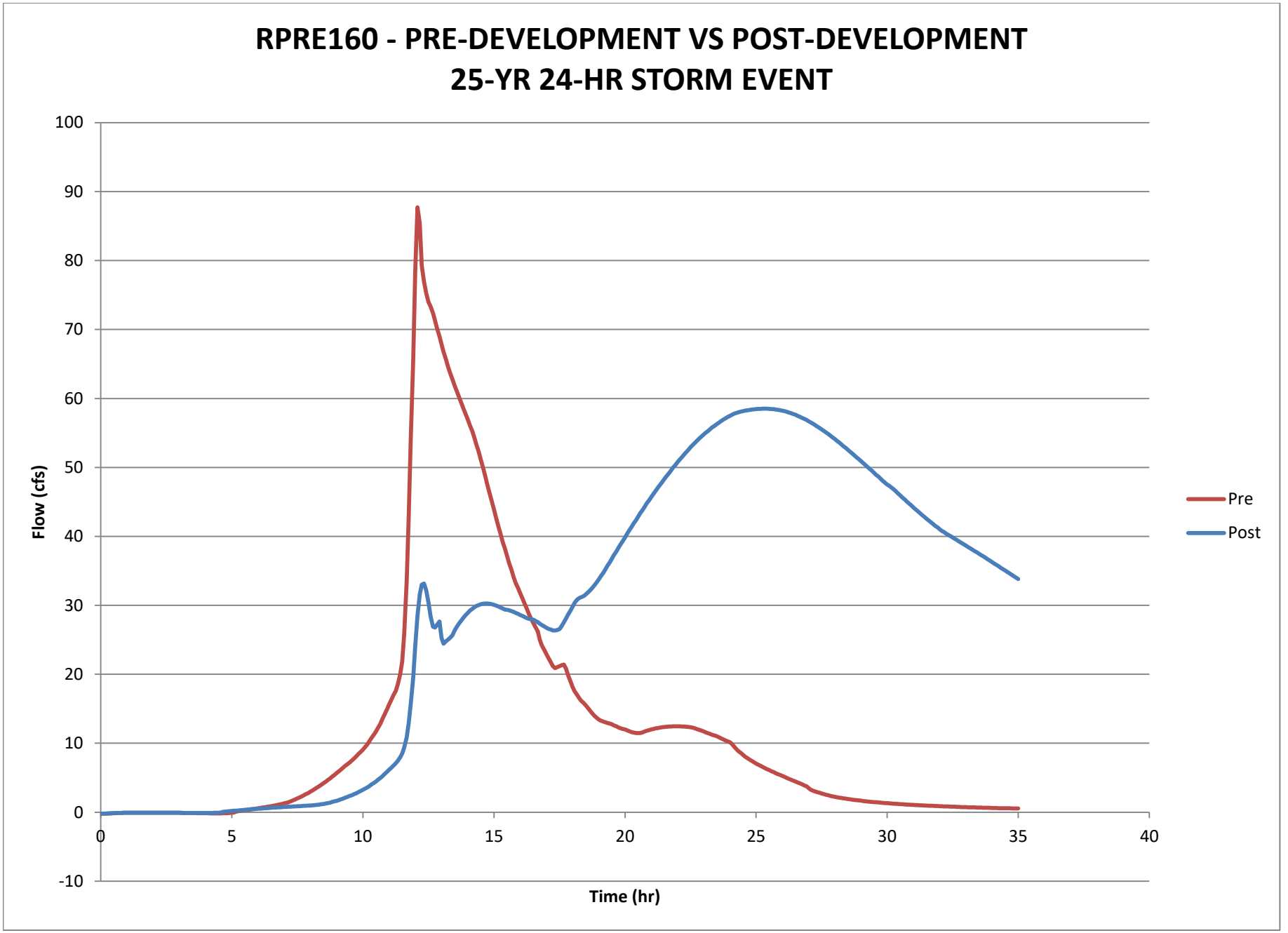
Appendix I: Pre and Post Hydrographs at Reach RPRE140


RPRE140 - PRE-DEVELOPMENT VS POST-DEVELOPMENT
MEAN ANNUAL 24-HR STORM EVENT
Flow (cfs)
Time (hr)
0
5
10
15
20
25
30
35
40
Pre
Post


RPRE140 - PRE-DEVELOPMENT VS POST-DEVELOPMENT
25-YR 24-HR STORM EVENT
Flow (cfs)
80
70
60
50
40
30
20
10
0
0
5
10
15
20
25
30
35
40
Time (hr)
Pre
Post

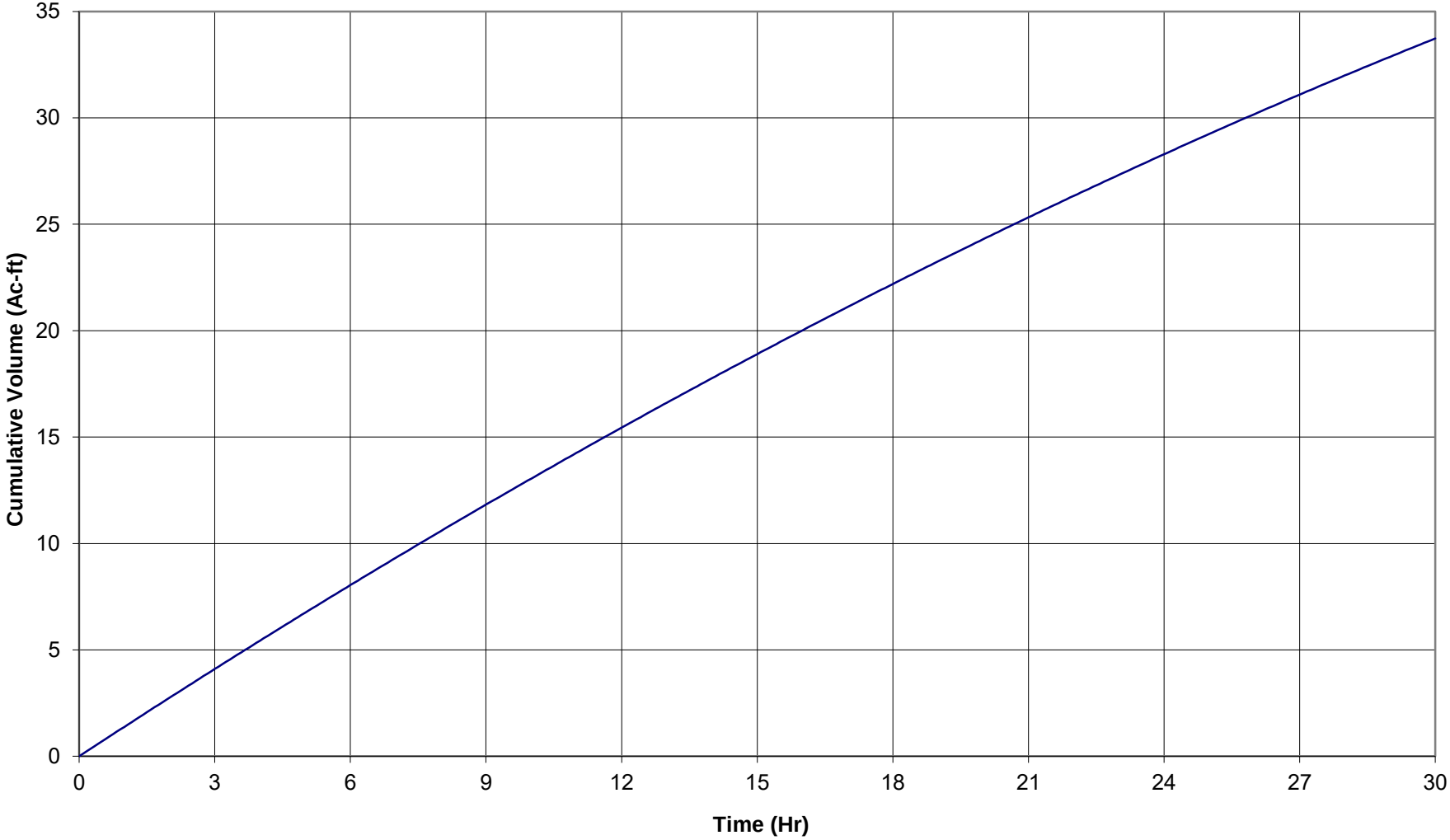
Appendix J: Pre and Post Hydrographs at Reach RPRE160


RPRE160 - PRE-DEVELOPMENT VS POST-DEVELOPMENT
MEAN ANNUAL 24-HR STORM EVENT
Flow (cfs)
50
45
40
35
30
25
20
15
10
5
0
-5
-10
0
5
10
15
20
25
30
35
40
Time (hr)
Pre
Post


RPRE160 - PRE-DEVELOPMENT VS POST-DEVELOPMENT
25-YR 24-HR STORM EVENT
Flow (cfs)
100
90
80
70
60
50
40
30
20
10
0
-10
0
5
10
15
20
25
30
35
40
Time (hr)
Pre
Post

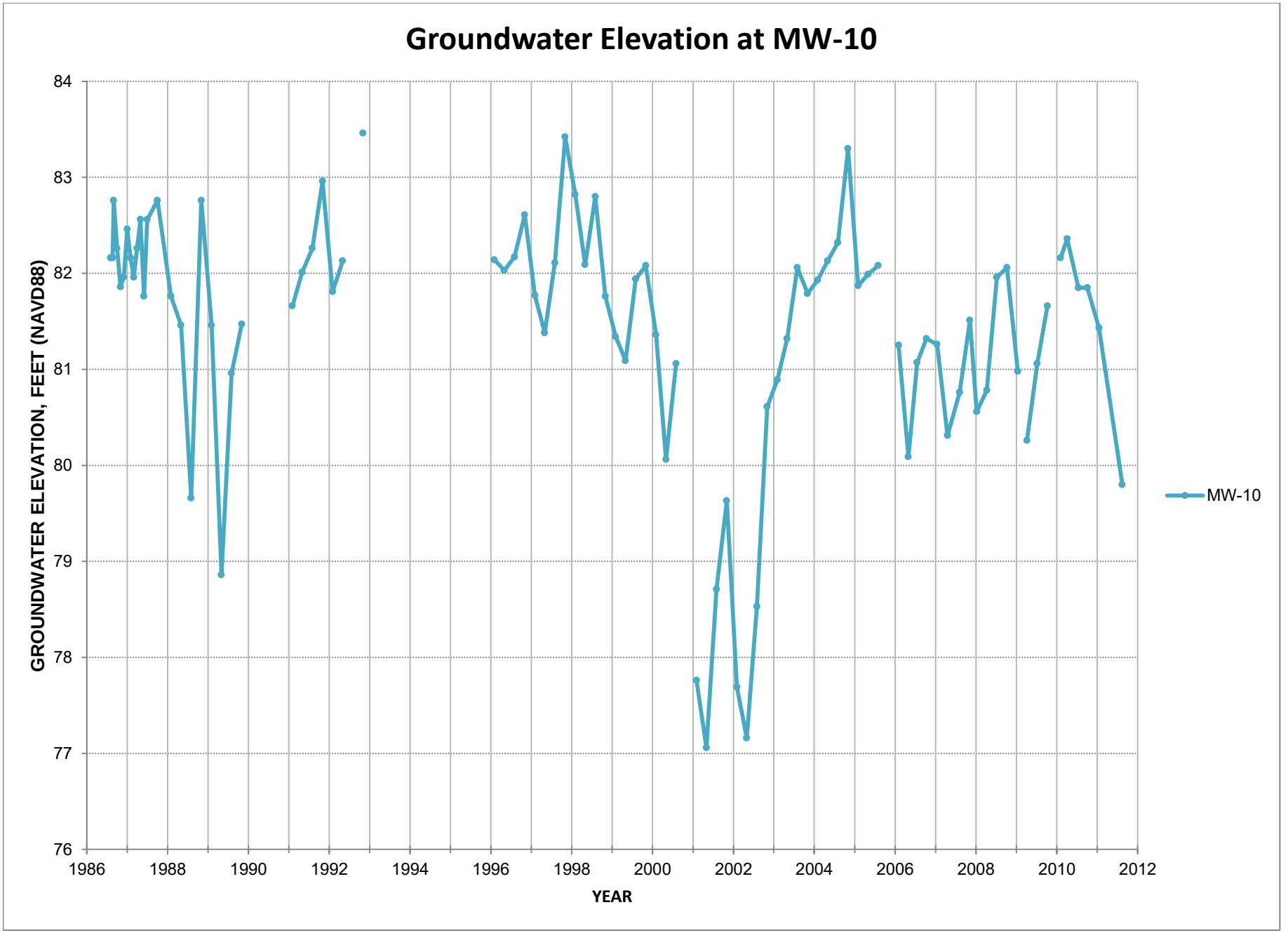
Appendix K: Treatment Volume Recovery Analysis

Computed Cumulative Discharge Volume

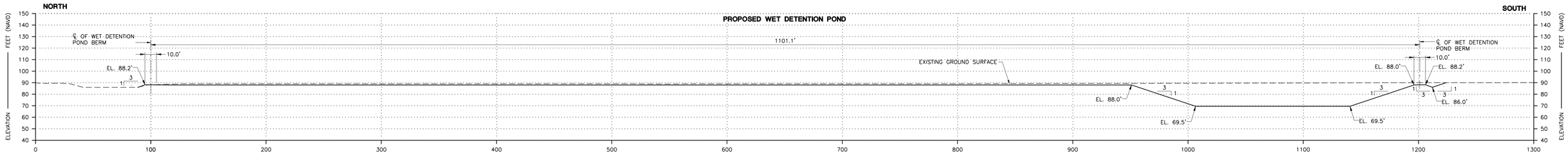


Appendix L: Monitoring Well (MW-10) Groundwater Data and Piezometers

MW-10								
Summary of Groundwater Elevation from 1986 through First Quarter 2011								
MAX	MIN	MEAN	STDEV	MEDIAN	COUNT	SKEW	95th Percentile	SHWT
83.46	77.06	81.43281	1.299264	81.81	89	-1.57821	82.812	82.82

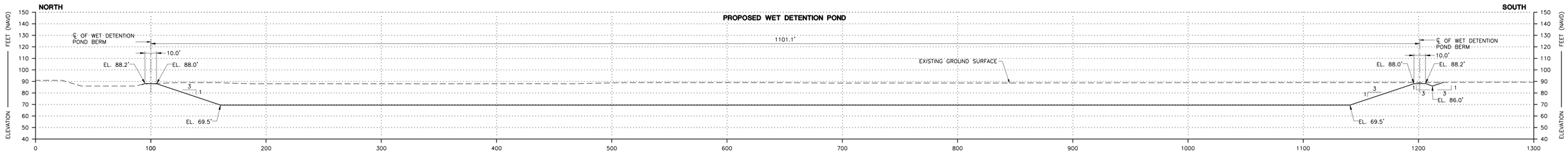

Groundwater Elevation at MW-10
GROUNDWATER ELEVATION, FEET (NAVD88)
84
83
82
81
80
79
78
77
76
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
YEAR
MW-10

Appendix M: Design Drawings



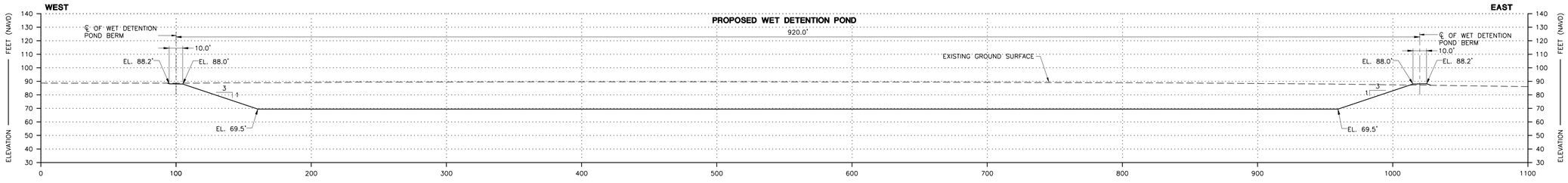
A 15 CROSS SECTION

SCALE: 1" = 40'



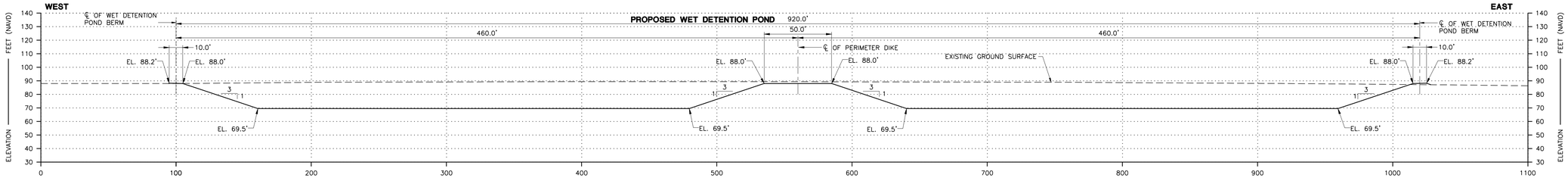
B 15 CROSS SECTION

SCALE: 1" = 40'



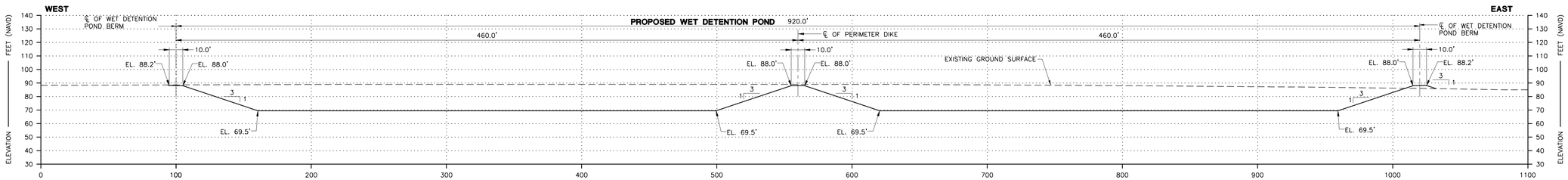
C 15 CROSS SECTION

SCALE: 1" = 40'



D 15 CROSS SECTION

SCALE: 1" = 40'



E 15 CROSS SECTION

SCALE: 1" = 40'

PRELIMINARY
SUBJECT TO CHANGE

REVISION	DATE	DESCRIPTION	APPR'D
P1	10/06/2011	ISSUED FOR CLIENT REVIEW	

	NAME	DATE		NAME	DATE
DESIGNED BY	MH	10/06/2011	CHECKED BY	FKC	10/25/2011
DRAWN BY	AZ	10/06/2011	CHECKED BY	TSI	
FILE NO.: 10-13-0249			SCALE: AS SHOWN		
APPROVED BY:					

Ardaman & Associates, Inc.
Geotechnical, Environmental, and Materials Consultants
A Tetra Tech Company
8008 S. Orange Ave. Orlando, FL 32809
TEL 407/855-3860 FAX 407/859-8121 C.A.N. 5950

OUC The Reliable One®

HORIZONTAL EXPANSION OF COAL COMBUSTION WASTE LANDFILL - CELL 1

OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

PROPOSED WET DETENTION POND CROSS SECTIONS

DRAWING NO. 16

T:\corporate\10\10-13-0249\HORIZONTAL EXPANSION OF CWCA - CELL 1\CURRENT SHEET SET\15-16 PROPOSED WET DETENTION POND PLAN AND DETAILS.dwg 11/03/2011 12:02:58 PM dmmed.zraphoul

EXISTING COAL COMBUSTION WASTE LANDFILL

EXISTING STORMWATER DRAINAGE DITCH

T.O.S. 97.0
97.0
85.0
93.0
93.0
M.E.G. (T.O.S.)

