

From: [Linton, William R](#)
To: [SCQ](#)
Cc: [SW ERP](#)
Subject: Duke Energy - PA7709A3 Amendment Request - Citrus Combined Cycle
Date: Tuesday, March 29, 2022 11:46:25 AM
Attachments: [PA7709A3Study.pdf](#)
[PA7709A3ERPform.pdf](#)
[PA7709A3 cover letter.pdf](#)

EXTERNAL MESSAGE

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Attached is an amendment request for PA7709A3 (Duke Energy, Citrus Combined Cycle plant). Attachments include a cover letter, general permit application form and a project study report. For additional information, please contact:

Bill Linton
Sr. Environmental Specialist
Permitting and Compliance
Duke Energy Florida, LLC
299 First Avenue North
St Petersburg, FL 33701
(727) 560-4803
william.linton@duke-energy.com



March 29, 2022

Sent Via Email

Cindy Mulkey
Program Administrator
Siting Coordination Office
Florida Department of Environmental Protection
2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399

Subject: Duke Energy Florida (DEF), LLC-
Citrus Energy Complex PA77-09A3
Conditions of Certification Amendment Request

Dear Ms. Mulkey:

As a part of DEF's commitment to providing reliable generation at the Citrus Combined Cycle Station (CCCS), DEF will modify the piping routed to the Turbine Area Wastewater Sumps. This modification will direct stormwater from the steam turbine top floor drains to the stormwater retention ponds instead of the industrial wastewater system.

DEF engaged engineering consultants Burns and McDonnell to provide design services associated with the Citrus Turbine Area Sump project. Please see attached Burns & McDonnell "Citrus Combined Cycle Steam Turbine Drain Segregation from Sump" report for details.

It is anticipated that construction will commence on the piping modifications around May 2022 and is anticipated to be placed in service by August 2022.

We appreciate your assistance on this matter. If you have any questions concerning this submittal, please contact William Linton at (727) 560-4803 or via email at William.Linton@duke-energy.com


Sincerely,
Martin J. Drango, P.E.
Citrus Combined Cycle Station Manager
Enclosures

cc: FDEP Southwest District Office



Report on the

Citrus Combined Cycle Station Steam Turbine Drain Segregation from Sump

Duke Energy

Project No. 138373

February 2022

Citrus Combined Cycle Station Steam Turbine Drain Segregation from Sump

Prepared for

**Duke Energy
Crystal River, Florida**

February 2022

Project No. 138373

Prepared by

**Burns & McDonnell Engineering Company, Inc.
Kansas City, Missouri**

INDEX AND CERTIFICATION

**Duke Energy
Citrus Combined Cycle Station
Steam Turbine Drain Segregation
from Sump
Project No. 138373**

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Certification

I hereby certify that this engineering document was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the State of Florida.

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1.0 INTRODUCTION

The Duke Energy (Owner) Citrus County Combined Cycle (Citrus CC) Power Station consists of two, 2x1 combined cycle power plants. Each power plant includes two (2) combustion turbines (CTs) with heat recovery steam generators (HRSGs) to feed one (1) steam turbine (ST). The equipment for each plant is rated for outdoor use including the ST. The elevated steam turbine operating floor slab is exposed to direct rainfall. Stormwater runoff from the operating floor is directed into the many floor drains scattered along each side of the steam turbine operating floor.

The floor drains are split into two (2) separate vertical steel downspout drain pipes. The drain pipe located on the west side of the ST is routed below grade where it penetrates the Turbine Area Sump. The drain pipe located on the east side of the ST is routed above ground and enters the sump from over the top. There are two (2) sumps located side-by-side and interconnected for each ST unit. One of the sumps houses a set of two (2) submersible pumps that discharge the sump contents through the above ground oil/water separators, which discharge into the Industrial Waste Water (IWW) percolation ponds. During heavy rain events, the sumps would occasionally back up causing localized flooding at the site.

Duke Energy wants to resolve the sump overflowing issue and has selected Burns & McDonnell (B&M) to review and propose feasible options to segregate the ST operating floor drains from the existing Turbine Area Sumps.

2.0 EXISTING CONDITIONS AND MODIFICATIONS

2.1 Existing Turbine Area Sumps

There are two (2) existing concrete drain sumps located adjacent to each other that are interconnected for each ST unit. Each sump is approximately 10-feet long x 20-feet wide x 8-feet deep. One of the sumps has a set of two (2) submersible pumps with a total design pumping capacity of 215 gpm per pump. The sumps for each unit serve as the collection point for multiple area equipment drains including the ST operating floor drains.

2.2 Existing Yard Storm Drains

The yard storm drainage system consists of drop inlets and manholes interconnected by either reinforced concrete pipe (RCP) or high-density polyethylene (HDPE) pipe from the equipment drains. The drainage design capacities were designed by Fluor and the yard drainage schematic pertinent to this evaluation is shown in Appendix A. Appendix A also includes details for the few select culverts and associated flowrates based on the results of Fluor's hydraulic modeling. Drainage for the Unit 1 ST top deck is conveyed to Stormwater Pond 1 and drainage for the Unit 2 ST top deck is conveyed to Stormwater Pond 2/3 (Pond 2/3 is a combined drainage pond for areas 2 and 3 in the runoff model).

2.2.1 Fluor Plant Stormwater Calculations

The original plant construction company provided the yard drainage calculations based on the design 25-year, 24-hour rainfall event. Table 2-2-1 includes the summary of the stormwater runoff modeling results. The drainage areas were subdivided to match the overall plant drainage pattern. Both ST operating floor drain headers have been accounted for in the design to drain to the Turbine Area Sump with eventual discharge to the respective detention ponds. Appendix B shows the culverts and flowrates that contribute to Stormwater Ponds 1 and 2/3.

Flow from the culverts to the ponds are summarized in Table 2-2-1. The calculated peak inflow and outflow are also shown along with the associated maximum pond depth in Stormwater Pond 1 and the combined maximum pond depth in Stormwater Pond 2/3. The available freeboard from the 25-year, 24-hour stormwater runoff is also provided.

TABLE 2-2-1: Fluor Calculated Pond Results (25-year, 24-hour Rainfall Event)

Stormwater Pond	Max Pond Depth (feet)	Available Freeboard (feet)	Peak Inflow (CFS)	Peak Outflow (CFS)
1	8.60	4.88	63.43	24.44
2/3	7.48	5.00	167.13	95.03

2.3 Proposed Modifications

A site visit was performed to walk down and review the potential modifications to the ST operating floors drainage. The operating floor for each unit is split along the center to drain the east and west sides of the operating floor. The west side drain (8" steel pipe) is partially buried and routed to the Turbine Area Sump. Drains from the east are combined into an 8" steel pipe and routed above ground entering the Turbine Area Sump from the top slab.

Upon review of the existing installation, the 8" drains from each side of the unit may be modified and routed to the nearby stormwater inlets. The ST operating floor 8" downspout drains may be cut and fitted with an isolation valve and 10"x8" reducer with a material transition to HDPE pipe for routing below ground to the nearby stormwater inlet. The remaining 8" carbon steel piping may be isolated by adding isolation valves.

The newly flanged 10" HDPE pipe would be buried with sufficient ground cover to allow maintenance traffic loading. The existing concrete inlet would be core-drilled and saw gap grouted to accept the 10" HDPE gravity pipe.

The proposed modification concepts for the above ground portions are shown in Figures 2.3A and 2.3B. The associated Piping & Instrument Diagram modifications are shown in Appendix D. The below ground 10" HDPE pipe may be field-routed to the existing drop inlets.