3:1
3:1
3:1

FABRIFOAM

(2) TYPE "D" FDOT STRUCTURES (SEE DETAIL 32, DWG. NO. 17)

(2) 36-INCH SDR 21 HDPE PIPES INV. EL. 75.5'

INV. EL. 80.91'

INV. EL. 80.20

STA. 0+00

STA. 5+00

POINT NO. 1
N. 1504172.34
E. 597725.50

FABRIFOAM

(2) 36-INCH SDR 21 HDPE PIPES INV. EL. 80.0'

TYP.

24.0'

TYPE "D" FDOT STRUCTURE (SEE DETAIL 31, DWG. NO. 17)

EXISTING 18" DIA. RCP

CURVE NO. 4

CURVE NO. 1

PC

PT

PI

69.5

3:1

88.0

88.2

88.5

PROPOSED WET DETENTION POND

STA. 10+00

STA. 35+00

STA. 30+00

STA. 15+00

STA. 25+00

STA. 20+00

℄ OF DETENTION POND BERM

POINT NO. 2
N. 1503346.29
E. 597725.50

R25.0'

88

CURVE NO. 3

CURVE NO. 2

86

90

RUNOFF DIVERSION DITCH

INV. EL. 78.71
INV. EL. 77.93

INV. EL. 78.31
INV. EL. 77.29
INV. EL. 77.54
INV. EL. 77.65
INV. EL. 77.15
INV. EL. 78.33

4 EXISTING 36" DIA. RCP (TYP.)

EXISTING STORMWATER DRAINAGE DITCH

N

0 100 200
SCALE: 1"=100'

NOTE:

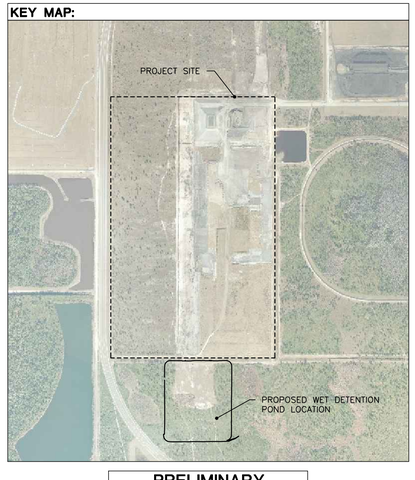
TOPOGRAPHIC SURVEY PERFORMED BY GEOMATIC TECHNOLOGIES, CALIFORNIA. SURVEY DATE: 07/19/2011

TOPOGRAPHIC CONTOUR INTERVAL: 1 FT.

DIKE CREST BASELINE CURVE DATA

CURVE NO.	R	L	PI N	PI E	PC	PT	T	Δ
CURVE NO. 1	68.50'	107.60'	N. 1504172.34	E. 598185.50	STA. 7+83.00	STA. 8+90.60	68.50'	90°00'00"
CURVE NO. 2	68.50'	107.60'	N. 1503071.29	E. 598185.50	STA. 18+54.65	STA. 19+62.25	68.50'	90°00'00"
CURVE NO. 3	68.50'	107.60'	N. 1503071.29	E. 597265.50	STA. 27+45.25	STA. 28+52.85	68.50'	90°00'00"
CURVE NO. 4	68.50'	107.60'	N. 1504172.34	E. 597265.50	STA. 38+16.90	STA. 39+24.50	68.50'	90°00'00"

KEY MAP:



PRELIMINARY
SUBJECT TO CHANGE

REVISION	DATE	DESCRIPTION	APPR'D
P1	10/06/2011	ISSUED FOR CLIENT REVIEW	

	NAME	DATE		NAME	DATE
DESIGNED BY	MH	10/06/2011	CHECKED BY	FKC	10/25/2011
DRAWN BY	AZ	10/06/2011	CHECKED BY	TSI	
FILE NO.: 10-13-0249			SCALE: AS SHOWN		
APPROVED BY:					

Ardaman & Associates, Inc.
Geotechnical, Environmental, and Materials Consultants
A Tetra Tech Company
8008 S. Orange Ave, Orlando, FL 32809
TEL 407/855-3860 FAX 407/859-8121 C.A.N. 5950

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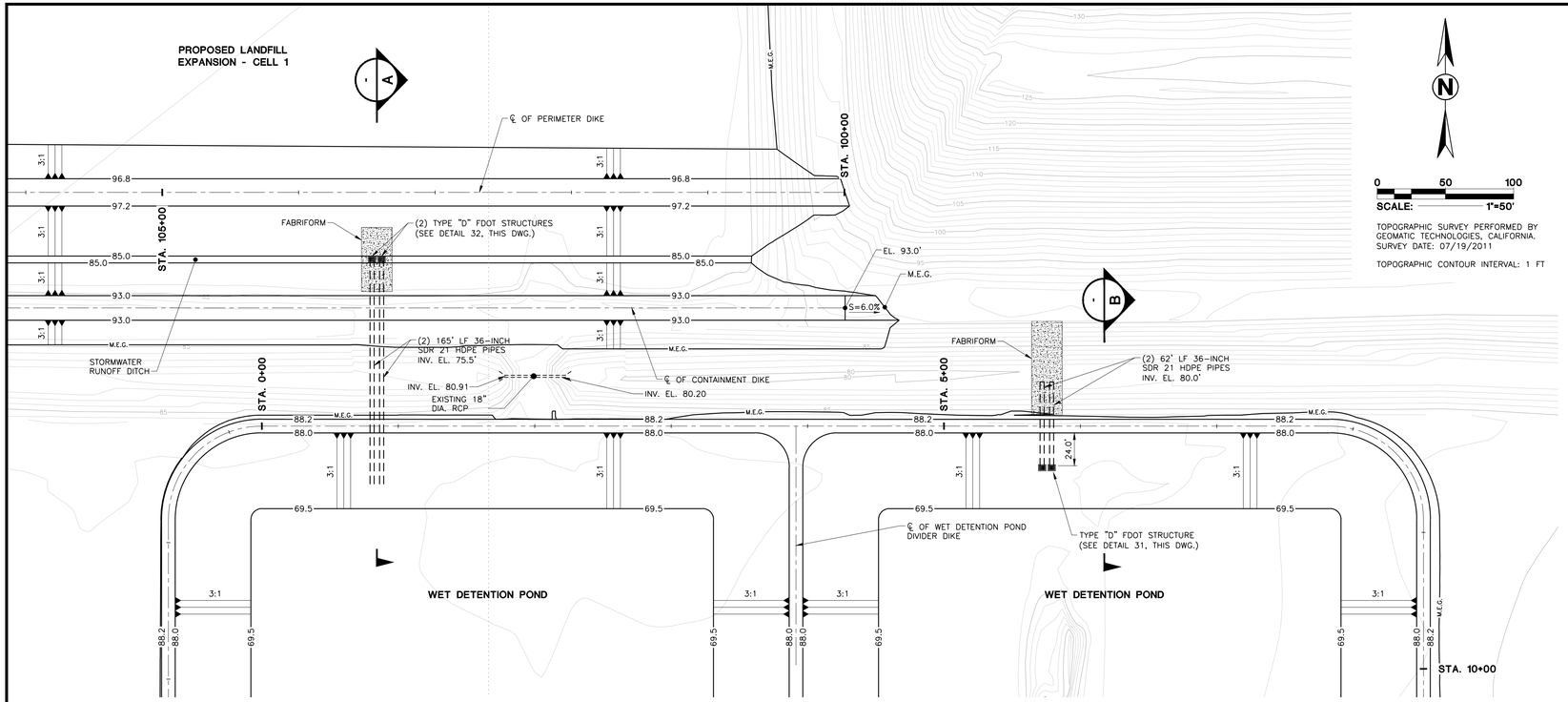
HORIZONTAL EXPANSION OF COAL COMBUSTION WASTE LANDFILL - CELL 1

OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

PROPOSED WET DETENTION POND PLAN AND DETAILS

DRAWING NO. 15

T:\corporate\10-13-0249\HORIZONTAL EXPANSION OF CMSA - CELL 1\CURRENT SHEET SET\15-16 PROPOSED WET DETENTION POND PLAN AND DETAILS.dwg 11/03/2011 12:02:54 PM, ahmed.zaghloul

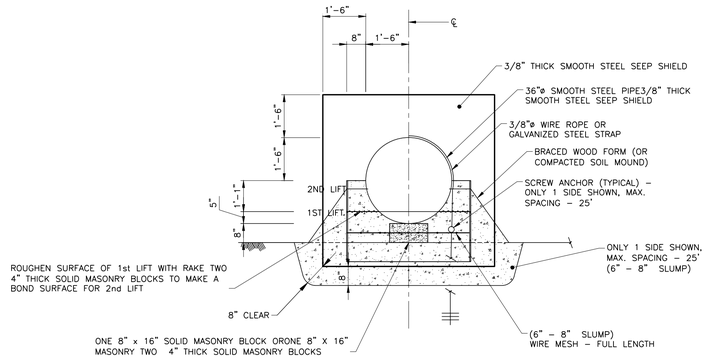


0 50 100

SCALE: 1"=50'

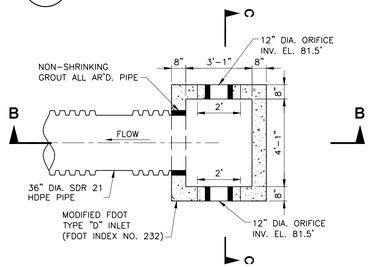
TOPOGRAPHIC SURVEY PERFORMED BY GEOMATIC TECHNOLOGIES, CALIFORNIA. SURVEY DATE: 07/19/2011

TOPOGRAPHIC CONTOUR INTERVAL: 1 FT



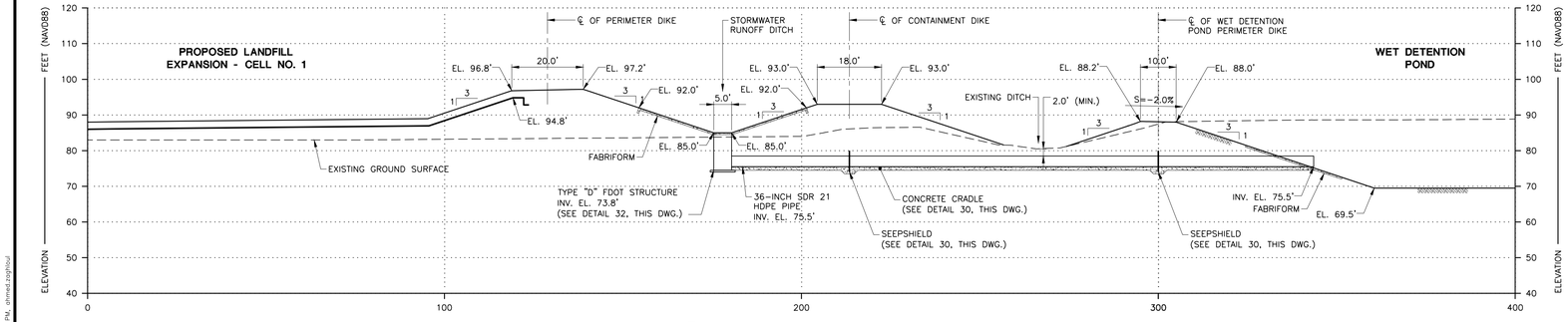
30 - CONCRETE CRADLE AND SEEP SHIELD INSTALLATION DETAIL

SCALE: 1" = 30'



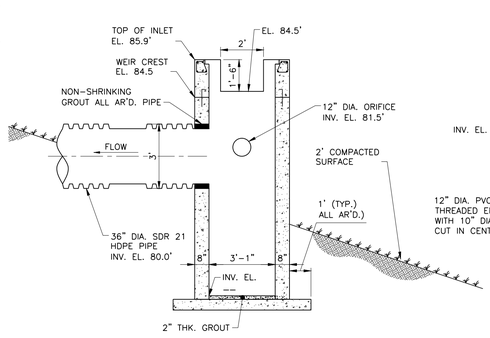
31 - TYPE "D" FDOT STRUCTURE PLAN VIEW

SCALE: 1" = 40'



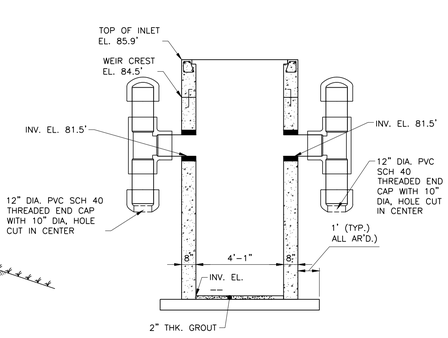
A - CROSS SECTION A

SCALE: 1" = 20'



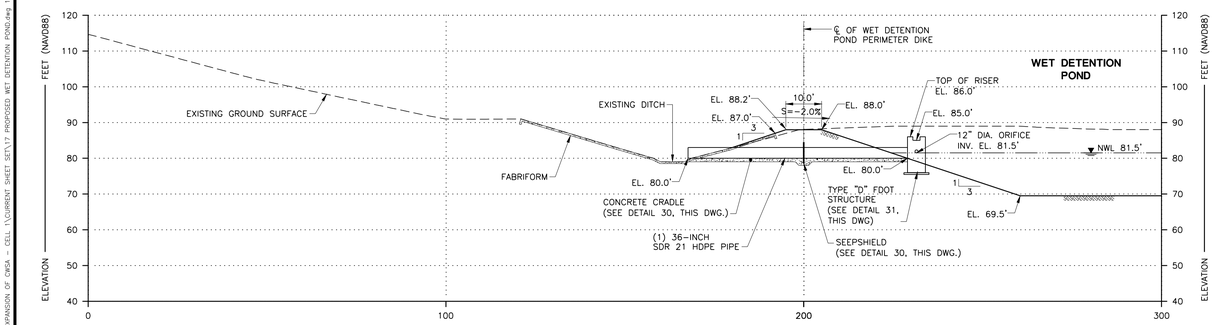
- - CROSS SECTION B-B

SCALE: 1" = 40'



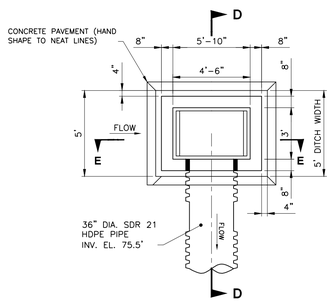
- - CROSS SECTION C-C

SCALE: 1" = 40'



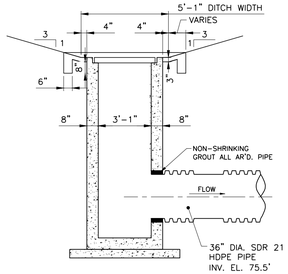
B - CROSS SECTION B

SCALE: 1" = 20'



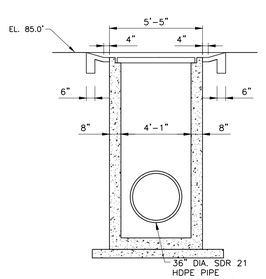
32 - TYPE "D" FDOT STRUCTURE PLAN VIEW

SCALE: 1" = 50'



- - CROSS SECTION D-D

SCALE: 1" = 50'



- - CROSS SECTION E-E

SCALE: 1" = 50'

PRELIMINARY SUBJECT TO CHANGE

REVISION	DATE	DESCRIPTION	APPR'D	REVISION	DATE	DESCRIPTION	APPR'D
				P1	10/06/2011	ISSUED FOR CLIENT REVIEW	

	NAME	DATE		NAME	DATE
DESIGNED BY	MH	10/06/2011	CHECKED BY	FKC	10/25/2011
DRAWN BY	AZ	10/06/2011	CHECKED BY	TSI	
FILE NO.: 10-13-0249			SCALE: AS SHOWN		
APPROVED BY:					

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HORIZONTAL EXPANSION OF COAL COMBUSTION WASTE LANDFILL - CELL 1

OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

PROPOSED WET DETENTION POND CULVERT STRUCTURES PLAN AND CROSS SECTIONS

DRAWING NO. 17

T:\corporate\10\10-13-0249\HORIZONTAL EXPANSION OF CWSA - CELL 1\CURRENT SHEET SET\17 PROPOSED WET DETENTION POND.dwg 11/03/2011 12:03:41 PM, ahmed.roghiul

EXISTING COAL COMBUSTION WASTE AREA RUNOFF POND

PROPOSED DECANT CELL

±1313 LF TYPE III SILT FENCE (SEE DETAIL 1 THIS DWG.)

EXISTING STORMWATER DRAINAGE DITCH

EXISTING COAL COMBUSTION WASTE LANDFILL

EXISTING STORMWATER DRAINAGE DITCH

EXISTING WETLAND

±3910 LF TYPE III SILT FENCE (SEE DETAIL 1 THIS DWG.)

PROPOSED WET DETENTION POND

PROPOSED LANDFILL EXPANSION - CELL 3

PROPOSED LANDFILL EXPANSION - CELL 2

PROPOSED LANDFILL EXPANSION - CELL 1

±4205 LF TYPE III SILT FENCE (SEE DETAIL 1 THIS DWG.)

EXISTING WETLAND

EXISTING STORMWATER DRAINAGE DITCH

INNOVATION WAY

W.E. 80.4'

W.E. 79.8'

ORANGE COUNTY LANDFILL

N

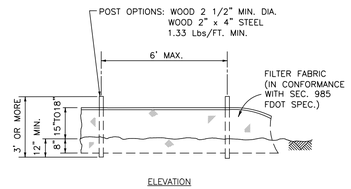
0 200 400

SCALE: 1"=200'

NOTE:

TOPOGRAPHIC SURVEY PERFORMED BY GEOMATIC TECHNOLOGIES, CALIFORNIA.
SURVEY DATE: 07/19/2011
DATUM: NAVD (1988)

TOPOGRAPHIC CONTOUR INTERVAL: 1 FT.



ELEVATION



SECTION

1 TYPE III SILT FENCE DETAIL

NOT TO SCALE

PRELIMINARY
SUBJECT TO CHANGE

REVISION	DATE	DESCRIPTION	APPR'D
P1	10/06/2011	ISSUED FOR CLIENT REVIEW	

	NAME	DATE		NAME	DATE
DESIGNED BY	MH	10/06/2011	CHECKED BY	FKC	10/25/2011
DRAWN BY	AZ		CHECKED BY	TSI	
FILE NO.: 10-13-0249			SCALE: AS SHOWN		
APPROVED BY:					

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HORIZONTAL EXPANSION OF COAL COMBUSTION WASTE LANDFILL - CELL 1

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ORANGE COUNTY, FLORIDA

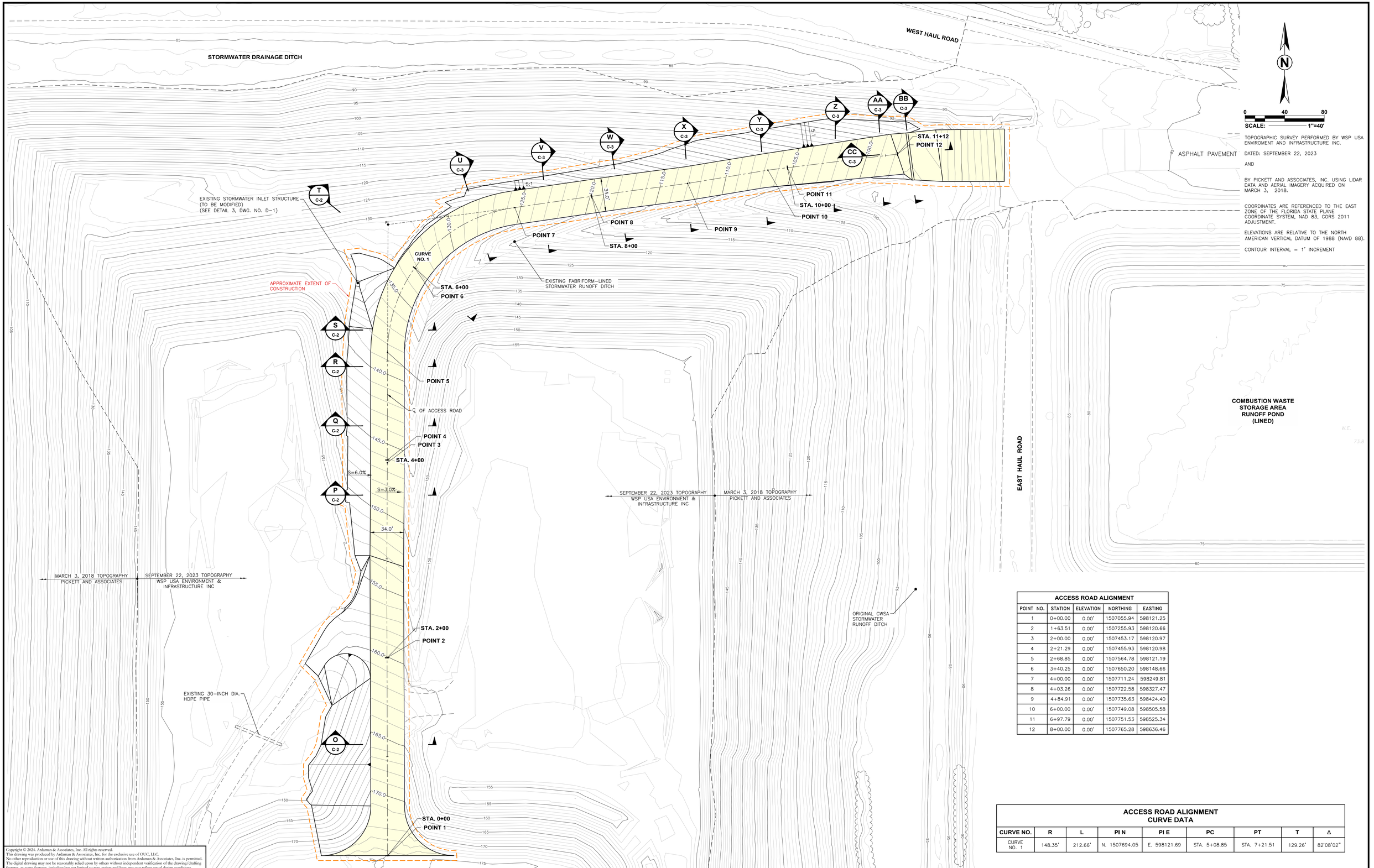
EROSION CONTROL PLAN AND DETAILS

DRAWING NO.

Y:\corporate\10-13-0249\HORIZONTAL EXPANSION OF CWSA - CELL 1\CURRENT SHEET SET\8 EROSION CONTROL PLAN AND DETAILS.dwg 11/03/2011 1:06:20 PM, ahmed.zaghloul

Attachment E2

Construction Plans for Paving of Access Ramp



TOPOGRAPHIC SURVEY PERFORMED BY WSP USA ENVIROMENT AND INFRASTRUCTURE INC.

DATED: SEPTEMBER 22, 2023

AND

BY PICKETT AND ASSOCIATES, INC. USING LIDAR DATA AND AERIAL IMAGERY ACQUIRED ON MARCH 3, 2018.

COORDINATES ARE REFERENCED TO THE EAST ZONE OF THE FLORIDA STATE PLANE COORDINATE SYSTEM, NAD 83, CORS 2011 ADJUSTMENT.

ELEVATIONS ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

CONTOUR INTERVAL = 1' INCREMENT

ACCESS ROAD ALIGNMENT

POINT NO.	STATION	ELEVATION	NORTHING	EASTING
1	0+00.00	0.00'	1507055.94	598121.25
2	1+63.51	0.00'	1507255.93	598120.66
3	2+00.00	0.00'	1507453.17	598120.97
4	2+21.29	0.00'	1507455.93	598120.98
5	2+68.85	0.00'	1507564.78	598121.19
6	3+40.25	0.00'	1507650.20	598148.66
7	4+00.00	0.00'	1507711.24	598249.81
8	4+03.26	0.00'	1507722.58	598327.47
9	4+84.91	0.00'	1507735.63	598424.40
10	6+00.00	0.00'	1507749.08	598505.58
11	6+97.79	0.00'	1507751.53	598525.34
12	8+00.00	0.00'	1507765.28	598636.46

ACCESS ROAD ALIGNMENT CURVE DATA

CURVE NO.	R	L	PI N	PI E	PC	PT	T	Δ
CURVE NO. 1	148.35'	212.66'	N. 1507694.05	E. 598121.69	STA. 5+08.85	STA. 7+21.51	129.26'	82°08'02"

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REVISION	DATE	DESCRIPTION	APPR'D
0	02/12/24	ISSUED FOR CONSTRUCTION	JM
P1	02/06/24	ISSUED FOR OWNER'S REVIEW (100% COMPLETION)	JM
P0	01/12/24	ISSUED FOR OWNER'S REVIEW (90% COMPLETION)	JM

	NAME	DATE		NAME	DATE
DESIGNED BY	JM	12/01/23	CHECKED BY	AP	01/03/24
DRAWN BY	MAM	12/04/23	CHECKED BY	FKC	01/09/24
FILE NO.: 22-13-0045			SCALE: AS SHOWN		
APPROVED BY:					

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A Tetra Tech Company
8008 S. Orange Ave. Orlando, FL 32809
TEL 407/855-3860 FAX 407/859-8121 C.A.N. 5950

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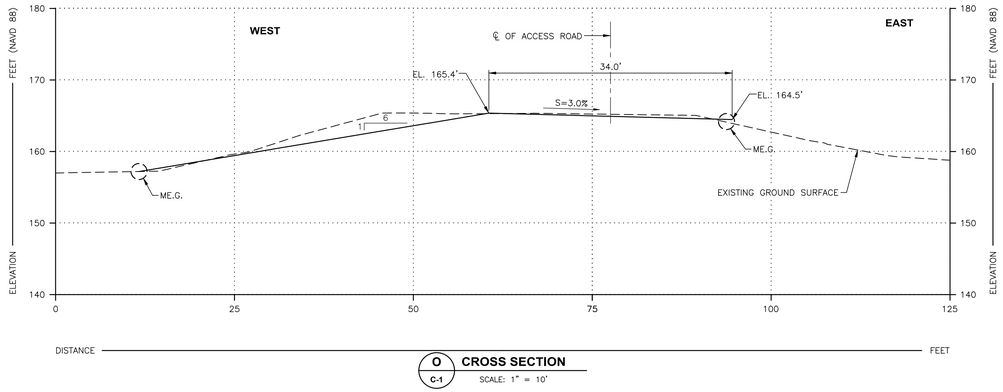
MODIFICATION OF STORMWATER CONTROL SYSTEM FOR ACCESS RAMP

OUC STANTON ENERGY CENTER ORANGE COUNTY, FLORIDA

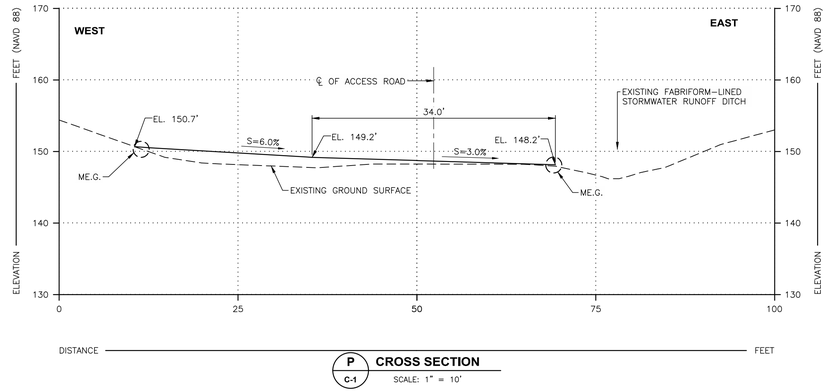
PLAN VIEW

DRAWING NO. **C-1**

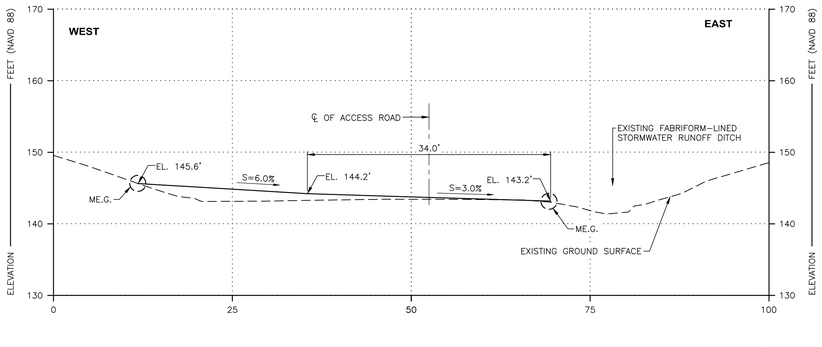
R:\Corporate\25\25-13-0166C\DESIGN OF STORMWATER CONTROL SYSTEM FOR ACCESS RAMP_Current Sheet Set\C-1 PLAN VIEW.dwg 2025/10/10 11:46 AM, Mclendon, Paula



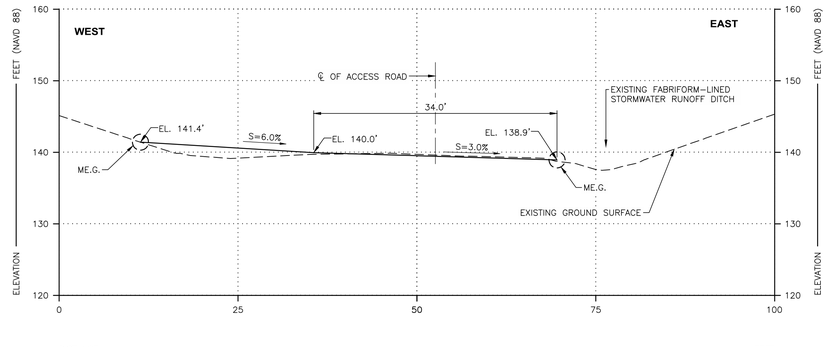
O C-1 **CROSS SECTION**
SCALE: 1" = 10'



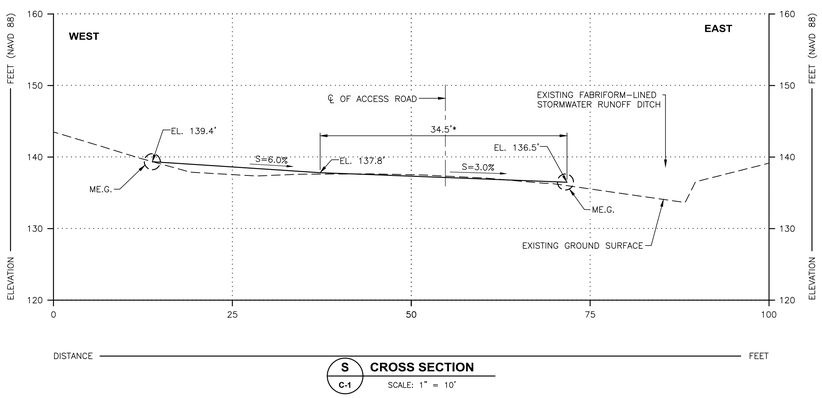
P C-1 **CROSS SECTION**
SCALE: 1" = 10'



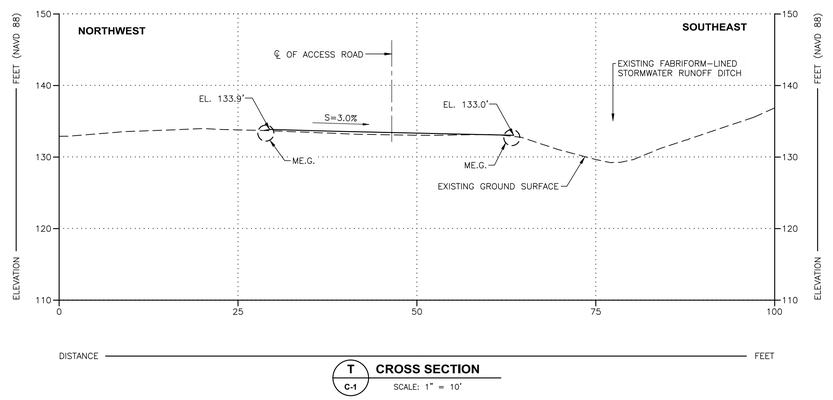
Q C-1 **CROSS SECTION**
SCALE: 1" = 10'



R C-1 **CROSS SECTION**
SCALE: 1" = 10'



S C-1 **CROSS SECTION**
SCALE: 1" = 10'



T C-1 **CROSS SECTION**
SCALE: 1" = 10'

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REVISION	DATE	DESCRIPTION	APPR'D
0	02/12/24	ISSUED FOR CONSTRUCTION	JM
P1	02/06/24	ISSUED FOR OWNER'S REVIEW (100% COMPLETION)	JM
P0	01/12/24	ISSUED FOR OWNER'S REVIEW (90% COMPLETION)	JM

	NAME	DATE		NAME	DATE
DESIGNED BY	JM	12/01/23	CHECKED BY	AP	01/03/24
DRAWN BY	MAM	12/04/23	CHECKED BY	FKC	01/09/24
FILE NO.: 22-13-0045			SCALE: AS SHOWN		
APPROVED BY:					

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Geotechnical, Environmental, and Materials Consultants
A Tetra Tech Company
8008 S. Orange Ave. Orlando, FL 32809
TEL 407/855-3860 FAX 407/859-8121 C.A.N. 5950