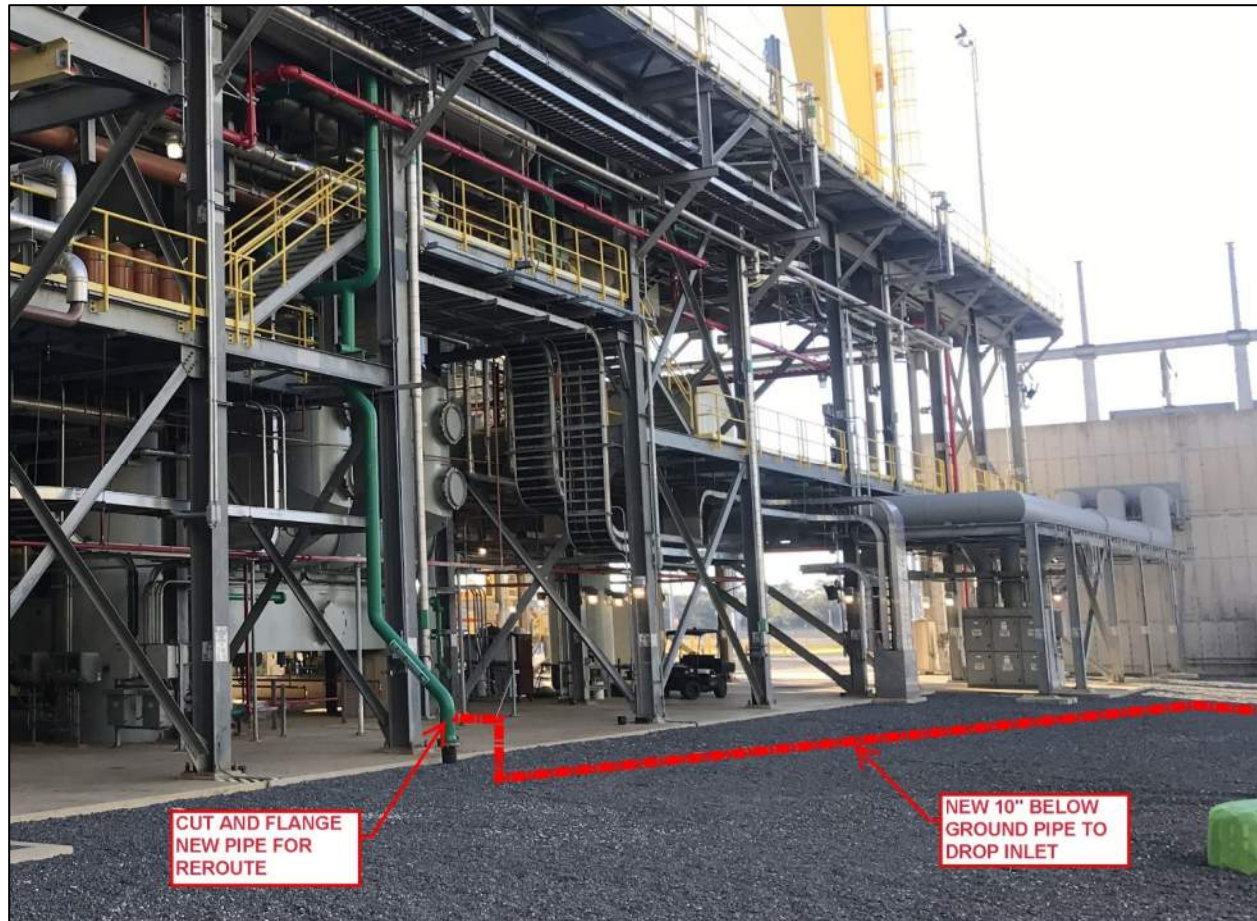


FIGURE 2.3A: Unit 2 ST Area – West Drain Modifications

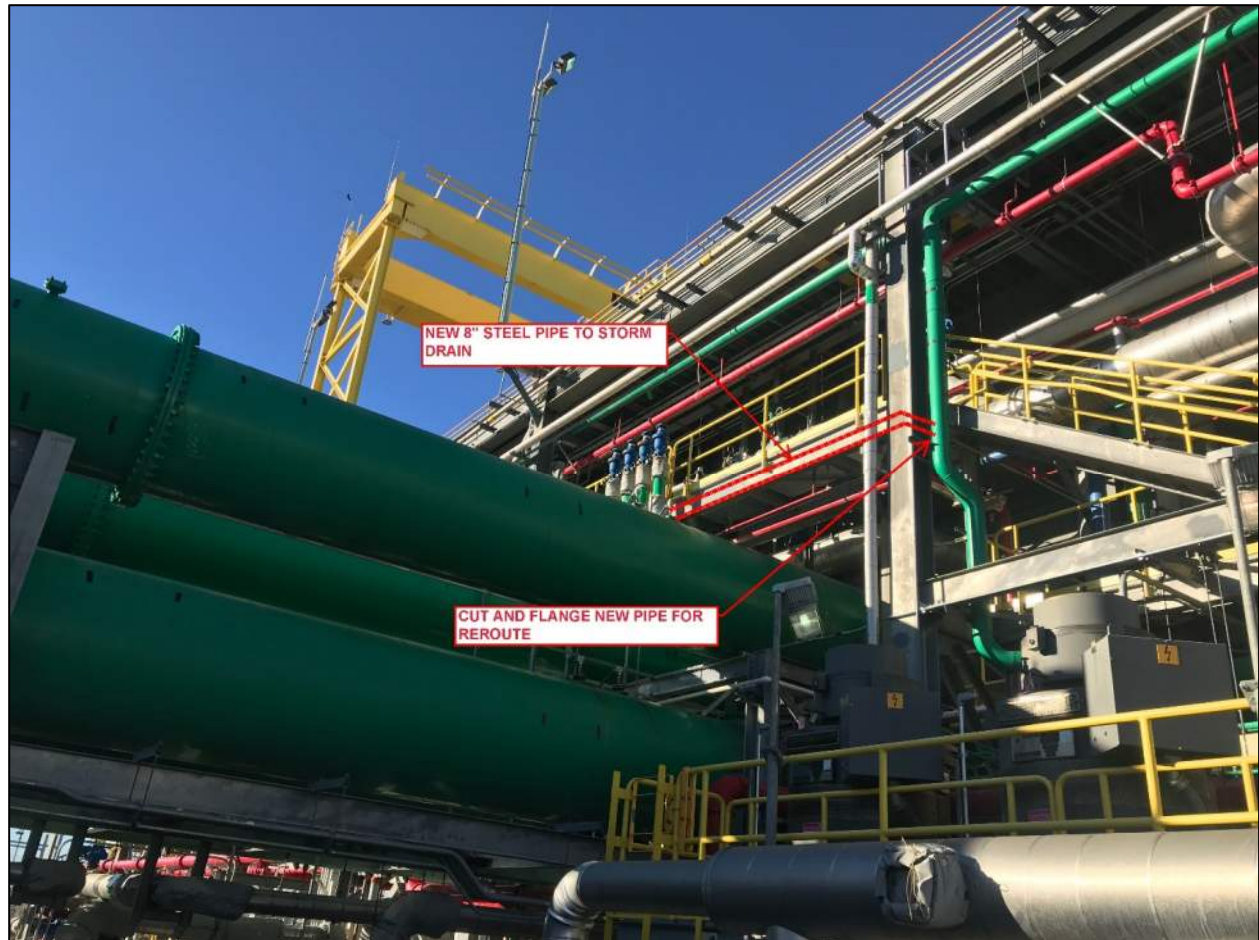


FIGURE 2.3B: Unit 2 ST Area – East Drain Modifications

2.4 Existing Pond Impact

The proposed drain re-route would shorten the flow path and timing of the peak runoff from the operating floor to the Stormwater Ponds 1 and 2/3. As a result, it may temporarily increase the Stormwater Ponds 1 and 2/3 water elevation sooner than previously calculated. Appendix B shows the Fluor-calculated pond stage during the 25-year storm. It also provides the freeboard available from overtopping the pond embankment. The computed pond surface area at the peak stage is 97,514 square feet for Stormwater Pond 1 (peak stage 8.60 ft), and 619,693 square feet for Stormwater Pond 2/3 (peak stage 7.48 ft).