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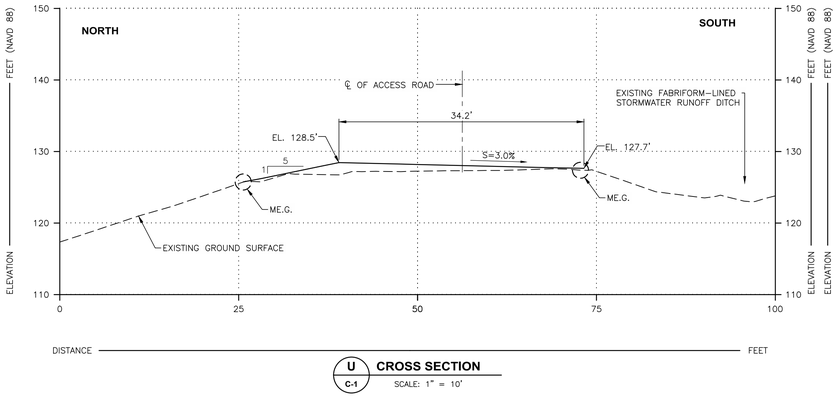
MODIFICATION OF STORMWATER CONTROL SYSTEM FOR ACCESS RAMP

OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

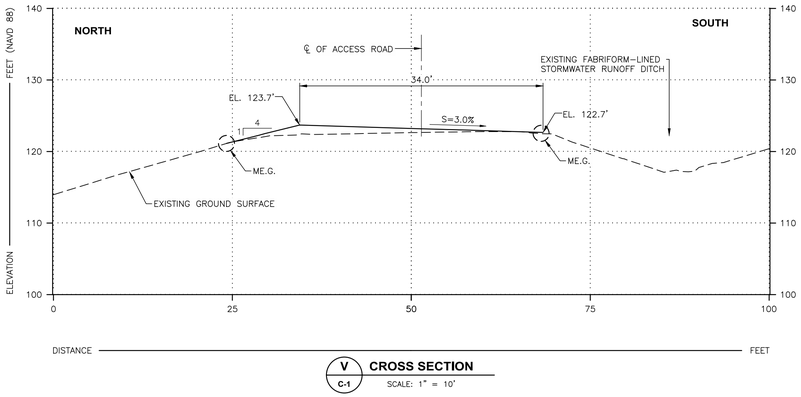
CROSS SECTIONS O THROUGH T

DRAWING NO. **C-2**

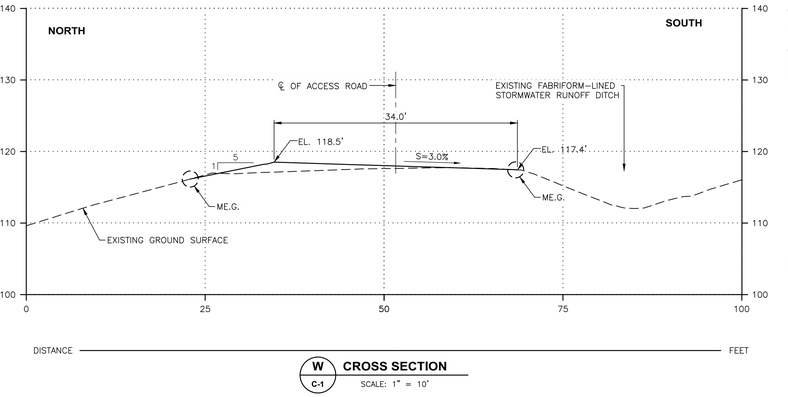
R:\Corporate\25\25-13-01660\DESIGN OF STORMWATER CONTROL SYSTEM FOR ACCESS RAMP_Current Sheet Set\C-2 CROSS SECTIONS O THROUGH T.dwg 2025/10/10 10:31 AM, McLendon, Paula



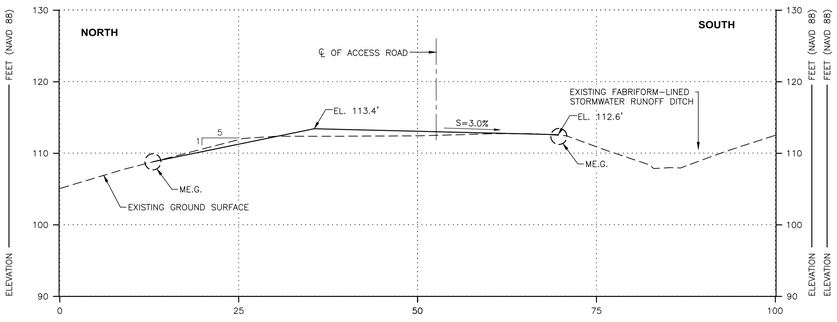
U C-1 **CROSS SECTION**
SCALE: 1" = 10'



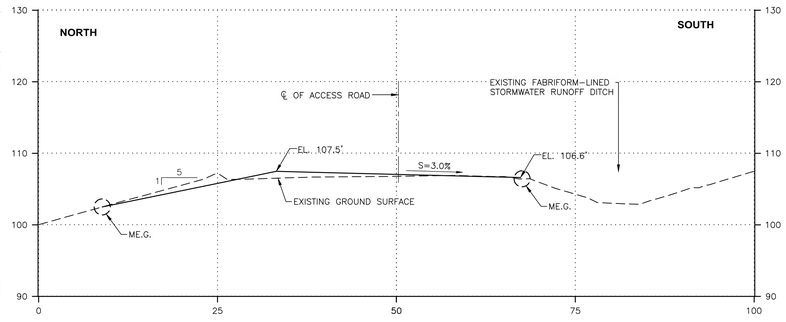
V C-1 **CROSS SECTION**
SCALE: 1" = 10'



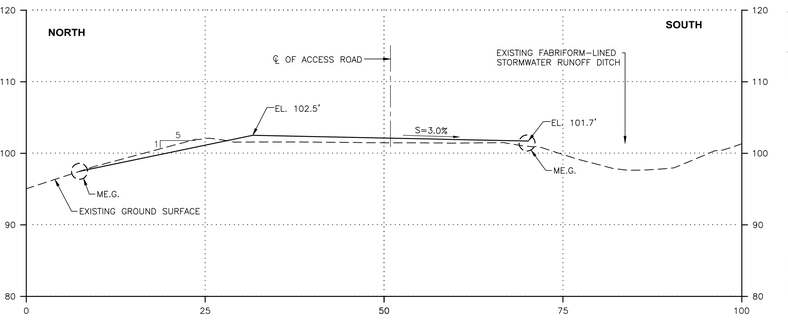
W C-1 **CROSS SECTION**
SCALE: 1" = 10'



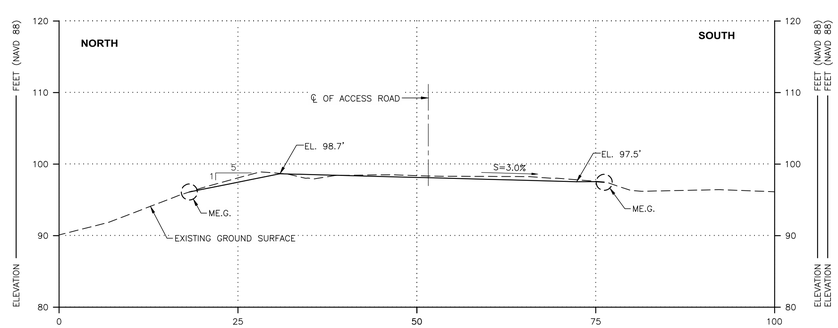
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SCALE: 1" = 10'



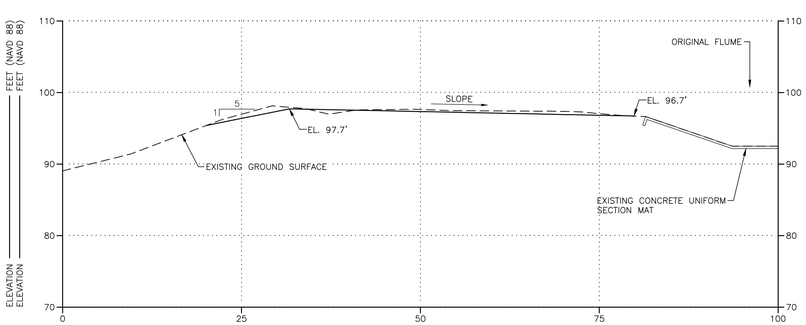
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SCALE: 1" = 10'



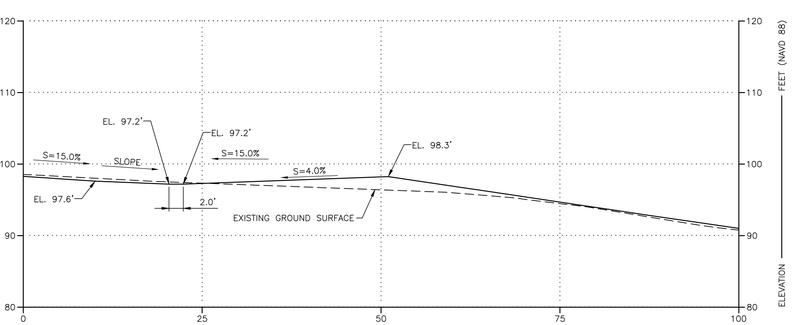
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SCALE: 1" = 10'



AA C-1 **CROSS SECTION**
SCALE: 1" = 10'



BB C-1 **CROSS SECTION**
SCALE: 1" = 10'



CC C-1 **CROSS SECTION**
SCALE: 1" = 10'

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REVISION	DATE	DESCRIPTION	APPR'D
0	02/12/24	ISSUED FOR CONSTRUCTION	JM
P1	02/06/24	ISSUED FOR OWNER'S REVIEW (100% COMPLETION)	JM
P0	01/12/24	ISSUED FOR OWNER'S REVIEW (90% COMPLETION)	JM

	NAME	DATE		NAME	DATE
DESIGNED BY	JM	12/01/23	CHECKED BY	AP	01/03/24
DRAWN BY	MAM	12/04/23	CHECKED BY	FKC	01/09/24
FILE NO.: 22-13-0045			SCALE: AS SHOWN		
APPROVED BY:					

Ardaman & Associates, Inc.
Geotechnical, Environmental, and Materials Consultants
A Tetra Tech Company
8008 S. Orange Ave. Orlando, FL 32809
TEL 407/855-3860 FAX 407/859-8121 C.A.N. 5950

OUC The Reliable One

MODIFICATION OF STORMWATER CONTROL SYSTEM FOR ACCESS RAMP

OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

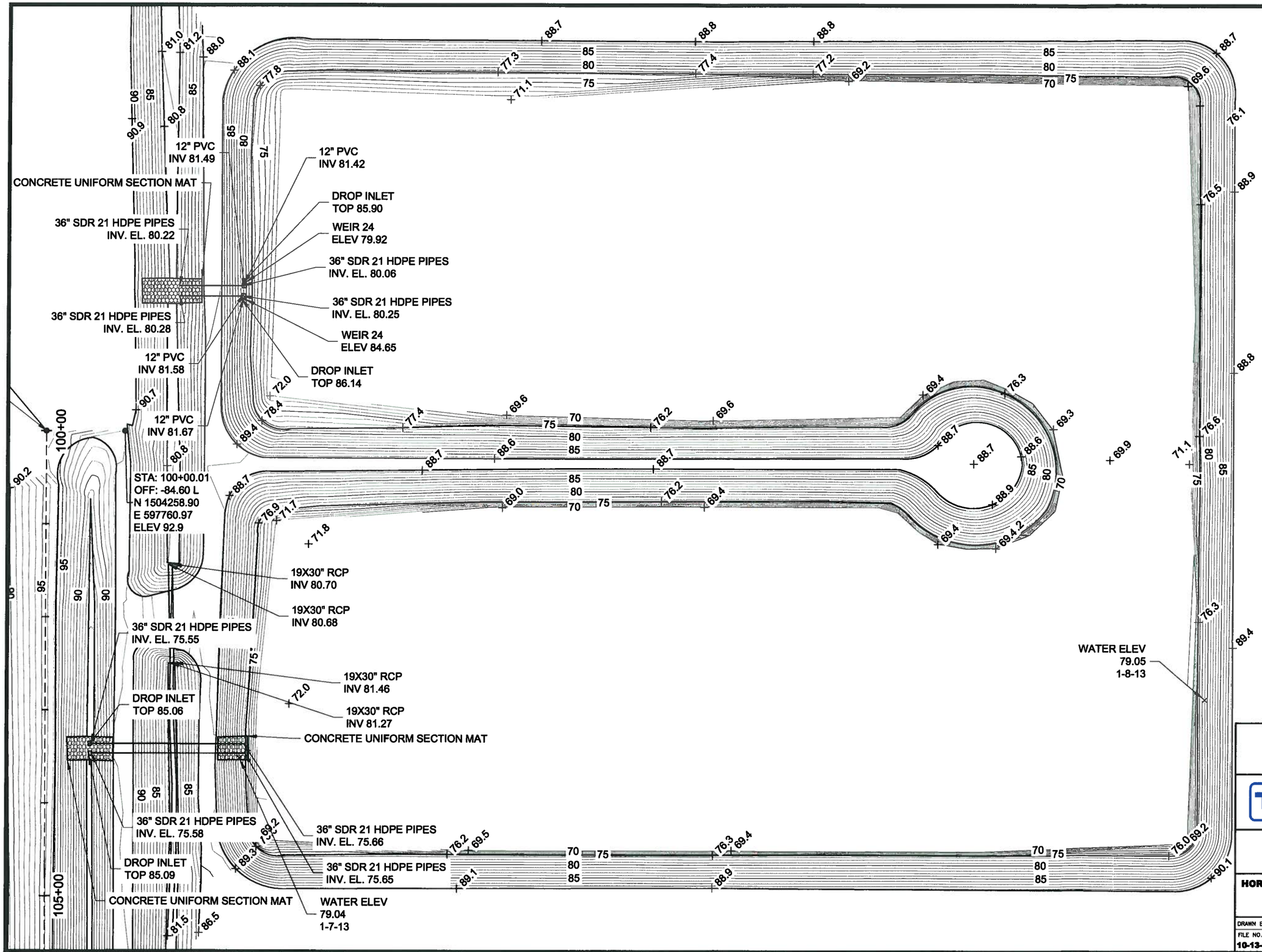
CROSS SECTIONS U THROUGH CC

DRAWING NO. **C-3**

R:\Corporate\25\25-13-01660\DESIGN OF STORMWATER CONTROL SYSTEM FOR ACCESS RAMP_Current Sheet Set\C-2 CROSS SECTIONS U THROUGH V.dwg 2025/10/10 10:32 AM, Mclendon, Paulo

Attachment E3

Stage-Storage Relationship for Wet Detention Pond



AS-BUILT SURVEY OF WET DETENTION POND

Ardaman & Associates, Inc.
Geotechnical, Environmental, and Materials Consultants
A Tetra Tech Company
8008 S. Orange Ave. Orlando, FL 32809
TEL 407/855-3860 FAX 407/859-8121 C.A.N. 5950

OUC The Reliable One

HORIZONTAL EXPANSION OF COMBUSTION WASTE STORAGE AREA - CELL 1 ORANGE COUNTY, FLORIDA

DRAWN BY:	AZ	CHECKED BY:	JR	DATE:	04/15/13
FILE NO.	10-13-0249	APPROVED BY:		FIGURE:	3-16

T:\Corporate\10\10-13-0249\HORIZONTAL EXPANSION OF CWSA - CELL 1\REPORT FIGURES_Current Sheet Set\3-16 AS-BUILT SURVEY OF WET DETENTION POND.dwg 4/29/2013 5:46:00 PM, ruben.hoffman

Stage-Storage Relationship for Wet Detention Pond

Elevation (ft, NAVD 88)	Area		Incremental Volume (ac-ft)	Total Volume (ac-ft)
	(ft^2)	(ac)		
+88.0	1,001,949	23.00	22.35	336.54
+87.0	945,183	21.70	21.51	314.19
+86.0	928,839	21.32	21.14	292.68
+85.0	912,550	20.95	10.34	271.55
+84.5	904,433	20.76	10.43	261.21
+84.0	896,316	20.58	20.39	250.78
+83.0	880,137	20.21	20.02	230.39
+82.0	864,013	19.83	9.92	210.37
+81.5	855,978	19.65	9.73	200.45
+81.0	847,943	19.47	19.28	190.72
+80.0	831,929	19.10	18.91	171.44
+79.0	815,970	18.73	18.55	152.53
+78.0	800,007	18.37	18.18	133.98
+77.0	783,496	17.99	17.82	115.80
+76.0	769,134	17.66	17.54	97.98
+75.0	758,991	17.42	17.31	80.44
+74.0	749,149	17.20	17.09	63.13
+73.0	739,553	16.98	16.87	46.04
+72.0	730,023	16.76	15.66	29.17
+71.0	635,288	14.58	13.51	13.51
+70.0	543,269	12.47	0	0

Top of Pond Elevation	+88.0 feet (NAVD 88)
Overflow Weir Crest Elevation	+84.5 feet (NAVD 88)
Normal Operating Water Level (Orifice Invert Elevation)	+81.5 feet (NAVD 88)
Permanent Pool Volume	200.45 acre-feet
Treatment Volume	60.76 acre-ft

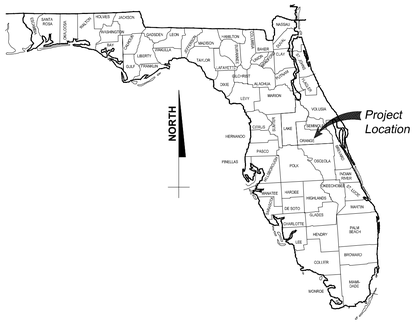
Attachment E4

Topographic Survey

Location Map
(Not to Scale)

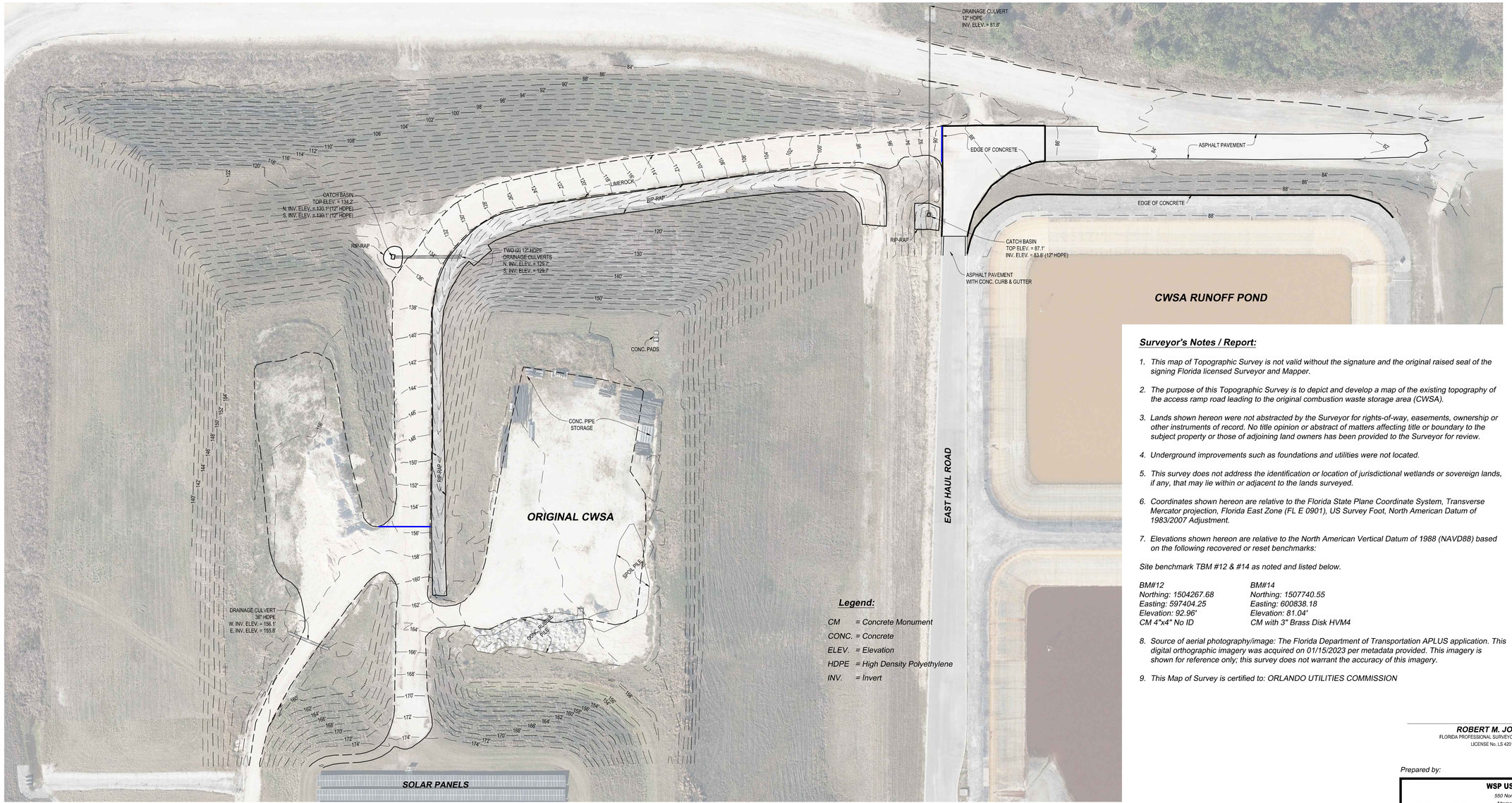


Map of Topographic Survey
of
Access Ramp Road at CWSA
Stanton Energy Center
Orange County, Florida



GRAPHIC SCALE
0 30 60 120
(IN FEET)
1 inch = 60 ft.

NORTH



Legend:

CM = Concrete Monument
CONC. = Concrete
ELEV. = Elevation
HDPE = High Density Polyethylene
INV. = Invert

Surveyor's Notes / Report:

1. *This map of Topographic Survey is not valid without the signature and the original raised seal of the signing Florida licensed Surveyor and Mapper.*
2. *The purpose of this Topographic Survey is to depict and develop a map of the existing topography of the access ramp road leading to the original combustion waste storage area (CWSA).*
3. *Lands shown hereon were not abstracted by the Surveyor for rights-of-way, easements, ownership or other instruments of record. No title opinion or abstract of matters affecting title or boundary to the subject property or those of adjoining land owners has been provided to the Surveyor for review.*
4. *Underground improvements such as foundations and utilities were not located.*
5. *This survey does not address the identification or location of jurisdictional wetlands or sovereign lands, if any, that may lie within or adjacent to the lands surveyed.*
6. *Coordinates shown hereon are relative to the Florida State Plane Coordinate System, Transverse Mercator projection, Florida East Zone (FL E 0901), US Survey Foot, North American Datum of 1983/2007 Adjustment.*
7. *Elevations shown hereon are relative to the North American Vertical Datum of 1988 (NAVD88) based on the following recovered or reset benchmarks:*

Site benchmark TBM #12 & #14 as noted and listed below.

BM#12	*BM#14*
Northing: 1504267.68	*Northing: 1507740.55*
Easting: 597404.25	*Easting: 600838.18*
Elevation: 92.96'	*Elevation: 81.04'*
CM 4"x4" No ID	*CM with 3" Brass Disk HVM4*

8. *Source of aerial photography/image: The Florida Department of Transportation APLUS application. This digital orthographic imagery was acquired on 01/15/2023 per metadata provided. This imagery is shown for reference only; this survey does not warrant the accuracy of this imagery.*
9. *This Map of Survey is certified to: ORLANDO UTILITIES COMMISSION*

ROBERT MICHAEL JONES
CERTIFICATE
4201
STATE OF
FLORIDA
REGISTERED LAND SURVEYOR

ROBERT M. JONES
FLORIDA PROFESSIONAL SURVEYOR AND MAPPER
LICENSE No. LS 4201

Prepared by:

WSP USA GEOMATICS, INC.
550 Northlake Boulevard, Suite 1000
Altamonte Springs, FL 32701 USA
Phone: (407) 522-7570
www.wsp.com
Certificate of Authorization Number LB-0008652

Original Topo Last Day in Field: 10/27/2023
Current Topo Last Day in Field: 05/01/2025

Prepared for:
Orlando Utilities Commission
5100 South Alafaya Trail
Orlando, Florida 32831

	Date	Revision

Dwg. Date: 5/6/2025
Photo Date: 2023
Drawn by: TW
Checked by: RMJ
County: Orange County, Florida
Field Book: Map Markup in Folder
Office No.: 6374181079
Dwg. Name: Cell 1 Ramp topo_20250501.dwg

Project Title:
Map of Topographic Survey
Access Ramp Road at CWSA
Stanton Energy Center
Orange County, Florida

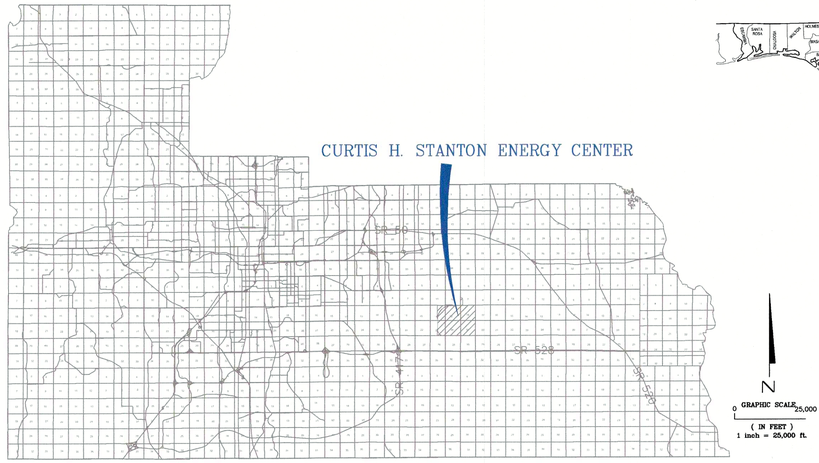
Sheet No.
1 of 1

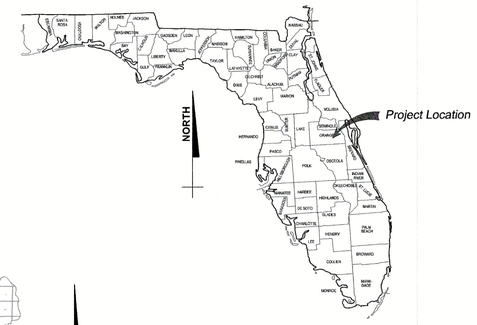
Attachment E5

Boundary Survey of Stanton Energy Center

Map of Boundary Survey
of
Curtis H. Stanton Energy Center

Located in
Section 12, 13, 14, 23 & 24, Township 23 South, Range 31 East
Orange County, Florida





LEGAL DESCRIPTION:

All of Section 18, Township 23 South, Range 32 East, Orange County, Florida;
plus the West 990 feet of the Southwest 1/4 of Section 7, Township 23 South, Range 32 East, Orange County, Florida.

less: Right-of-Way Agreement (Official Records Book 3537, page 1156)

Together with:

All of Section 19, Township 23 South, Range 32 East, Orange County, Florida.

Together with:

All of Section 24, Township 23 South, Range 31 East, Orange County, Florida.

Together with:

All of Section 13, Township 23 South, Range 31 East, Orange County, Florida,
less: Right-of-Way for Alafaya Trail Extension. (Official Records Book 8964 at Page 3164)

Together with:

The East 1/2 of Section 23, Township 23 South, Range 31 East, Orange County, Florida,
less: Right-of-Way for Alafaya Trail Extension. (Official Records Book 8964 at Page 3164)

Together with:

The East 1/2 of Section 14, Township 23 South, Range 31 East, Orange County, Florida,
less: Right-of-Way for Alafaya Trail Extension. (Official Records Book 8964 at Page 3164)

Together with:

The South 200' of the SW 1/4 of Section 12, Township 23 South, Range 31 East, Orange County, Florida

ROBERT MICHAEL JONES CERTIFICATE 4201 STATE OF FLORIDA REGISTERED LAND SURVEYOR

ROBERT M. JONES
FLORIDA PROFESSIONAL SURVEYOR AND MAPPER
LICENSE No. LS 4201

LEGEND:

(C)	=	Calculated
℄C/L	=	Centerline
CCR	=	Certified Corner Record
CHD	=	Chord Distance
CB	=	Chord Bearing
(D)	=	Deed
Δ	=	Delta Angle
(F)	=	Field
L	=	Length
R	=	Radius
ORB	=	Official Records Book
PC	=	Point of Curvature
PT	=	Point of Tangent
PI	=	Point of Intersection
CM	=	Concrete Monument
id	=	Identification
—|—	=	Line Not to Scale
——	=	Section line
▬	=	Boundary line
ROW	=	Right of Way
AKA	=	also known as
±	=	more or less

SURVEYOR'S NOTES:

1. This Boundary Survey is not valid without the signature and original raised Seal of a Florida Licensed Surveyor and Mapper.

2. Bearings shown hereon are relative to the Florida State Plane Coordinate System, Transverse Mercator Projection, Florida East Zone (FL E 0901), North American Datum of 1983/2007 adjustment based on the North line of the Northeast Quarter of Section 18, Township 23 South, Range 32 East as being South 89°58'05" West.

3. The lands described hereon were not abstracted for ownership, easements, rights-of-way or other matters of title by this firm nor were any such documents provided by the client.

4. The Legal Description shown hereon was prepared by the surveyor based upon a review of the Orange County Property Appraisers records.

5. Interior improvements were not located.

6. Underground improvements, if any, such as foundations and utilities, were not located.

7. This Boundary Survey certified to the Orlando Utilities Commission.

8. Lands surveyed contain acres:

3138.36 acres ± lying South and East of Alafaya Trail Extension
21.92 acres ± lying Southwest of Alafaya Trail Extension
125.38 acres ± lying North and West of Alafaya Trail Extension

3285.66 acres ± total

Last Day in Field: 08/24/2011

Prepared by: T1

WSP USA ENVIRONMENT & INFRASTRUCTURE, INC.
550 Northlake Boulevard, Suite 1000
Altamonte Springs, FL 32701 USA
Phone: (407) 522-7570
www.wsp.com
Certificate of Authorization Number LB-0007932

Prepared for:
ORLANDO UTILITIES COMMISSION
5971 Pershing Avenue
Orlando, Florida 32822
Phone: 407-384-4077

OUC The Reliable One

Revision	Date

Revision	Date
REVISED LOGO	08-17-17
RECERTIFIED	02-21-24

County: Orange County, Florida	
Field Books: 1118-25,98;BK. 1124-49,66	
Office No.: 6374.11.0514	
Dwg. Name:	
Dwg. Date:	02/21/2024
Photo Date:	05/27/2022
Drawn by:	M.P.
Checked by:	R.M.J.

Project Title:
Map of Boundary Survey
of
Curtis H. Stanton Energy Center
Located in
Orange County, Florida

Sheet No. 1 of 2

P:\63741\2011\63741110514 - OUC SEC Boundary\Recert SEC Boundary\Stanton Energy Center Boundary_WSP.dwg

Map of Boundary Survey

of

Curtis H. Stanton Energy Center

Located in

Section 12, 13, 14, 23 & 24, Township 23 South, Range 31 East

Orange County, Florida

GRAPHIC SCALE
0 300 600 1200
(IN FEET)
1 inch = 600 ft.

NORTH

125.38 acres
(per Orange County Property Appraiser Tax Parcel No. 14-23-31-0000-00-002 and 14-23-31-0000-00-010) that part of E 1/2 of Section 14 lying NW of Alafaya Trail ext. see O.R. Book 8964, Page 3164

E 1/2 less Alafaya Trail Extension

NW 1/4

NE 1/4

SW 1/4

SE 1/4

Section 12

Section 13

Section 14

Section 18

Section 19

Section 23

Section 24

All of Section 18 per O.R. Book 3229, Page 0764

(per Orange County Property Appraiser Tax Parcel No. 13-23-31-0000-00-001) all of Section 23 see O.R. Book 2774, Page 1423

(per Orange County Property Appraiser Tax Parcel No. 13-23-31-0000-00-001) the of E 1/2 of Section 14 less Alafaya Trail ext. see O.R. Book 8964, Page 3164

(per Orange County Property Appraiser Tax Parcel No. 13-23-31-0000-00-001) all of Section 24 see O.R. Book 4420, Page 4603

All of Section 19 per O.R. Book 3435, Page 2304

3138.36 acres

21.92 acres

(per Orange County Property Appraiser Tax Parcel No. 23-23-31-0000-00-005) that part of SE 1/4 of Section 23 lying SW of Alafaya Trail ext. see O.R. Book 8964, Page 3164

(per Orange County Property Appraiser Tax Parcel No. 13-23-31-0000-00-001) the of NE 1/4 of Section 13 less Alafaya Trail ext. see O.R. Book 8964, Page 3164

SE 1/4 of Section 23 see O.R. Book 3424, Page 2051

ORANGE COUNTY LAND FILL

ALAFAYA TRAIL EXTENSION (Innovation Way) 120' right-of way (per Official Records Book 8964, Page 3164)

ALAFAYA TRAIL 130' right-of way

120' right-of way

West Portion Road-right-of-way (per O.R. Book 8964, Page 3164)

East Portion Road-right-of-way (per O.R. Book 8964, Page 3164)

The South 200' of the Southwest 1/4 of Section 12

That part of Section 13 lying North of Alafaya Trail Extension (per Orange County Property Appraiser Tax Parcel No. 13-23-31-0000-00-001) the South 200' of the SW 1/4 of Section 12 less that part of E 1/2 lying NW of Alafaya Trail ext. see O.R. Book 8964, Page 3164

West 990' of the Southwest 1/4 less Right of Way (O.R.B. 3537, pg. 1156)

the W 990' of SW 1/4 of Sec 07 per O.R. Book 3229, Page 0764, less ROW per O.R. Book 3537, page 1156

LIMITS OF OWNERSHIP SHOWN HEREON ARE CONSISTENT WITH ORANGE COUNTY PROPERTY APPRAISER RECORDS

BOUNDARY (typical)

RANGE 31 EAST
RANGE 32 EAST

Prepared for:

ORLANDO UTILITIES COMMISSION
5971 Perishing Avenue
Orlando, Florida 32822
Phone: 407-384-4077

Revision	Date
REVISED LOGO	08-17-17
RECERTIFIED	02-21-24

Dwg. Date:	02/21/2024
Photo Date:	05/27/2022
Drawn by:	M.P.
Checked by:	R.M.J.