The 25yr-24hr storm is 8.7 inches and each unit ST operating floor is about 14,500 square feet. The total volume of runoff is approximately 10,500 cubic feet per unit. Conservatively, assuming the entire volume of the rainfall enters each respective stormwater pond, the estimated level in Stormwater Pond 1 would increase by 1.30 inches, and the estimated level in Stormwater Pond 2/3 would increase by 0.20 inches.

2.5 Potential Risks

There are risks associated with the proposed ST operating floor drain flow path modifications. The main concern is overtopping of the existing drop inlets from excessive peak runoff from the ST operating floor drains. Although, the existing culverts appear to have enough capacity to pass the additional flows from the drains, there would still be a risk of the inlet overtopping considering the peak runoff from the operating floor would be channeled directly into the inlet. This would be most evident during periods of intense rainfall.

The increased discharge time to each stormwater pond is not anticipated to significantly increase the pond stage beyond the calculated peak stage. It is not likely to overtop the existing pond berms with the 25-year storm event. Furthermore, the 100-year storm event is not anticipated to overtop the berms considering the Stormwater Pond 1 maximum stage was 8.93 feet, and the Stormwater Pond 2/3 maximum stage was 7.65 feet.

Other risks include the potential for some oil wash off of uncovered equipment during a storm event. This runoff would eventually end up in the stormwater ponds. The proposed modifications to the piping system include the implementation of isolation valves to allow operations the ability to divert the flow back to the Turbine Area Sumps during high-risk maintenance activities such as system oil flushes. Refer to the Piping & Instrument Diagrams in Appendix D for additional details.

A project risk tracking register outlining the potential issues and associated risks is provided in Appendix C. The equipment and instrument photos associated with the potential risks for oil leaks are shown in Appendix E.

3.0 CONCLUSIONS

Based on the review of the existing ST operating floor drain schematics, it is viable to segregate the floor drains and direct the flows directly into the yard stormwater drainage system. Diverting the flows away from the current sump system would reduce the potential for the sumps from overtopping.

APPENDIX A - DRAINAGE REROUTE PLAN

LEGEND

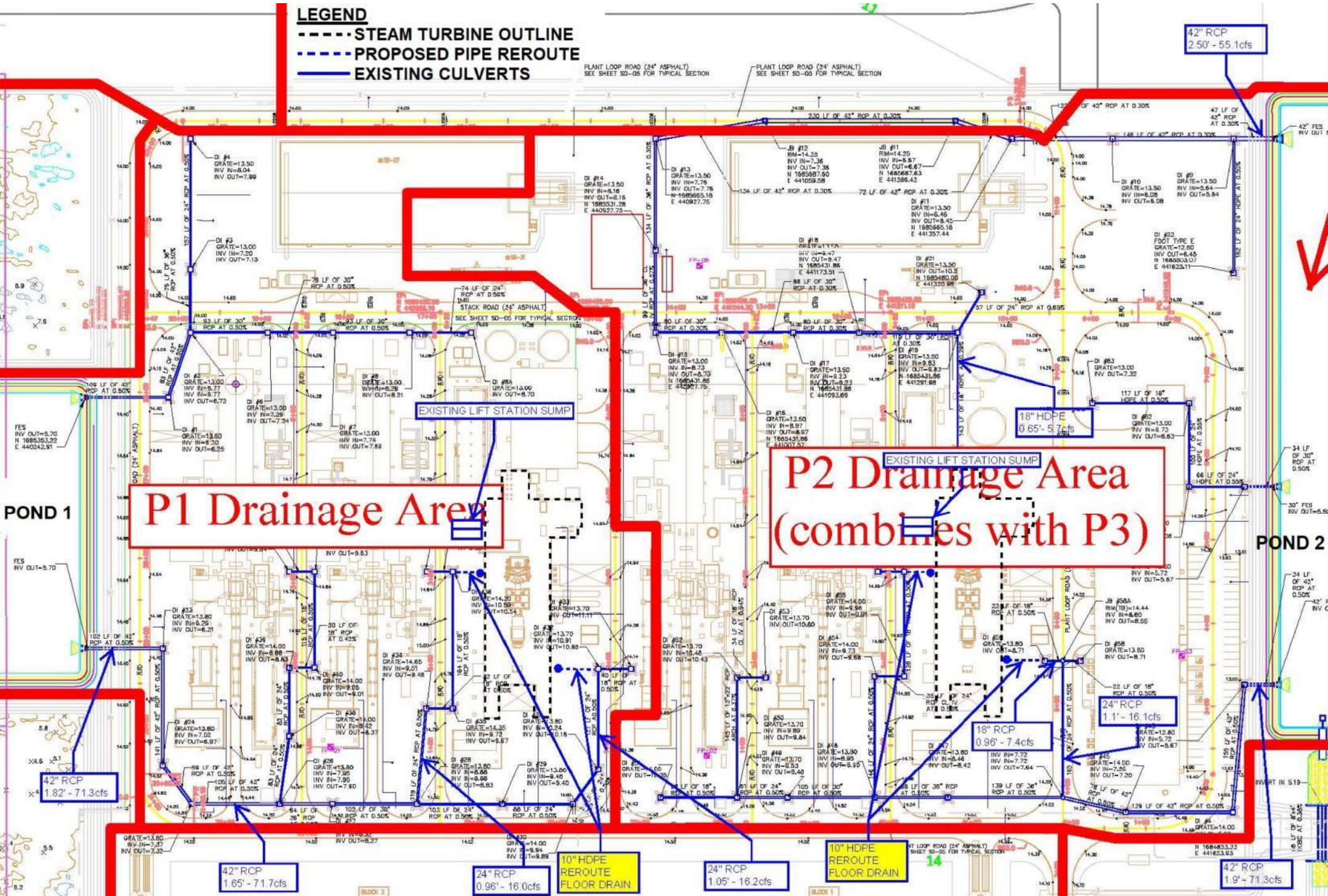
- STEAM TURBINE OUTLINE
- PROPOSED PIPE REROUTE
- EXISTING CULVERTS

POND 1

P1 Drainage Area

P2 Drainage Area
(combines with P3)

POND 2



APPENDIX B - DRAINAGE STORM TABULATION FORM

MODEL NODE MAX (25-YR)													Revision 00
Name	Group	Simulation	Max Time Stage hrs	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Time Inflow hrs	Max Inflow cfs	Max Time Outflow hrs	Max Outflow cfs		
GLOBAL_OUTFALL	BASE	PR_25_24_R5r1	0.00	3.00	0.00	0.0000	0	13.05	186.52	0.00	0.00		
GW_NODE	BASE	PR_25_24_R5r1	0.00	0.00	0.00	0.0000	0	8.93	22.64	0.00	0.00		
PermPond_1	BASE	PR_25_24_R5r1	12.62	8.60	11.00	0.0050	97514	12.08	63.43	12.62	24.44		
PermPond_23	BASE	PR_25_24_R5r1	13.17	7.48	9.80	0.0027	619693	12.33	167.13	13.17	95.03		
PermPond_4	BASE	PR_25_24_R5r1	12.81	7.59	8.00	0.0027	363353	12.08	133.92	12.80	57.23		
TempPond_1	BASE	PR_25_24_R5r1	13.68	8.31	9.00	0.0035	191918	12.08	85.62	13.65	9.25		
TempPond_2	BASE	PR_25_24_R5r1	13.64	8.53	9.00	0.0038	312235	12.08	142.90	13.61	20.88		

APPENDIX C - PROJECT RISK TRACKING REGISTER

PMCoE Risk Register

Applicability:
Reference
Tool Version

All Projects (required for Green, Brown and Black Ranked Projects per PJM-00013-ENTSTD)
PJM-00013-ENTSTD
2015 V0.1

Complete the Following Steps

1 Fill in the Project Identification Information below.

Project Title	Citrus Turbine Sump Analysis	Required
Data Date:	9-Dec-21	Required
Project Initiation Date:	18-Oct-21	Required
Document Owner:	Andrew Martin	Required
Revision Number:	2	Optional

2 Fill in the Project Objectives in the boxes provided below.

Project Cost (\$)		Required: Cost <u>including</u> burdens & <u>excluding</u> AFUDC and contingency
Schedule		Required: In-Service or Completion Date

3 For each risk, populate the "Risk Entry" tab with the requisite information and update and maintain the information as the risks change status and new risks are identified. All entries under the black labeled columns are required. Other entries are calculated. Note the company position is to not accept anything but minimal compliance impacts for all risks in the post-treatment state. All risks are to be mitigated, as necessary, to achieve this result.

4 Update the "Risk Reporting" tab on a monthly basis. Note - use the "Sort" tab to ensure the top 10 risks are sorted in the proper order.

5 At a minimum, communicate the status of Risks on a monthly basis. The "Risk Reporting" tab is provided to facilitate the communication of risks consistent with PJM-00013-ENTSTD requirements.

Risk ID	Risk Entry Date [Enter]	Short Name [Enter]	Risk Description: IF event, THEN consequence [Enter]	Risk Trigger: Description [Enter]	Risk Owner [Enter]	Risk Status [Select]	Probability [Select]	Compliance Impact (Must Be Minimal)	Likelihood [Enter]	Likelihood	Mid-point Likelihood	Max Rating	Risk Rating [Calculated]	Mitigation [Select]	Mitigating actions and/or comments [Enter]	Contingency Plan [Enter]	Comments [Enter]
1	9-Dec-21	ST Generator Outboard Bearing - Oil Leak	If a failure occurs with the lube oil system at the Generator Outboard bearing; Then oil will drain to a lower deck	For this leak to reach the turbine floor top deck drains, the leak would need to be large and outside the exciter enclosure	Citrus CC	Open	Very Low [0-10%]	Significant [Local/State/Federal violation incurred or Recordable/Lost Time Incident]	0	2	5%	38	Green	Accept	None. Continue to maintain the exciter enclosure integrity and lube oil system through BMP. Monitor system during normal operator rounds.	Install additional curbing around generator.	No additional actions planned.
2	9-Dec-21	ST Generator Inboard Bearing - Oil Leak	If a failure occurs with the lube oil system at the Generator Inboard bearing; Then oil will accumulate inside the turbine enclosure and drain to a lower deck	For this leak to reach the turbine top deck drains, the leak would have to be large and pass through a breach in either the enclosure curbing or wall.	Citrus CC	Open	Very Low [0-10%]	Minimal	0	2	5%	26	Green	Accept	None. Continue to maintain the steam tubing enclosure integrity and lube oil system through BMP.	None	No additional actions planned.
3	9-Dec-21	Steam Turbine HP/IP/LP Bearing - Oil Leak	If a failure occurs with the lube oil system at the ST bearing; Then oil will accumulate inside the turbine enclosure and drain to a lower deck	For this leak to reach the turbine top deck drains, the leak would have to be large and pass through a breach in either the enclosure curbing or wall.	Citrus CC	Open	Very Low [0-10%]	Minimal	0	2	5%	26	Green	Accept	None. Continue to maintain the steam tubing enclosure integrity and lube oil system through BMP.	None	No additional actions planned.
4	9-Dec-21	Steam Turbine HP/IP/LP Hydraulic Controls - Oil Leak	If a failure occurs with the control oil system at the ST bearing; Then oil will accumulate inside the turbine enclosure and drain to a lower deck	For this leak to reach the turbine top deck drains, the leak would have to be large and pass through a breach in either the enclosure curbing or wall.	Citrus CC	Open	Moderate [34-65%]	Minimal	0	5	50%	65	Green	Accept	None. Continue to maintain the steam tubing enclosure integrity and control oil system through BMP.	None	No additional actions planned.
5	9-Dec-21	STG Seal Oil Vapor Extractor Vent Leak	If excessive oil mist were to condense at the vent outlet; Then seal oil could drip onto turbine deck top floor	For this drip to reach the top deck drains, the drip would need to accumulate over time. To date, there has been no evidence of liquid dripping from the vents on to the turbine top deck floor.	Citrus CC	Open	Low [11-33%]	Significant [Local/State/Federal violation incurred or Recordable/Lost Time Incident]	0	3	22%	57	Green	Accept	None. Continue to monitor system during normal operator rounds and maintain seal oil system through BMP.	Add catch pan around vent and drain to WW system	No additional actions planned.
6	9-Dec-21	STG Seal Oil Vapor Extractor - Oil Leak	If a failure was to occur with the generator seal oil vapor extractor; Then seal oil could accumulate on the turbine top deck and reach the deck drains	Depending on the size and location of the leak, majority of the condensed oil would run to the lower deck	Citrus CC	Open	Moderate [34-65%]	Significant [Local/State/Federal violation incurred or Recordable/Lost Time Incident]	0	5	50%	95	Yellow	Reduce	Burns & McDonnell to design stainless steel (or other) catch pan around seal oil vapor extractor and drain to lower deck. Thompson Construction to install.	None	Install catch pan around seal oil vapor extractor and drain to lower deck.
7	9-Dec-21	Stormwater System Ponding	If a peak rain event would occur; Then the water from the top deck could result in temporary stormwater system backups and cause localized ponding at ground level.	May result in localize erosion and/or requiring grading repairs	Citrus CC	Open	Very High [90-100%]	Minimal	0	11	95%	143	Green	Accept	Address localized erosion and grading as needed. Continue to maintain stormwater system through BMP.	Utilize temporary pump to divert water as needed.	No additional actions planned.
8	9-Dec-21	IWW Pond Concentration	If top deck rainwater is diverted from the WW system; Then changes to pollutant concentrations in the IWW percolation ponds could occur	No different than extended periods of low rainfall	Citrus CC	Open	Low [11-33%]	Moderate [Local/State/Federal warning or Near Miss]	0	3	22%	51	Green	Accept	None	Maintain existing WW piping in place with isolation valve. Re-direct the top floor drains to the WW perc. pond.	No additional actions planned.
9	10-Dec-21	Steam Turbine Maintenance Activities	If maintenance activities on the ST top deck include handling or transferring oil; Then a spill or leak could contact the top deck floor drains	For major maintenance activities that involve transferring oil, additional precautions will need to be considered regarding potential leaks and spill containment to prevent contacting the stormwater system. For minor maintenance, spill containment equipment (such as socks and rags) will be available as part of standard BMP.	Citrus CC	Open	Moderate [34-65%]	Significant [Local/State/Federal violation incurred or Recordable/Lost Time Incident]	0	5	50%	95	Yellow	Reduce	Maintain existing WW piping in place with isolation valve. Re-direct the top deck drains to the OWS during major maintenance activities that involve transferring oil.	Cover drains and provide spill kits on an as needed basis.	Maintain existing WW piping in place with isolation valve. Normal position will be to direct flow to the storm water system. Optional position to the OWS through the turbine area sump.
10		Storm Water Pond Sizing	If storm water ponds are not sized to handle the area of the turbine deck floor; Then project will need to consider increasing pond size	Burns & McDonnell reviewed Flour document CCC00-CA-C-00.YD.00-01 STORMWATER SYSTEM CALCULATION and determined pond sizing is sufficient.	Citrus CC	Open	Low [11-33%]	Minimal	0	3	22%	39	Green	Accept	None. Turbine deck area was included in the pond sizing for a 25-year rain event	None	No additional actions planned.