County: Orange County, Florida
Field Books: 1118-25,96,86; 1128-48,66
Office No.: 6374.11.0514
Dwg. Name:

Project Title:
Curtis H. Stanton Energy Center
Map of Boundary Survey
of
Located in
Orange County, Florida

Sheet No.
2 of 2

Prepared by:

WSP USA ENVIRONMENT & INFRASTRUCTURE, INC.
550 Northlake Boulevard, Suite 1000
Altamonte Springs, FL 32701 USA
Phone: (407) 522-7570
www.wsp.com
Certificate of Authorization Number LB-000783

CONSTRUCTION DRAWINGS

FOR

PAVING OF LANDFILL ACCESS RAMP

OUC STANTON ENERGY CENTER

ORANGE COUNTY, FLORIDA

OUC The Reliable One®

NOVEMBER 2025

Prepared By

Ardaman & Associates, Inc.
Geotechnical, Environmental, and
Materials Consultants
A Tetra Tech Company
8008 S. Orange Ave. Orlando, FL 32809
TEL 407/855-3860 FAX 407/859-8121 C.A.N. 5950

JEYISANKER MATHIYAPARANAM LICENSE No. 69966 STATE OF FLORIDA PROFESSIONAL ENGINEER

JEYISANKER MATHIYAPARANAM Digitally signed by JEYISANKER MATHIYAPARANAM Date: 2025.11.11 13:49:02 -05'00'

JEYISANKER MATHIYAPARANAM, P.E.
FLORIDA LICENSE NO. 69966

ARDAMAN & ASSOCIATES, INC. A&E NO. 25-13-0166C

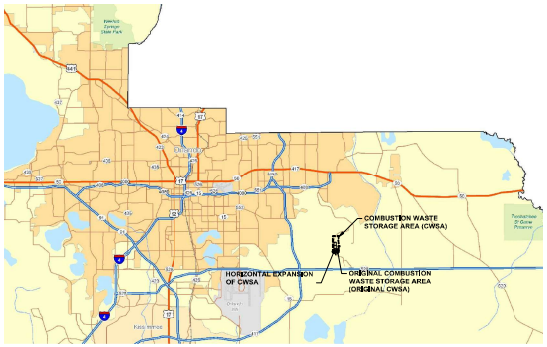
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Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

DRAWING NO. G-1



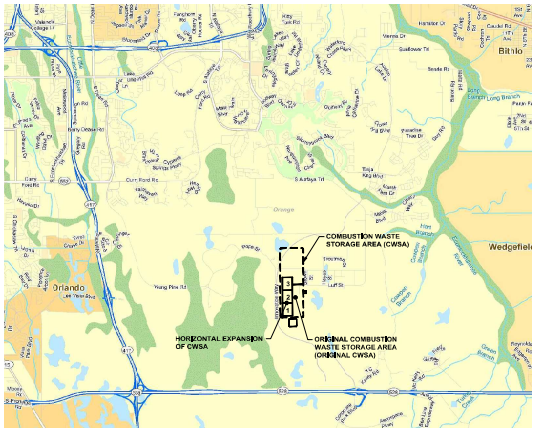
FLORIDA STATE MAP

1" = 350,000'



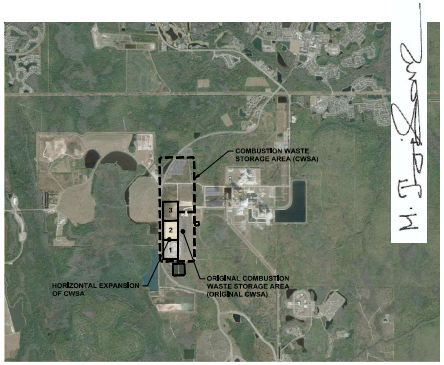
ORANGE COUNTY MAP

1" = 25,000'



SITE LOCATION MAP

1" = 6,000'



SITE VICINITY MAP

1" = 4,000'

INDEX OF DRAWINGS

SHEET NUMBER	SHEET TITLE
	GENERAL DRAWINGS
G-1	COVER SHEET
G-2	INDEX OF DRAWINGS AND PROJECT LOCATION MAPS
G-3	GENERAL NOTES ABBREVIATIONS AND SYMBOLS
G-4	AERIAL PHOTOGRAPH OF PROJECT SITE
G-5	TOPOGRAPHIC SURVEY OF PROJECT SITE
G-6	CROSS SECTIONS A THROUGH H
G-7	CROSS SECTIONS I THROUGH N
	CONSTRUCTION DRAWINGS
C-1	PLAN VIEW
C-2	CROSS SECTIONS O THROUGH T
C-3	CROSS SECTIONS U THROUGH CC
	DETAILS
D-1	TYPICAL DETAILS

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REVISION	DATE	DESCRIPTION	APPR'D
1	11/04/25	UPDATED BASED ON OWNER'S REQUEST	JM
0	03/13/24	ISSUED FOR CONSTRUCTION	JM
P1	02/06/24	ISSUED FOR OWNER'S REVIEW (100% COMPLETION)	JM
P0	01/12/24	ISSUED FOR OWNER'S REVIEW (90% COMPLETION)	JM

	NAME	DATE		NAME	DATE
DESIGNED BY	JM	08/29/25	CHECKED BY	JM	10/20/25
DRAWN BY	MAM	08/29/25	CHECKED BY	FKC	10/20/25

FILE NO.: 25-13-0166C SCALED: AS SHOWN

APPROVED BY: N/A

Ardaman & Associates, Inc.
Geotechnical, Environmental, and Materials Consultants
A Tetra Tech Company
8008 S. Orange Ave. Orlando, FL 32809
TEL 407/855-5860 FAX 407/859-8121 C.A.N. 5950

OUC The Reliable One

PAVING OF LANDFILL ACCESS RAMP

OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

INDEX OF DRAWINGS AND PROJECT LOCATION MAPS

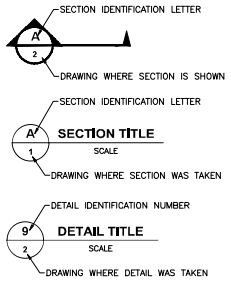
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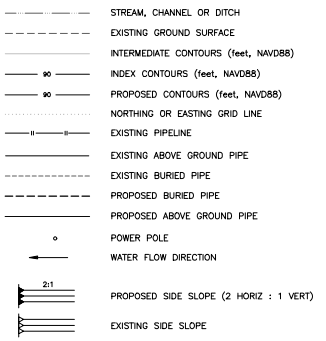
ABBREVIATIONS

A	
A	ANCHOR
AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
ADAPT	ADAPTER
AR'D	AROUND
ASTM	ASTM INTERNATIONAL
B	
BOTT	BOTTOM
BF.V.	BUTTERFLY VALVE
B.F.	BLIND FLANGE
B.V.	BALL VALVE
C	
℄	CENTERLINE
C.C.	CENTER TO CENTER
CLR	CLEAR
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUATION OR CONTINUOUS
COR	CORNER
CORR	CORRUGATED
CPT	CORRUGATED PLASTIC TUBING
CR	COUNTY ROAD
△	CURVE ANGLE
D	
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DISCH	DISCHARGE
DR	DIMENSION RATIO
DWG	DRAWING
E	
E	EAST
EA	EACH
ECC	ECCENTRIC
EL	ELEVATION (feet, NAVD)
ELL	ELBOW
ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTENSION
F	
FAB	FABRICATED
FG	FINISH GRADE
FIN	FINISH
FLG	FLANGE
FLG'D	FLANGED
FRP	FIBERGLASS REINFORCED PIPE
FT	FOOT
G	
GALV	GALVANIZED
GR	GRADE
H	
H	HIGH
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HP	HIGH POINT
HWY	HIGHWAY
I	
ID	INSIDE DIAMETER
INV	INVERT
L	
L	LENGTH OF ARC
LBS	POUNDS
LDS	LEAK DETECTION SYSTEM
LF	LINEAR FOOT
LG	LENGTH OR LONG
LLV	LONG LEG VERTICAL
LR	LONG RADIUS
LT	LEFT
M	
MAT'L	MATERIAL
MAX	MAXIMUM
MB	MECHANICAL BOLT
MDG	MEET DESIGN GRADE
MEG	MEET EXISTING GRADE
MIN	MINIMUM
N	
N	NORTH
NAVD	NATIONAL AMERICAN VERTICAL DATUM OF 1988
NO.	NUMBER
NTS	NOT TO SCALE
NWI	NATIONAL WETLANDS INVENTORY
O	
OC	ON CENTERS
O/E	OR EQUAL
OZ	OUNCE
P	
PC	POINT OF CURVATURE
PE	PLAIN END
PERF	PERFORATED
PI	POINT OF INTERSECTION
ℙ	PLATE
PP	POWER POLE
PPL	POLYPROPYLENE
PRC	POINT OF REVERSE CURVATURE
PROJ	PROJECTION
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
P.V.	PLUG VALVE
PVC	POLYVINYL CHLORIDE
R	
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
REQ'D	REQUIRED
RR	RAILROAD
RT	RIGHT
S	
S	SLOPE OR SOUTH
SCH	SCHEDULE
SCR'D	SCREWED
SPEC	SPECIFICATIONS
SS	STAINLESS STEEL
STA	STATION
STL.	CARBON STEEL
STL RL	RUBBER-LINED CARBON STEEL
S.W.	STORMWATER
T	
T	TANGENT
TEMP	TEMPORARY
TEXT	TEXTURED
THK	THICK
THR'D	THREADED
TOC	TOP OF CONCRETE
TOL	TOP OF LINER
TOS	TOE OF SLOPE
TYP	TYPICAL
U	
UON	UNLESS OTHERWISE NOTED
UNREINF'D	UNREINFORCED
V	
VAR	VARIES
VCP	VITRIFIED CLAY PIPE
VER	VERIFY
VERT	VERTICAL
W	
W	WEST OR WIDE
W/	WITH
W.S.	WATER STOP
W/S. WE	WATER SURFACE
WWM	WELDED WIRE MESH
Y	
YD^2	SQUARE YARD

DRAWING SYMBOLS



LEGEND



MATERIAL SYMBOLS



GENERAL NOTES

1. ALL CONSTRUCTION TRAFFIC INTO AND OUT OF THE PROJECT SITE SHALL BE THROUGH ACCESS ROAD(S) DESIGNATED BY THE OWNER. ALL CONSTRUCTION TRAFFIC WITHIN THE PROJECT SITE SHALL BE WITHIN CORRIDORS DESIGNATED BY THE OWNER. THE CONTRACTOR SHALL MAINTAIN THE ROADS SUCH THAT THEY ARE FREE OF MATERIAL BUILD-UP AND REPAIR ALL DISTRESSED PAVEMENTS AND POTHOLES WITH SUITABLE FILL MATERIALS APPROVED BY THE OWNER/ENGINEER.

2. ALL LABOR, MATERIALS, AND METHODS OF CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE MINIMUM ENGINEERING AND CONSTRUCTION STANDARDS ADOPTED BY THE CITY OF ORLANDO AND ORANGE COUNTY, THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT), AND THE CONSTRUCTION DRAWINGS AND TECHNICAL SPECIFICATIONS. WHERE CONFLICTS OR OMISSIONS EXIST, THE STANDARDS SHALL DICTATE.

3. SUBSTITUTIONS OF AND DEVIATIONS FROM THE DRAWINGS AND SPECIFICATIONS SHALL BE PERMITTED ONLY WITH WRITTEN APPROVAL BY THE OWNER/ENGINEER.

4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL REQUIRED COUNTY AND CITY PERMITS ARE IN HAND BEFORE CONSTRUCTION BEGINS.

5. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES WHICH MAY HAVE UTILITIES LOCATED WITHIN THE DESIGNATED CONSTRUCTION AREAS AT LEAST 72 HOURS BEFORE CONSTRUCTION BEGINS.

6. CONSTRUCTION QUALITY ASSURANCE WILL BE PROVIDED BY THE ENGINEER AND/OR THE ENGINEER'S REPRESENTATIVE. THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION AND AT LEAST 48 HOURS BEFORE REQUIRING INSPECTION ON EACH AND EVERY PHASE OF WORK. THE CONTRACTOR SHALL GIVE THE ENGINEER A MINIMUM OF 48 HOURS NOTICE PRIOR TO ANY SCHEDULED TESTING. NO FINAL TESTING WILL BE ACCEPTED UNLESS WITNESSED BY THE ENGINEER'S REPRESENTATIVE.

7. REMOVAL AND DUMPING OF DEBRIS GENERATED BY CLEARING AND GRUBBING OPERATIONS SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE COORDINATED WITH THE OWNER BY THE CONTRACTOR. THE DEBRIS SHALL BE STORED AT THE LOCATION DESIGNATED BY THE OWNER.

8. IT IS CONTRACTOR'S RESPONSIBILITY TO HAUL AND SPRAY WATER TO CONTROL DUSTING AND MAINTAIN THE ROADWAY FREE OF MATERIAL BUILD-UP.

9. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH APPLICABLE STATE WATER QUALITY STANDARDS AS SPECIFIED IN THE PERMITS. ALL WATER AND WIND EROSIONS SHALL BE MINIMIZED AS DEFINED IN THE SPECIFICATIONS AND PERMITS. THE SPECIFICATIONS PROVIDE ONLY THE MINIMUM REQUIREMENTS FOR EROSION AND SEDIMENTATION CONTROLS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES, IF REQUESTED BY THE OWNER. ALL COSTS ASSOCIATED WITH TURBIDITY AND SEDIMENTATION CONTROLS SHALL BE BORNE BY THE CONTRACTOR.

10. EROSION CONTROL AND SEDIMENTATION CONTROL DEVICES SHALL BE IN PLACE PRIOR TO CONSTRUCTION. THEY SHALL BE INSTALLED TO THE LIMITS SHOWN ON THE DRAWINGS OR AS STATED IN THE SPECIFICATIONS AND IN ACCORDANCE WITH ALL REGULATORY AGENCY REQUIREMENTS. THE CONTRACTOR, AT ITS OWN EXPENSE, SHALL OPERATE AND MAINTAIN EROSION AND SEDIMENTATION CONTROL DEVICES AND STRUCTURES AND TO COMPLY WITH ALL APPLICABLE PERMIT REQUIREMENTS.

11. THE CONTRACTOR SHALL TAKE ALL MEASURES NECESSARY TO CONTROL TURBIDITY INCLUDING, BUT SHALL NOT BE LIMITED TO, THE INSTALLATION OF TURBIDITY BARRIERS AT ALL LOCATIONS WHERE THE POSSIBILITY OF TRANSFERRING SUSPENDED SOLIDS INTO THE RECEIVING WATER BODY EXISTS DUE TO THE PROPOSED WORK ACTIVITIES. TURBIDITY BARRIERS SHALL BE MAINTAINED AT ALL LOCATIONS UNTIL CONSTRUCTION HAS BEEN COMPLETED AND DISTURBED AREAS HAVE BEEN STABILIZED. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR REMOVING THE BARRIERS. AT NO TIME SHALL THERE BE ANY OFFSITE DISCHARGE THAT VIOLATES THE WATER QUALITY STANDARDS IN CHAPTER 62-302, FLORIDA ADMINISTRATIVE CODE.

12. THE FINISHED GRADE ON THE DRAWINGS REFERS TO THE TOP OF THE ASPHALT AND THE GRADE PRIOR TO SODDING, OR OTHER SURFACE TREATMENT.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING ANY CONSTRUCTION ACTIVITIES FROM TAKING PLACE OUTSIDE THE LIMITS OF CONSTRUCTION SHOWN ON THE DRAWINGS.

14. THE LIMITS OF CONSTRUCTION SHOWN ON THE PLANS SHALL BE STRICTLY OBSERVED BY THE CONTRACTOR. ALL INGRESS, EGRESS AND TRAFFIC PATTERNS ON THE SITE SHALL BE WITHIN AREAS AND CORRIDORS DESIGNATED BY THE OWNER.

15. THE CONTRACTOR SHALL MAINTAIN A CURRENT SET OF CONSTRUCTION PLANS AND ALL PERMITS ON THE JOB SITE DURING ALL PHASES OF CONSTRUCTION.

16. THE CONTRACTOR IS RESPONSIBLE FOR OBSERVING EXISTING SITE CONDITIONS AND CONSIDERING THEM IN THE BID PRICES.

17. DESIGN ELEVATIONS AND GRADES AND EXISTING ELEVATIONS ON ALL DRAWINGS ARE BASED ON INFORMATION FROM A 1-FOOT CONTOUR MAP OF THE SITE TAKEN SEPTEMBER 22, 2023.