Project EMV Risk and Contingency Monthly Summary

Top 10 Risks For:

Citrus Turbine Sump Analysis

Date

12/9/2021

Probability

Very High [90-100%]

High [66-89%]

Moderate [34-65%]

Low [11-33%]

Very Low [0-10%]

7,				
4,		6, 9,		
10,	8,	5,		
2, 3,		1,		
Minimal < 2%	Moderate < 5%	Significant < 10%	Severe < 15%	Critical > 15%

Impact

Enterprise Risk Assessment

- Financial ≥\$50M: No **Calculated**
- Reputational: Assessing ← Select

Enterprise Risk Discussion:

Citrus Turbine Sump Analysis and risks associated with diverting the top deck drains to the stormwater system.

Tail Risk Discussion:

As below.

Project Risk Discussion:

As below.

Order	Risk ID	Risk Short Name	Project Risk EMV (\$)	Total Risk EMV (\$)	Total Impact (\$)
1		ST Generator Outboard Bearing - Oil Leak			
2		ST Generator Inboard Bearing - Oil Leak			
3		Steam Turbine HP/IP/LP Bearing - Oil Leak			
4		Steam Turbine HP/IP/LP Hydraulic Controls - Oil Leak			
5		STG Seal Oil Vapor Extractor Vent Leak			
6		STG Seal Oil Vapor Extractor - Oil Leak			
7		Stormwater System Ponding			
8		IWW Pond Concentration			
9		Steam Turbine Maintenance Activities			
10		Storm Water Pond Sizing			

Top 10 Risks Plotted by:

Risk ID

Remember: Update the Top 10 Using the "Sort" Tab

Risk and Contingency Summary (All Risks)

For all Projects:

- The current top-ten risk matrix is reviewed, updated, and reported on a monthly basis
- Contingency is reviewed, managed, and reported on a monthly basis.
- The Project Risk Matrix, is used to communicate probability and impact of Project and Enterprise Risks and should be used as supporting documentation when communicating with Global Risk Management and Insurance

In addition, Green III, Brown and Black Projects must also report monthly on:

- Contingency balance as a percentage of total Expected Monetary Value (EMV) of the identified Project risks (including estimate uncertainty)
- Contingency as a percentage of Estimate to

Risk Status →	Open:	10
	Triggered:	0
	Closed:	0
	Tail Event:	0

(1) Cumulative EMV for all Open Risks (\$)

\$ -

\$ -

Calculated

(2) Estimate Uncertainty (\$)

← Enter Current Value

(3) Risk EMV & Estimate Uncertainty (\$)

\$ -

Calculated

(4) Contingency (\$)

← Enter Current Value

(5) Unallocated Mitigating Costs (\$)

\$ -

Calculated

(6) Net Contingency (\$)

\$ -

Calculated

(7) Net Contingency / Risk EMV & Estimate Uncertainty

← Enter Current Value

Calculated, Normal Range: 0.75 to 1.25

(8) ETC excluding financing (e.g. AFUDC) & contingency (\$)

← Enter Current Value

Calculated

(9) Net Contingency / ETC

← Enter Current Value

Calculated, Normal Range: 3% to 15%

(10) Tail Risk Aggregate Risk Impact (\$)

\$ -

Calculated

(11) Identified Aggregate Enterprise Risk Impact (\$)

\$ -

Calculated, Report to Risk Mgmt. if ≥ \$50M

Notes

Total Risk EMV = Project Risk EMV + Enterprise Risk EMV

Contingency is added to the project cost to cover risk and estimate uncertainty. Contingency is monitored and adjusted throughout the life of the project.

Total Impact is the project and enterprise cost that would be incurred should the risk trigger

References: PJM-000012-ENTSTD, Project Cost & Contingency Management, PJM-000013-ENTSTD, Project Risk Management

APPENDIX D - PIPING & INSTRUMENT DIAGRAMS

PRELIMINARY - NOT FOR CONSTRUCTION

REDLINES ASSOCIATED WITH PROPOSED REDIRECT OF STG OPERATING FLOOR DRAINS FROM TURBINE AREA SUMP TO STORMWATER SYSTEM.

GREEN HIGHLIGHTS INDICATE THE CURRENT FLOW PATH.

REV A
12/21/21

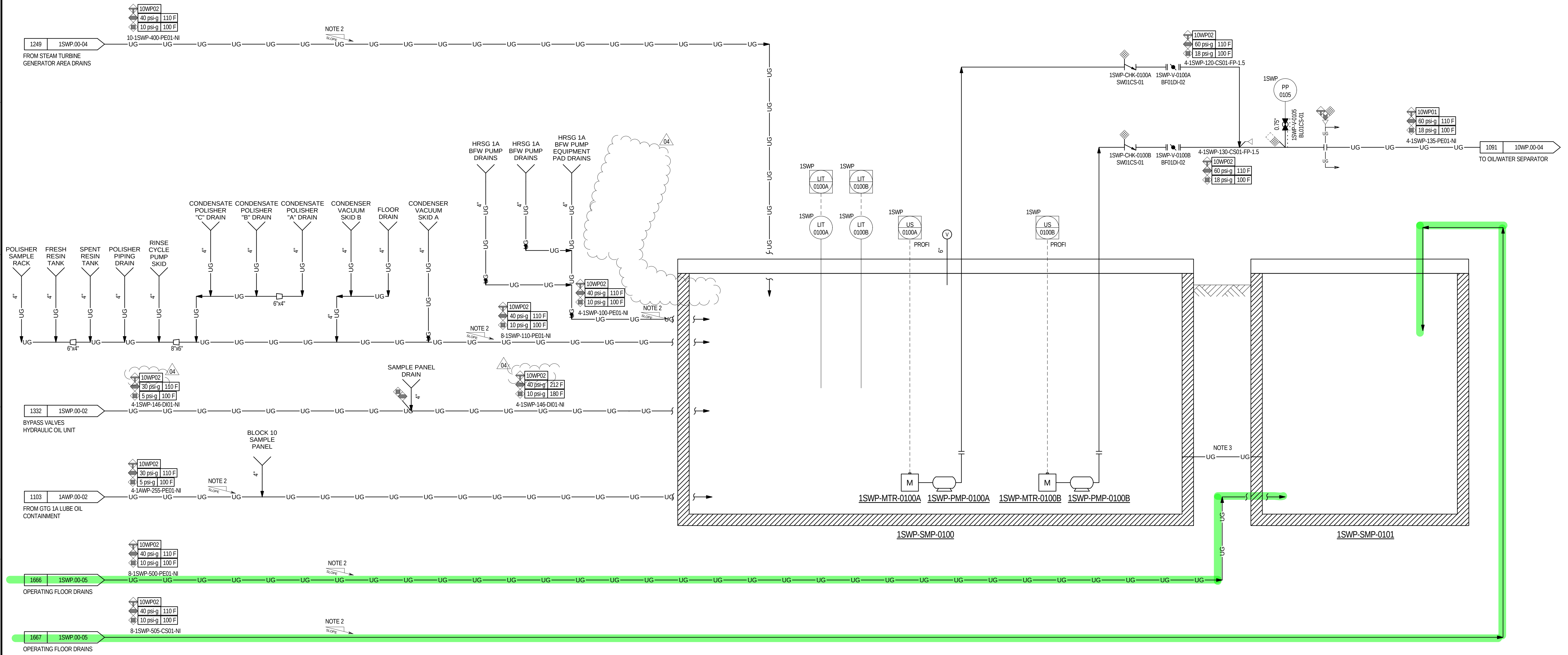
1SWP-SMP-0100
TURBINE 1S AREA SUMP
SIZE: 10' L X 20' W X 8' D