18. PROJECT GRADING AND CONSTRUCTION SHALL BE COMPLETED RELATIVE TO BENCHMARKS ESTABLISHED WITHIN THE PROJECT SITE.

19. THE CONTRACTOR SHALL SCHEDULE AND COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE OWNER.

20. THE CONTRACTOR SHALL SUBMIT THE SURVEY GRADE OF FINAL GRADE TO THE OWNER FOR REVIEW AND APPROVAL.

21. THE SURVEY DRAWINGS SHALL BE PREPARED BY A STATE OF FLORIDA LICENSED SURVEYOR.

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1	11/04/25	UPDATED BASED ON OWNER'S REQUEST	JM
0	03/13/24	ISSUED FOR CONSTRUCTION	JM
P1	02/06/24	ISSUED FOR OWNER'S REVIEW (100% COMPLETION)	JM
P0	01/13/24	ISSUED FOR OWNER'S REVIEW (90% COMPLETION)	JM

	NAME	DATE		NAME	DATE
DESIGNED BY	JM	08/29/25	CHECKED BY	JM	10/20/25
DRAWN BY	MAM	08/29/25	CHECKED BY	FKC	10/20/25

FILE NO.: 25-13-01550 SCALE: AS SHOWN
APPR'D APPROVED BY: NJ

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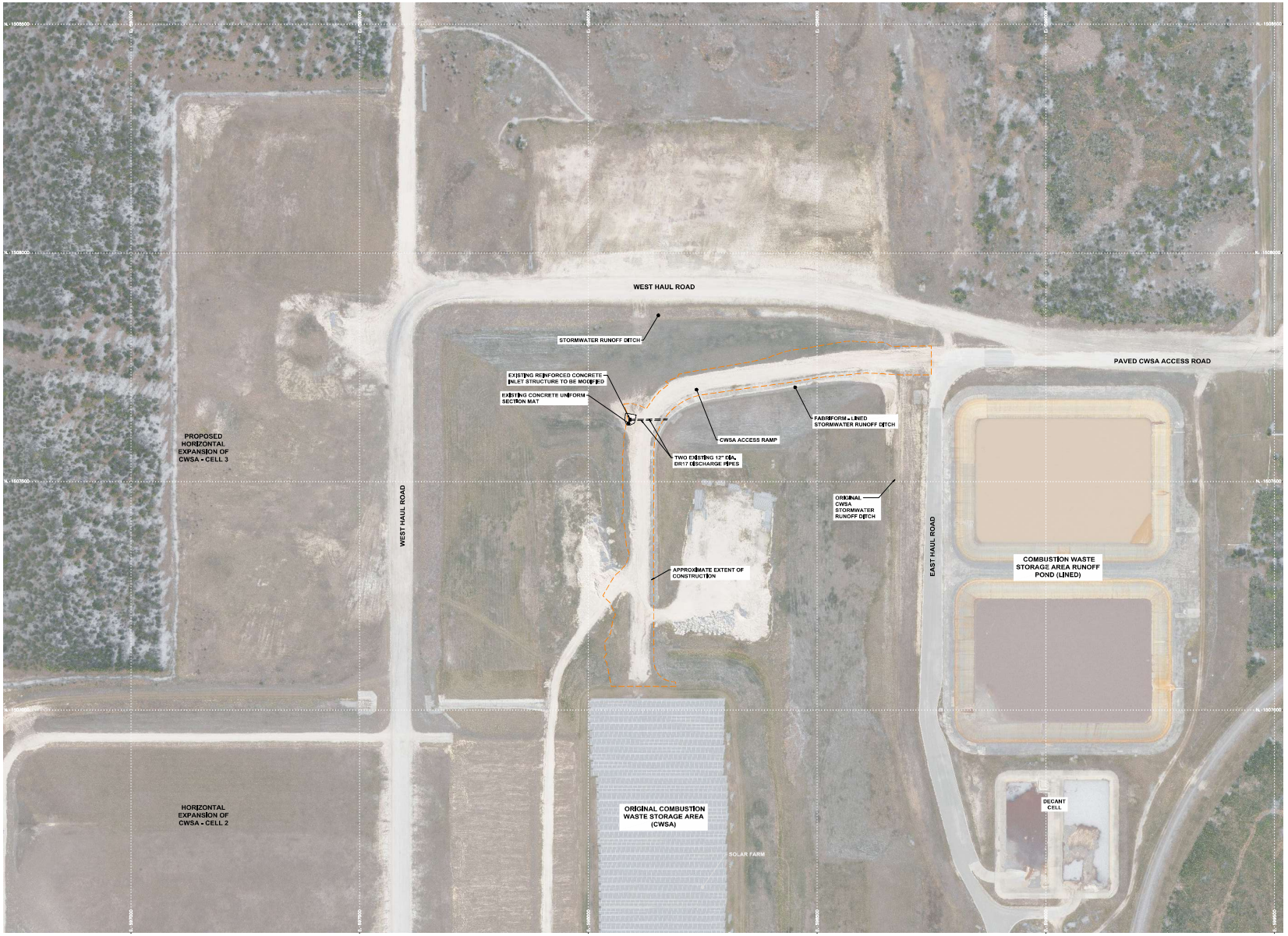
PAVING OF LANDFILL ACCESS RAMP

OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

GENERAL NOTES ABBREVIATIONS AND SYMBOLS

DRAWING NO. G-3

R:\Corporate\DWG\25-13-01550\Design Of Stormwater Control Sheet For Access Ramp_Current Sheet Set\G-3 GENERAL NOTES ABBREVIATIONS AND SYMBOLS.dwg 2025/11/11 11:48 AM, McLendon, Paula



N

SCALE: 0 100 200 — 1"=100'

AERIAL IMAGERY FROM ORANGE COUNTY PROPERTY APPRAISER

DATED 09/22/2023

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DESIGNED BY	JM	08/29/25	CHECKED BY	JM	10/20/25
DRAWN BY	MAM	08/29/25	CHECKED BY	FKC	10/20/25

FILE NO.: 25-13-0166C
SCALE: AS SHOWN
APPROVED BY:

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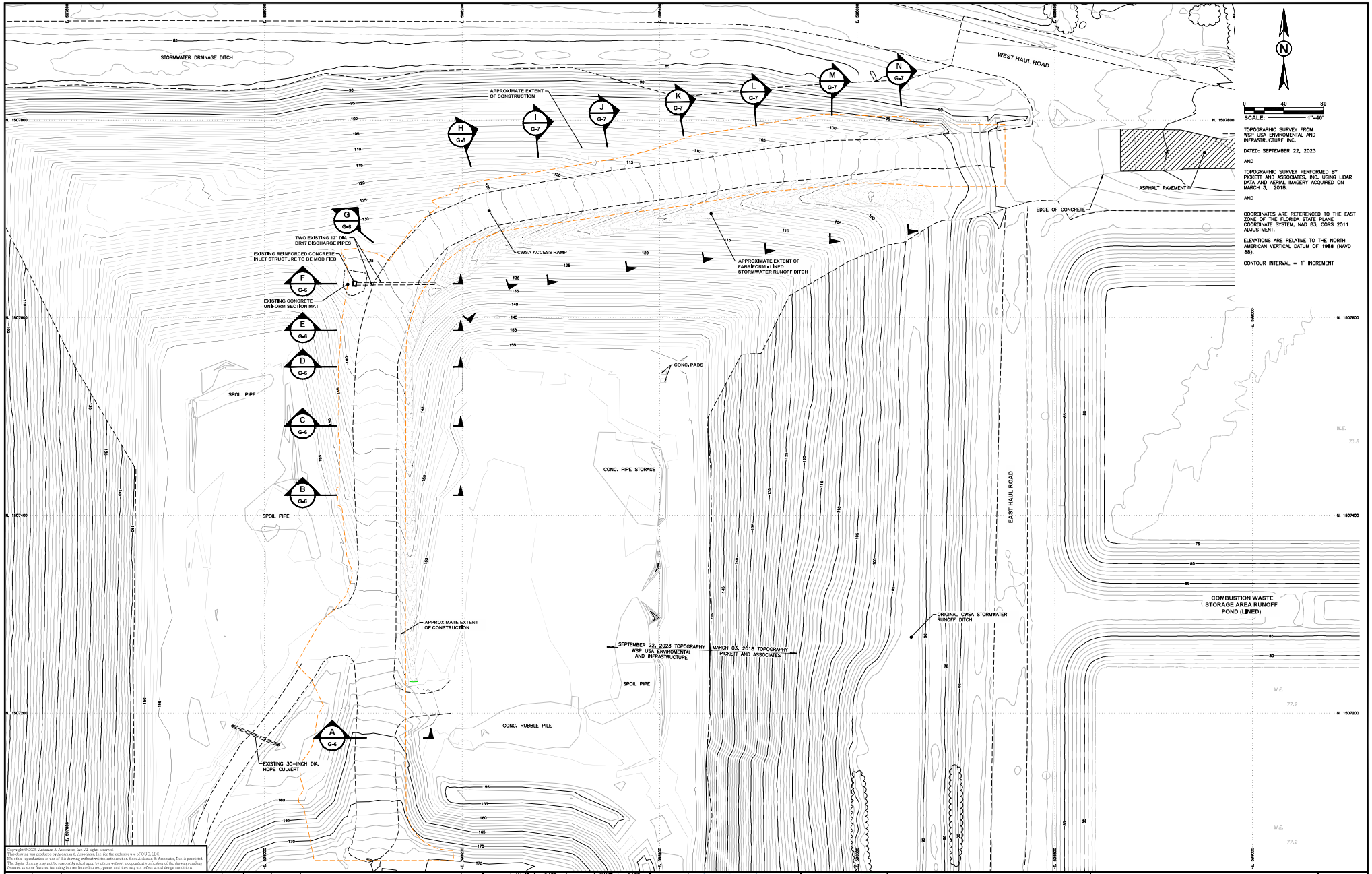
OUC The Reliable One

PAVING OF LANDFILL ACCESS RAMP

OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

AERIAL PHOTOGRAPH OF PROJECT SITE

DRAWING NO.
G-4



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DRAWN BY	MAM	08/29/25	CHECKED BY	FKC	10/20/25
FILE NO.: 25-13-0166C			SCALE: AS SHOWN		

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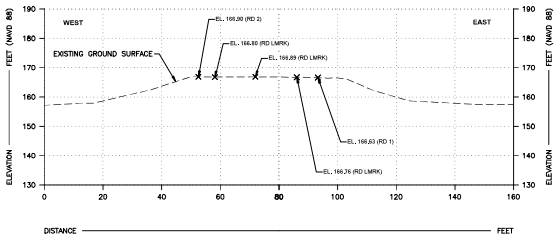
PAVING OF LANDFILL ACCESS RAMP

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ORANGE COUNTY, FLORIDA

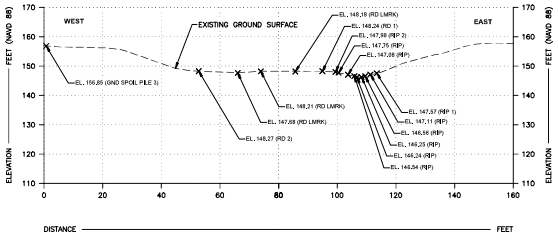
TOPOGRAPHIC SURVEY OF PROJECT SITE

DRAWING NO. G-5

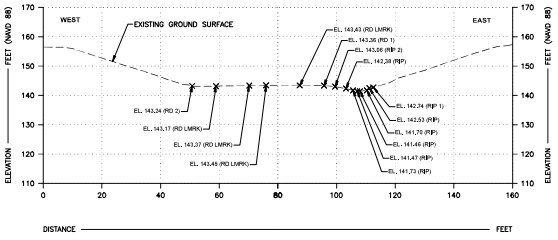
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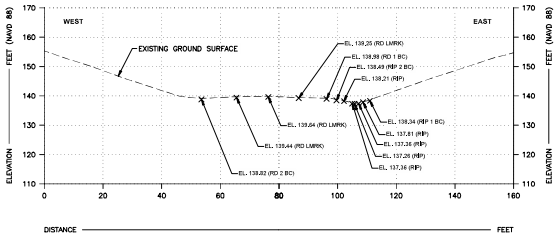
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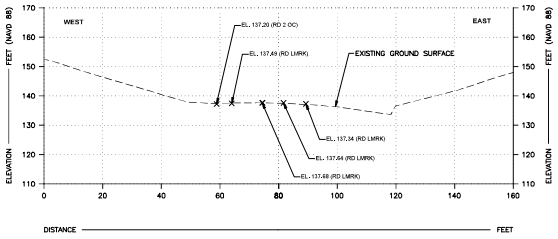
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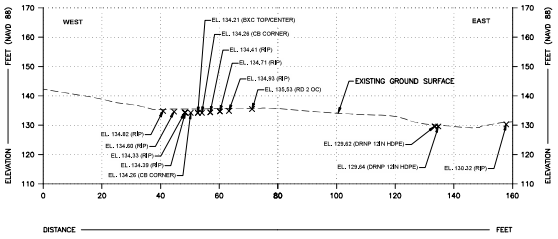
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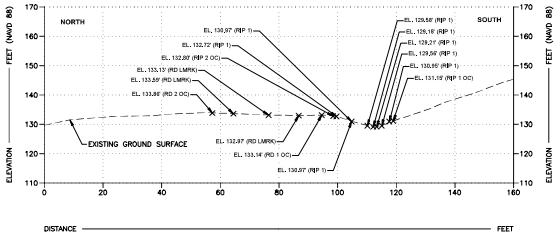
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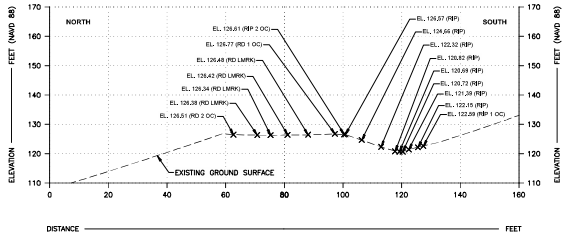
E CROSS SECTION
SCALE: 1" = 20'



F CROSS SECTION
SCALE: 1" = 20'



G CROSS SECTION
SCALE: 1" = 20'



H CROSS SECTION
SCALE: 1" = 20'

NOTE:

RIP: CONCRETE EROSION PROTECTION MAT
RD: ROAD

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DESIGNED BY	JM	08/29/25	CHECKED BY	JM	10/20/25
DRAWN BY	MAM	08/29/25	CHECKED BY	FKC	10/20/25

FILE NO.: 25-13-01660 SCALE: AS SHOWN
APPROVED BY: N/A

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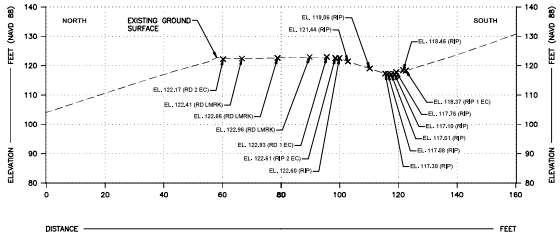
OUC The Reliable One

PAVING OF LANDFILL ACCESS RAMP
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ORANGE COUNTY, FLORIDA

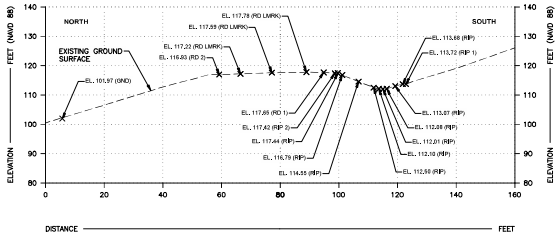
CROSS SECTIONS A THROUGH H

DRAWING NO. G-6

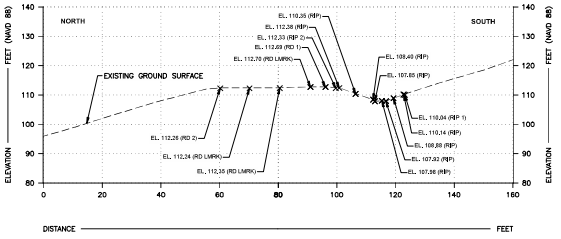
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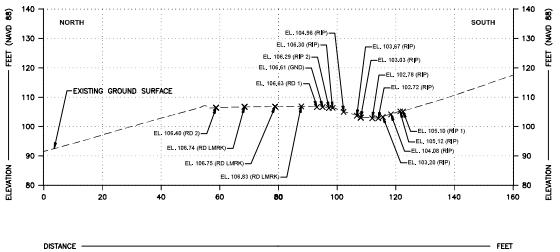
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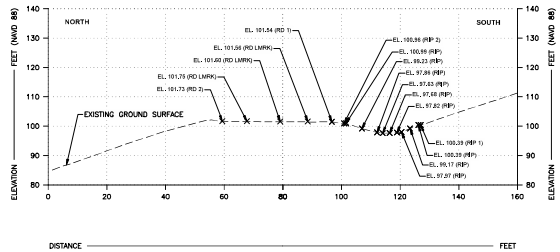
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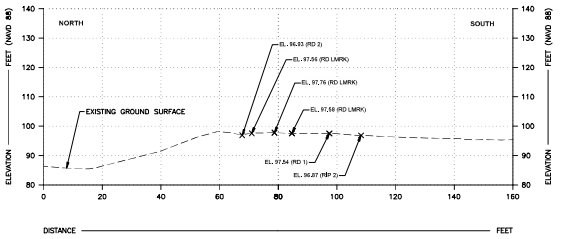
K CROSS SECTION
SCALE: 1" = 20'



L CROSS SECTION
SCALE: 1" = 20'



M CROSS SECTION
SCALE: 1" = 20'



N CROSS SECTION
SCALE: 1" = 20'

NOTE:

RIP: CONCRETE EROSION PROTECTION MAT
RD: ROAD

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	NAME	DATE		NAME	DATE
DESIGNED BY	JM	08/29/25	CHECKED BY	JM	10/20/25
DRAWN BY	MAM	08/29/25	CHECKED BY	FKC	10/20/25

FILE NO.: 25-13-D166C
SCALE: AS SHOWN
APPROVED BY:

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8008 S. Orange Ave. Orlando, FL 32809
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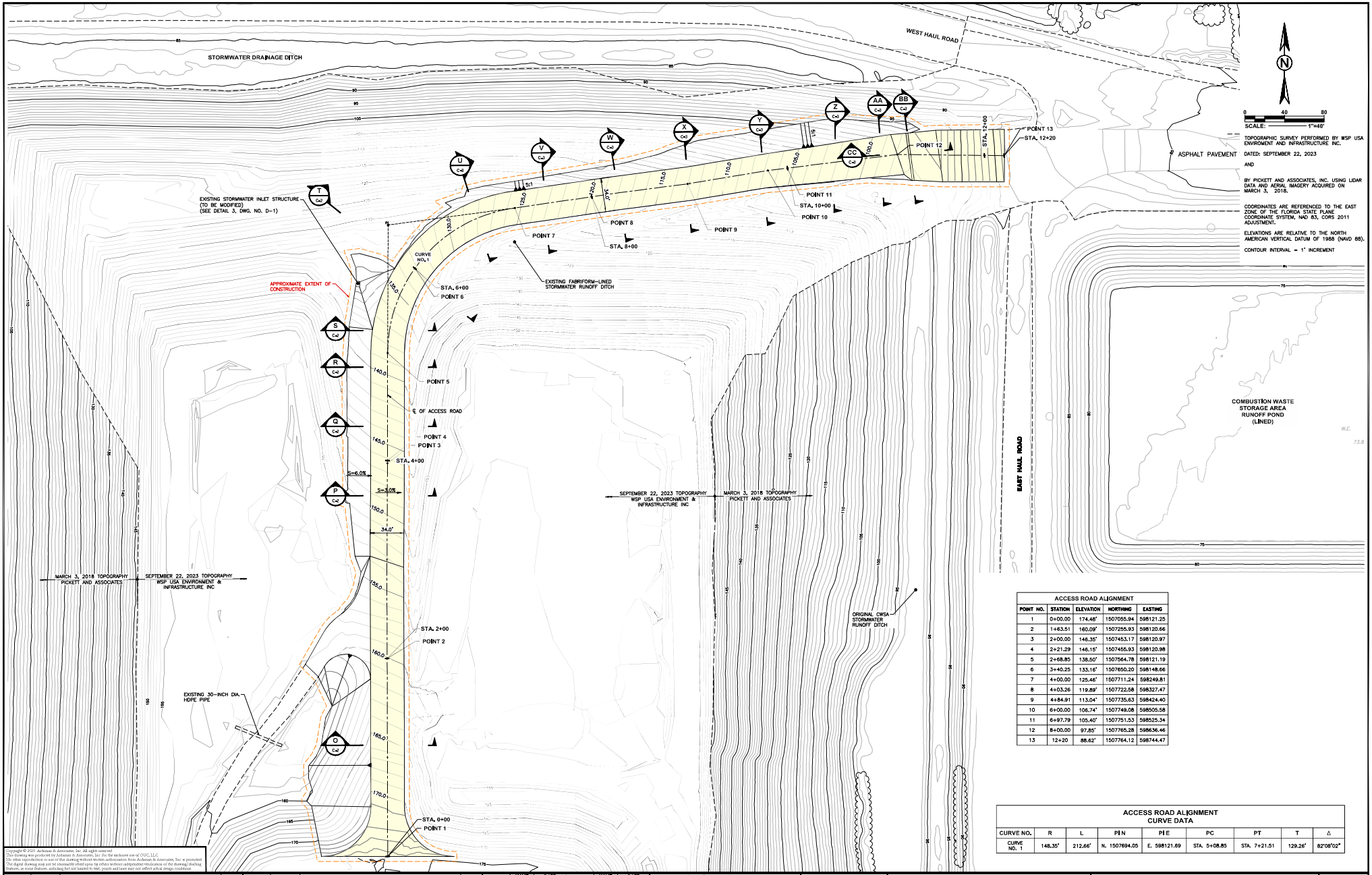
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OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