1SWP-PMP-0100A
TURBINE 1S AREA SUMP PUMP A
215 GPM @ 43 FT; 5 HP
VENDOR - FLYGT / PO # 0605-00

1SWP-PMP-0100B
TURBINE 1S AREA SUMP PUMP B
215 GPM @ 43 FT; 5 HP
VENDOR - FLYGT / PO # 0605-00

1SWP-SMP-0101
TURBINE 1S AREA SUMP OVERFLOW
SIZE: 10' L X 20' W X 8' D

- NOTES:
1. DELETED.
 2. SLOPE 1/8" PER FT.
 3. SUMP INTERCONNECTING PIPE. (SUMPS TO BE CORE DRILLED AND PIPE FIELD ROUTED.)



MECH	LAYOUT	CSA	ELEC	REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD
WAIVED	WAIVED	WAIVED	WAIVED	04	01-23-19	CICCO	CONSTRUCTION	JPB	IMAC	BGF	JPB	SAS
MECH	LAYOUT	CSA	ELEC	03	1-12-17	CICCO	CONSTRUCTION	JPB	IMAC	BGF	JPB	SAS
BAS	RET	WAIVED	GAS	02	11-19-15	CICCO	CONSTRUCTION	DWR	ITAB	AJM	JPB	JRM
MECH	LAYOUT	CSA	ELEC	01	9-25-15	CICCO	CONSTRUCTION	FNT	INSB	BGF	JPB	JRM
BAS	MWW	WAIVED	SAS	00	7-6-15	CICCO	CONSTRUCTION	FNT	INSB	BGF	JPB	JRM
MECH	LAYOUT	CSA	ELEC	00	7-6-15	CICCO	CONSTRUCTION	FNT	INSB	BGF	JPB	JRM
BAS	SAT	WAIVED	SAS	00	7-6-15	CICCO	CONSTRUCTION	FNT	INSB	BGF	JPB	JRM
MECH	LAYOUT	CSA	ELEC	00	7-6-15	CICCO	CONSTRUCTION	FNT	INSB	BGF	JPB	JRM
BAS	MWW	WAIVED	SAS	00	7-6-15	CICCO	CONSTRUCTION	FNT	INSB	BGF	JPB	JRM
MECH	LAYOUT	CSA	ELEC	00	7-6-15	CICCO	CONSTRUCTION	FNT	INSB	BGF	JPB	JRM
BAS	SAT	WAIVED	SAS	00	7-6-15	CICCO	CONSTRUCTION	FNT	INSB	BGF	JPB	JRM

RESERVED FOR PROFESSIONAL ENGINEER'S SEAL, IF APPLICABLE

FLUOR
6700 LAS COLINAS BLVD.
IRVING, TEXAS 75039
704-526-2500
CERTIFICATE OF AUTHORIZATION LICENSE NUMBER: 3833

NOTICE: THIS DRAWING HAS NOT BEEN PUBLISHED AND IS THE SOLE PROPERTY OF FLUOR CORPORATION AND IS LENT TO THE BORROWER FOR THEIR CONFIDENTIAL USE ONLY. AND IN CONSIDERATION OF THE LOAN OF THIS DRAWING, THE BORROWER PROMISES AND AGREES TO RETURN IT UPON REQUEST AND AGREES THAT IT SHALL NOT BE REPRODUCED, COPIED, LENT OR OTHERWISE DISPOSED OF DIRECTLY OR INDIRECTLY NOR USED FOR ANY PURPOSE OTHER THAN FOR WHICH IT IS FURNISHED.

DUKE ENERGY FLORIDA
CITRUS COUNTY COMBINED CYCLE PROJECT
PIPING AND INSTRUMENTATION DIAGRAM
PLANT DRAINS (WP) SYSTEM

FOR CITRUS COUNTY COMBINED CYCLE - UNIT 1S

SCALE: NA
DWG TYPE: PD
JOB NO: CICCO
DATE: 7-6-15

DES: FNT
DFTR: NSB
CHKD: BGF
ENGR: JPB

APPD: JRM

FILENAME: CCC1S-PD-M-WP.00-01.pid

DWG SIZE: ARCH D 24.0"x36.0"

DRAWING NO. CCC1S-PD-M-WP.00-01

REVISION 04

NOTES:

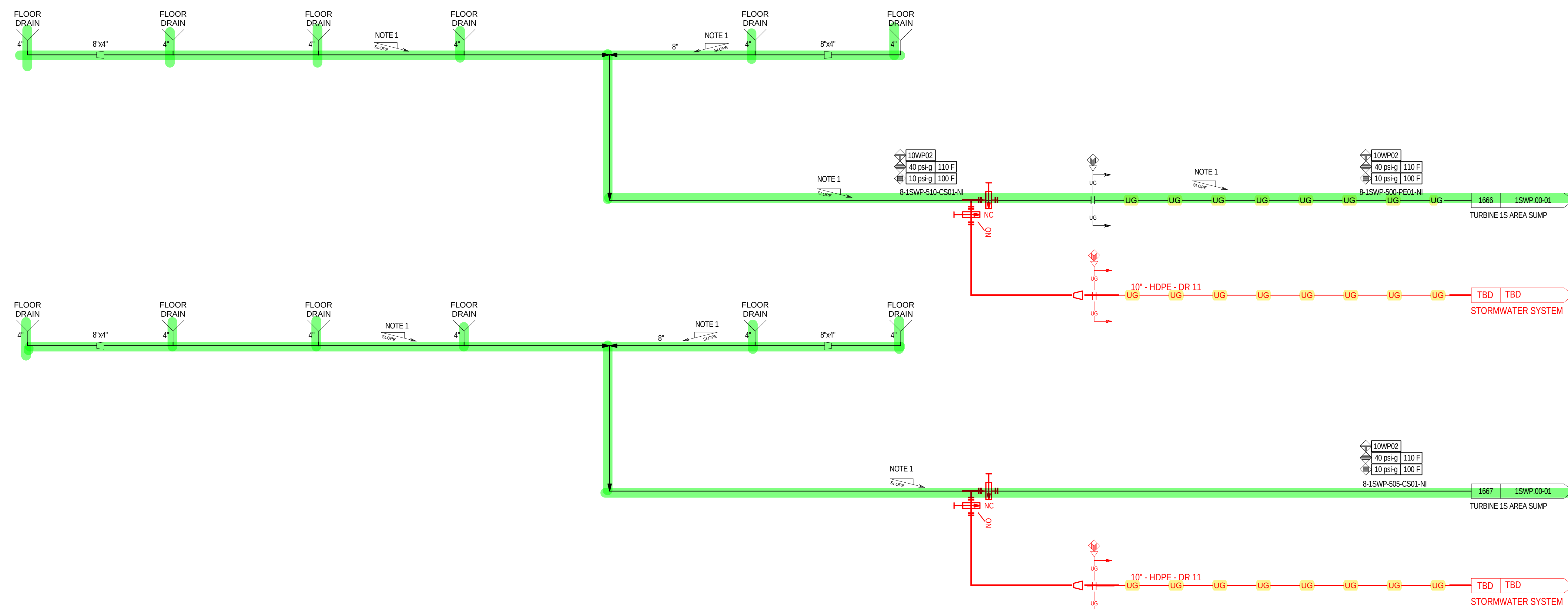
1. SLOPE 1/8" PER FT

PRELIMINARY - NOT FOR CONSTRUCTION

REDLINES ASSOCIATED WITH PROPOSED REDIRECT OF STG OPERATING FLOOR DRAINS FROM TURBINE AREA SUMP TO STORMWATER SYSTEM.