CROSS SECTIONS I THROUGH N

DRAWING NO.
G-7

R:\Projects\OUC\25-13-D166C\Division 01 Preliminary Drawings\Plans For Access Road_Current Sheet Set\G-7 CROSS SECTIONS I THROUGH N.dwg 2025/11/11 11:08 AM, Eduardo, Paula



ACCESS ROAD ALIGNMENT				
POINT NO.	STATION	ELEVATION	NORTHING	EASTING
1	0+00.00	174.48'	1507055.94	598121.25
2	1+63.51	160.09'	1507255.93	598120.66
3	2+00.00	146.35'	1507453.17	598120.97
4	2+21.29	146.15'	1507455.93	598120.98
5	2+68.85	138.50'	1507564.78	598121.19
6	3+40.25	133.16'	1507650.20	598148.66
7	4+00.00	125.46'	1507711.24	598249.81
8	4+03.26	119.89'	1507722.58	598327.47
9	4+84.91	113.04'	1507735.63	598424.40
10	6+00.00	106.74'	1507749.08	598505.58
11	6+97.79	105.40'	1507751.53	598525.34
12	8+00.00	97.85'	1507765.28	598636.46
13	12+20	88.62'	1507764.12	598744.47

ACCESS ROAD ALIGNMENT CURVE DATA								
CURVE NO.	R	L	PIN	PIE	PC	PT	T	Δ
CURVE NO. 1	148.35'	212.66'	N. 1507694.05	E. 598121.69	STA. 5+08.85	STA. 7+21.51	129.26'	82°08'02"

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P0	01/12/24	ISSUED FOR OWNER'S REVIEW (90% COMPLETION)	JM

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DRAWN BY	MAM	08/29/25	CHECKED BY	FKC	10/20/25
FILE NO.: 25-13-0165C			SCALE: AS SHOWN		
APPROVED BY:					

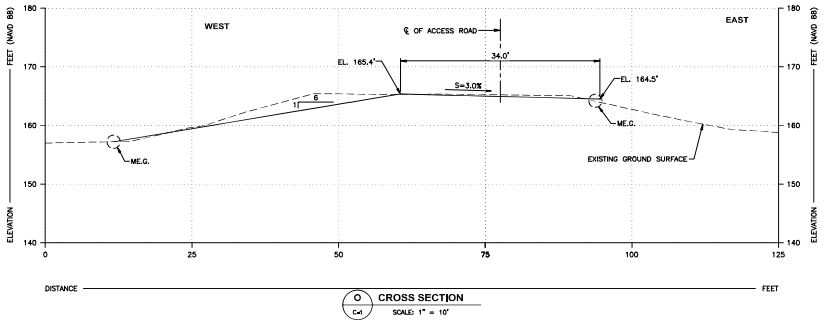
Ardaman & Associates, Inc.
Geotechnical, Environmental, and Materials Consultants
A Tetra Tech Company
8008 S. Orange Ave. Orlando, FL 32809
TEL 407/855-5860 FAX 407/859-8121 C.A.N. 5950

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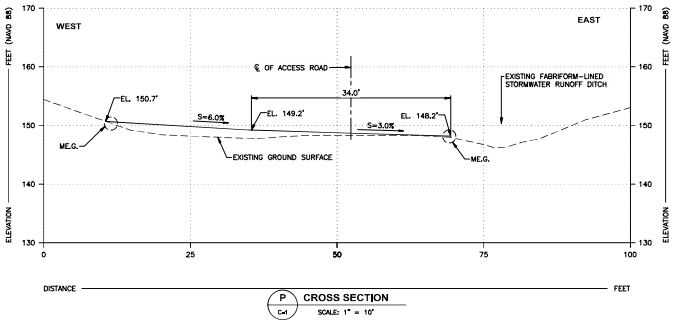
PAVING OF LANDFILL ACCESS RAMP
OUC STANTON ENERGY CENTER
ORANGE COUNTY, FLORIDA

PLAN VIEW

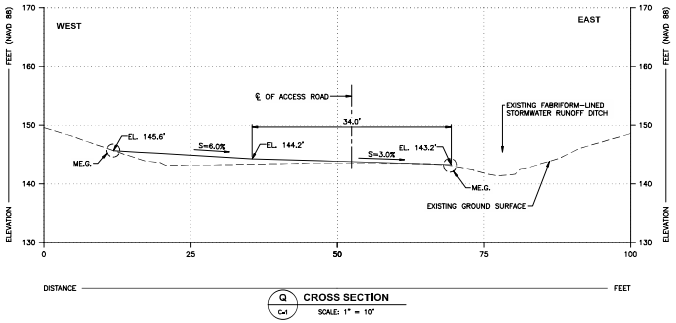
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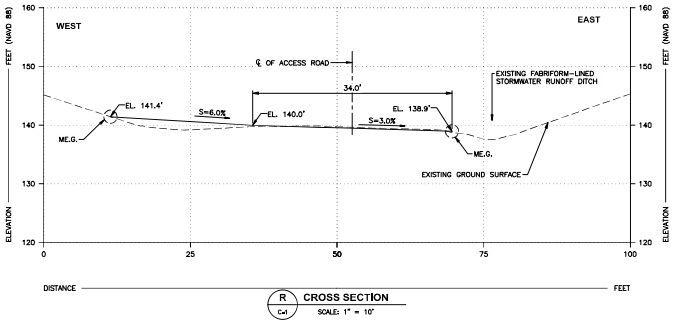
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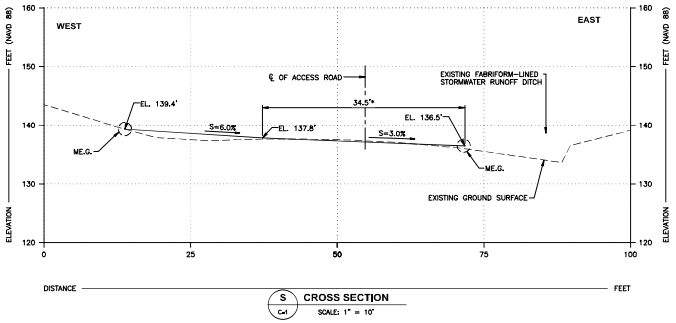
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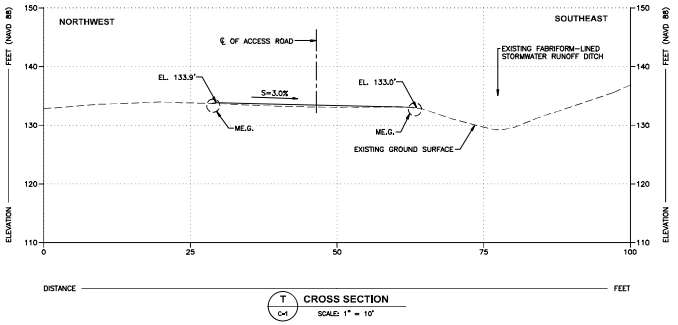
Q CROSS SECTION
SCALE: 1" = 10'



R CROSS SECTION
SCALE: 1" = 10'



S CROSS SECTION
SCALE: 1" = 10'



T CROSS SECTION
SCALE: 1" = 10'

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APPROVED BY:

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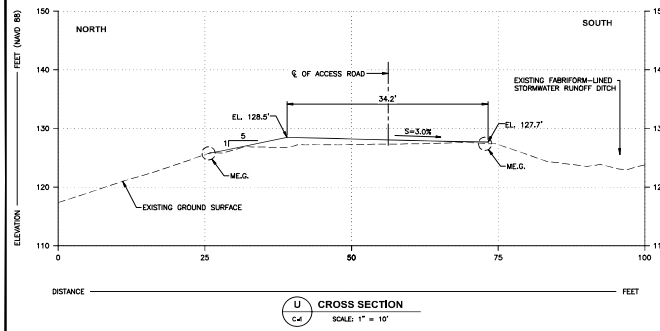
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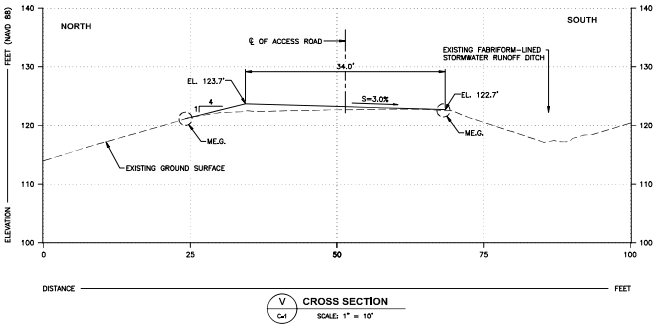
CROSS SECTIONS O THROUGH T

DRAWING NO.
C-2

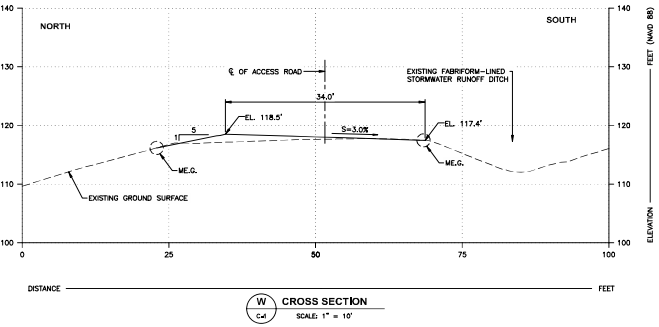
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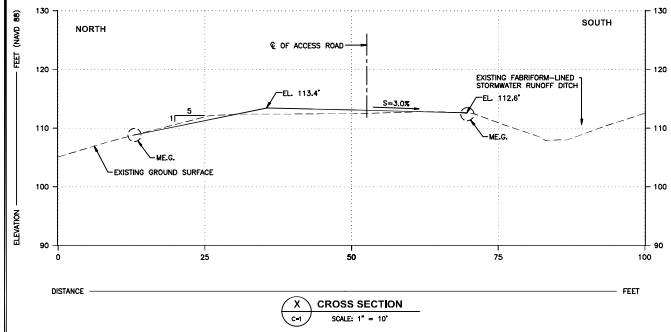
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C-4 SCALE: 1" = 10'



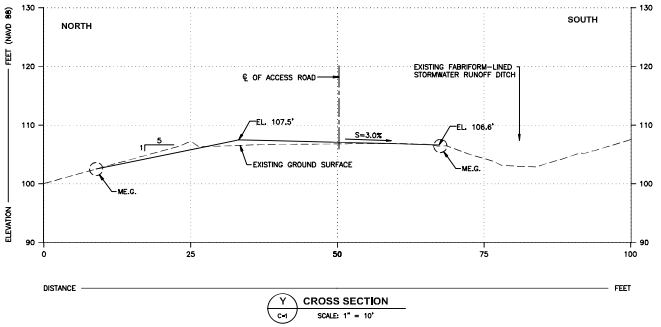
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C-4 SCALE: 1" = 10'



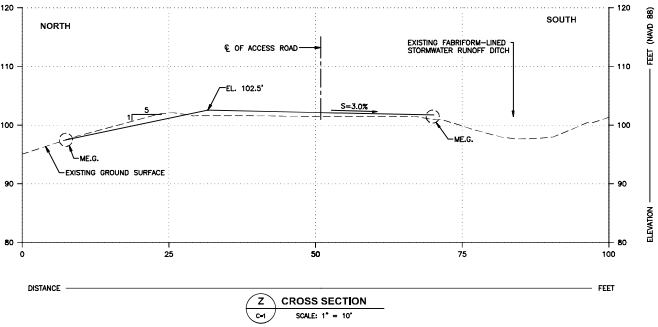
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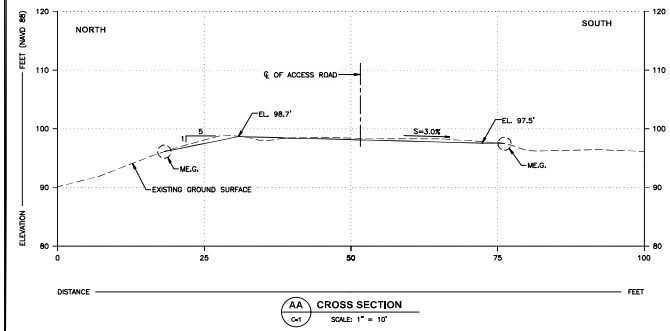
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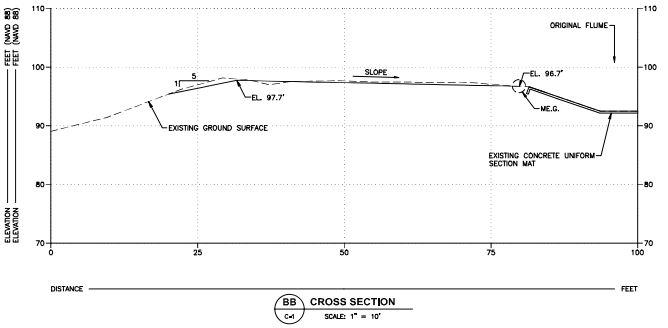
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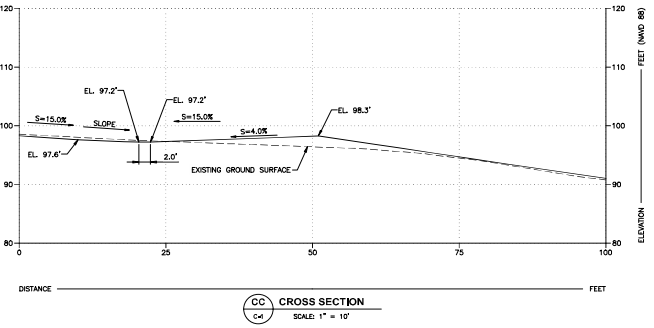
Z CROSS SECTION
C-4 SCALE: 1" = 10'



AA CROSS SECTION
C-4 SCALE: 1" = 10'



BB CROSS SECTION
C-4 SCALE: 1" = 10'



CC CROSS SECTION
C-4 SCALE: 1" = 10'

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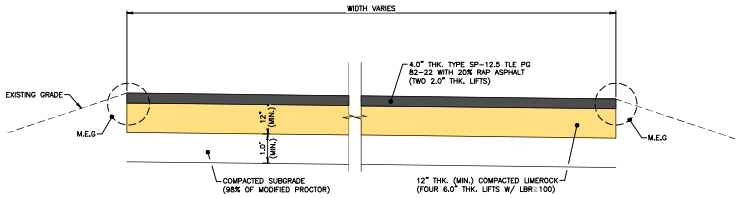
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ORANGE COUNTY, FLORIDA

CROSS SECTIONS U THROUGH CC

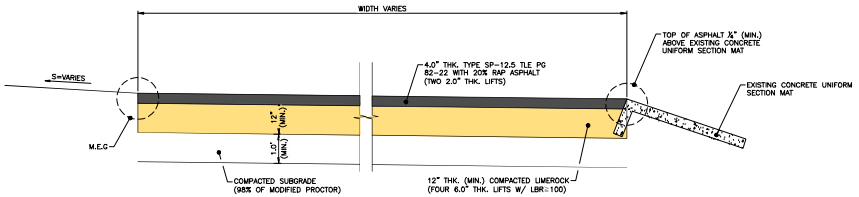
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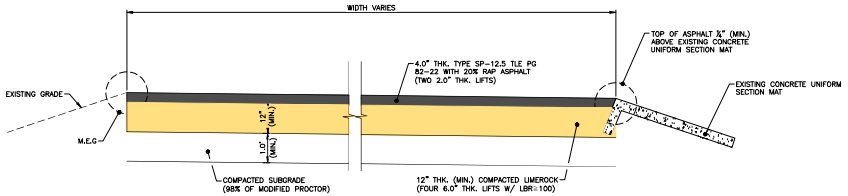
1 - **ASPHALT ROADWAY DESIGN - 1**

SCALE: 1" = 2'



2 - **ASPHALT ROADWAY DESIGN - 2**

SCALE: 1" = 2'



3 - **ASPHALT ROADWAY DESIGN - 3**

SCALE: 1" = 2'

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TYPICAL DETAILS

DRAWING NO.
D-1