GREEN HIGHLIGHTS INDICATE THE CURRENT FLOW PATH.

REV A
12/21/21

[illegible]

PRELIMINARY - NOT FOR CONSTRUCTION

REDLINES ASSOCIATED WITH PROPOSED REDIRECT OF STG OPERATING FLOOR DRAINS FROM TURBINE AREA SUMP TO STORMWATER SYSTEM.

GREEN HIGHLIGHTS INDICATE THE CURRENT FLOW PATH.

REV A
12/21/21

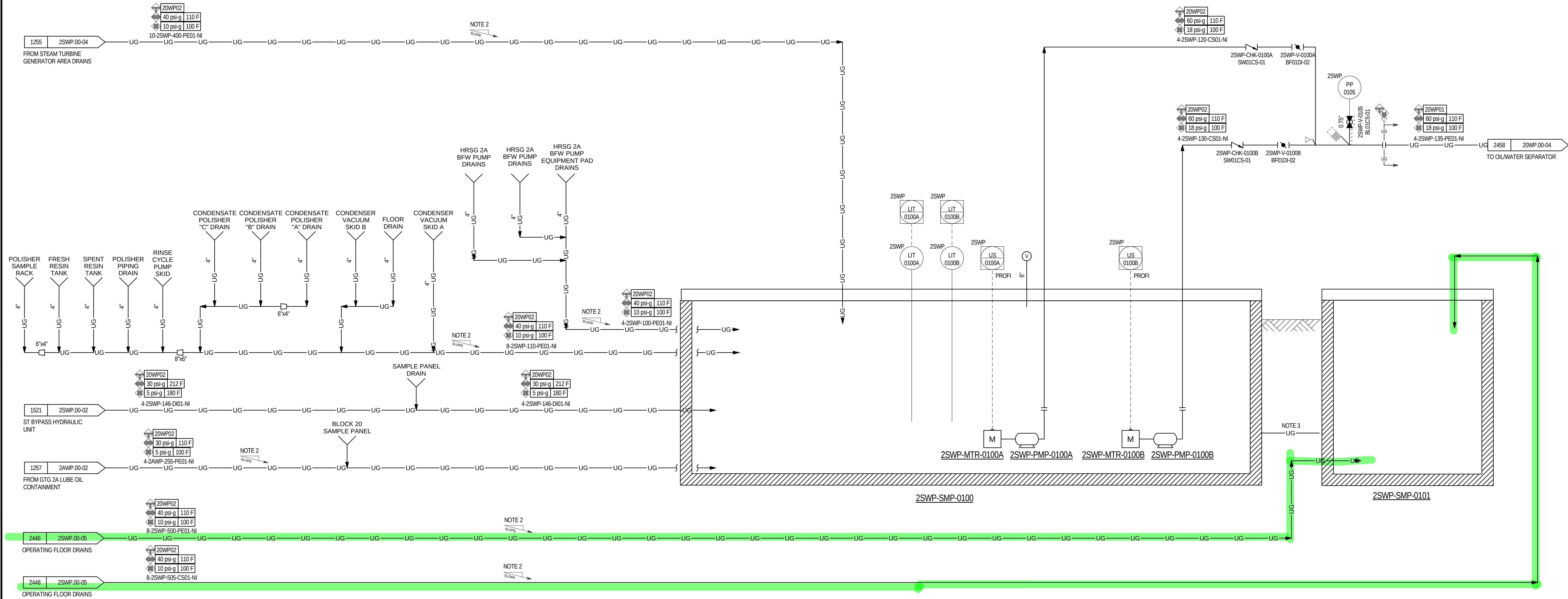
2SWP-SMP-0100
TURBINE 2S AREA SUMP

2SWP-PMP-0100A
TURBINE 2S AREA SUMP PUMP A
CAPACITY : 210 GPM

2SWP-PMP-0100B
TURBINE 2S AREA SUMP PUMP B
CAPACITY : 210 GPM

2SWP-SMP-0101
TURBINE 2S AREA SUMP OVERFLOW
SIZE 10 FT L X 20 FT W X 8 FT D

- NOTES:
1. DELETED.
 2. SLOPE 1/8" PER FT.
 3. SUMP INTERCONNECTING PIPE (SUMPS TO BE CORE DRILLED AND FIELD ROUTED).



		MECH	LAYOUT	CSA	ELEC
		MECH	LAYOUT	CSA	ELEC
		MECH	LAYOUT	CSA	ELEC
		MECH	LAYOUT	CSA	ELEC
		MECH	LAYOUT	CSA	ELEC
		WAIVED	WAIVED	WAIVED	WAIVED
		MECH	LAYOUT	CSA	ELEC
		MP	RET	WAIVED	SAS
		MECH	LAYOUT	CSA	ELEC
		BAS	SAT	WAIVED	SAS

REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD
02	01-23-19	CICCOC	CONSTRUCTION					
DESC: ISSUED AS-BUILT (AB)								
REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD
01	4-22-16	CICCOC	CONSTRUCTION	DWR	KSC	KYC	JPB	JRM
DESC: ISSUED FOR CONSTRUCTION (IFC)								
REV	DATE	JOB NO.	PROJECT TYPE	DES	DFTR	CHKD	ENGR	APPD
00	7-6-15	CICCOC	CONSTRUCTION	FNT	NSB	BGF	JPB	JRM
DESC: ISSUED FOR DESIGN (IFD)								

RESERVED FOR PROFESSIONAL ENGINEER'S SEAL, IF APPLICABLE

JOHN PHILIP BOLTON
LICENSE
No. 79878
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Digitally signed by
bol14487
DN:
E=Phil.Bolton@flucor.com,
CN=bol14487
Date: 2019.01.24
17:48:07-05'00'

FLUOR
6700 LAS COLINAS BLVD.
IRVING TEXAS 75039
704-526-2500
CERTIFICATE OF AUTHORIZATION LICENSE NUMBER: 3833

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TITLE
DUKE ENERGY FLORIDA
CITRUS COUNTY COMBINED CYCLE PROJECT
PIPING AND INSTRUMENTATION DIAGRAM
PLANT DRAINS (WP) SYSTEM

FOR
CITRUS COUNTY COMBINED CYCLE - UNIT 2S

SCALE: NA	DES: FNT
DWG TYPE: PD	DFTR: NSB
JOB NO: CICCOC	CHKD: BGF
DATE: 7-6-15	ENGR: JPB
APPD: JRM	

FILENAME: CCC2S-PD-M-WP.00-01.pid

DWG SIZE ARCH D 24.0"x36.0"	DRAWING NO. CCC2S-PD-M-WP.00-01	REVISION 02
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NOTES:

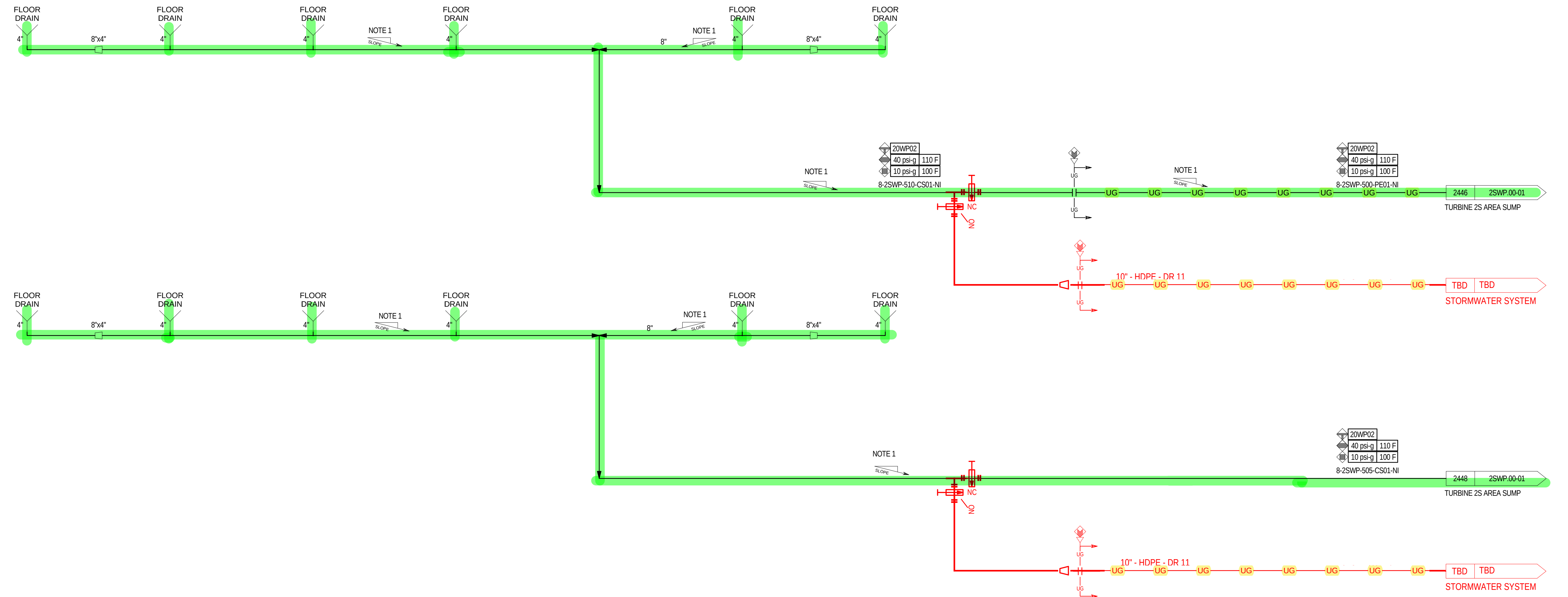
1. SLOPE 1/8" PER FT

PRELIMINARY - NOT FOR CONSTRUCTION

REDLINES ASSOCIATED WITH PROPOSED REDIRECT OF STG OPERATING FLOOR DRAINS FROM TURBINE AREA SUMP TO STORMWATER SYSTEM.

GREEN HIGHLIGHTS INDICATE THE CURRENT FLOW PATH.

REV A
12/21/21

[illegible]

APPENDIX E - EQUIPMENT & INSTRUMENT PHOTOS

STG Seal Oil Vapor Extractor



STG Seal Oil Vapor Extractor Vent



Steam Turbine HP/IP/LP Hydraulic Controls



Steam Turbine HP/IP/LP Bearing



ST Generator Outboard Bearing



ST Generator Inboard Bearing



APPENDIX F - MAP OF DELINEATED DRAINAGE AREAS

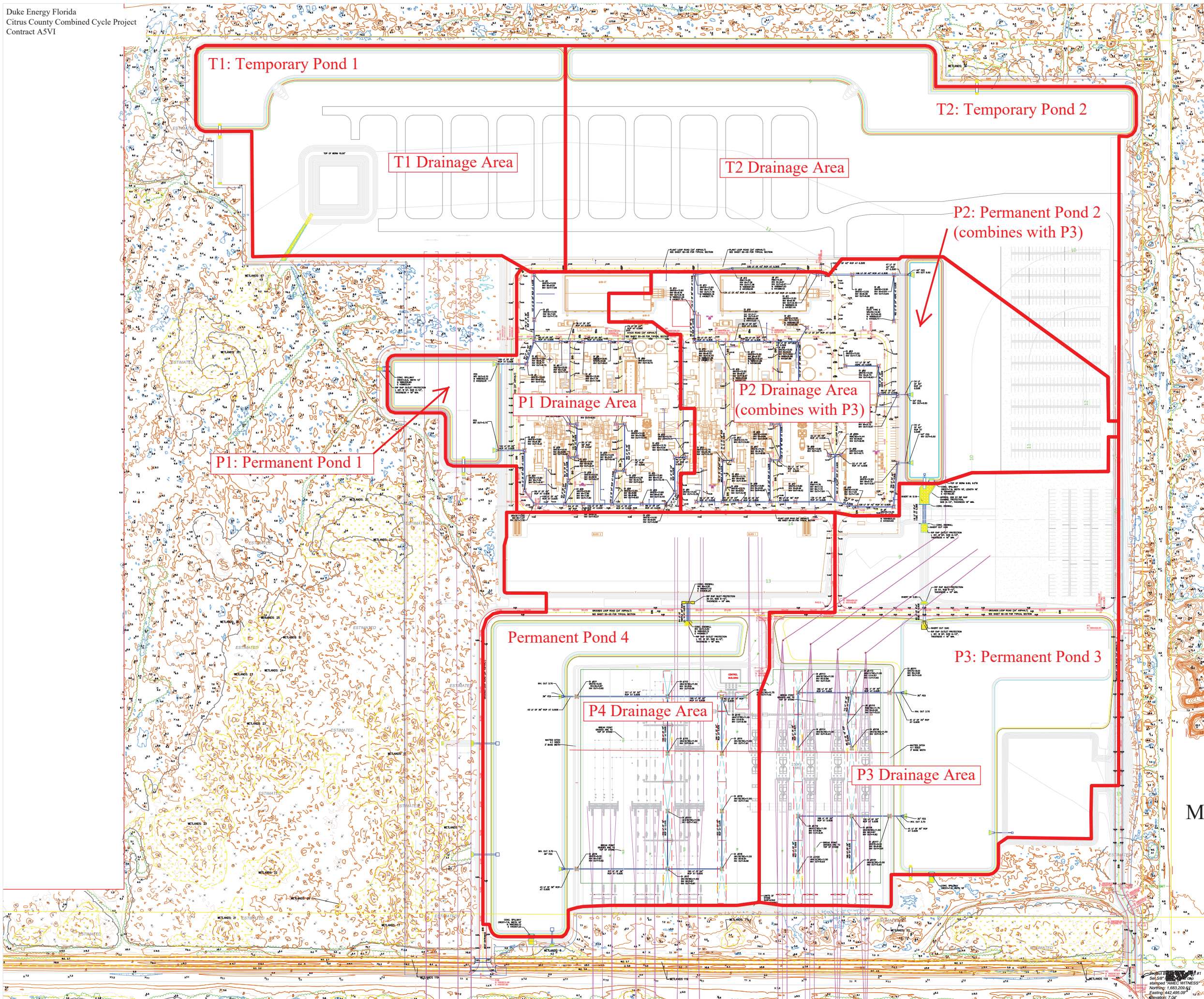
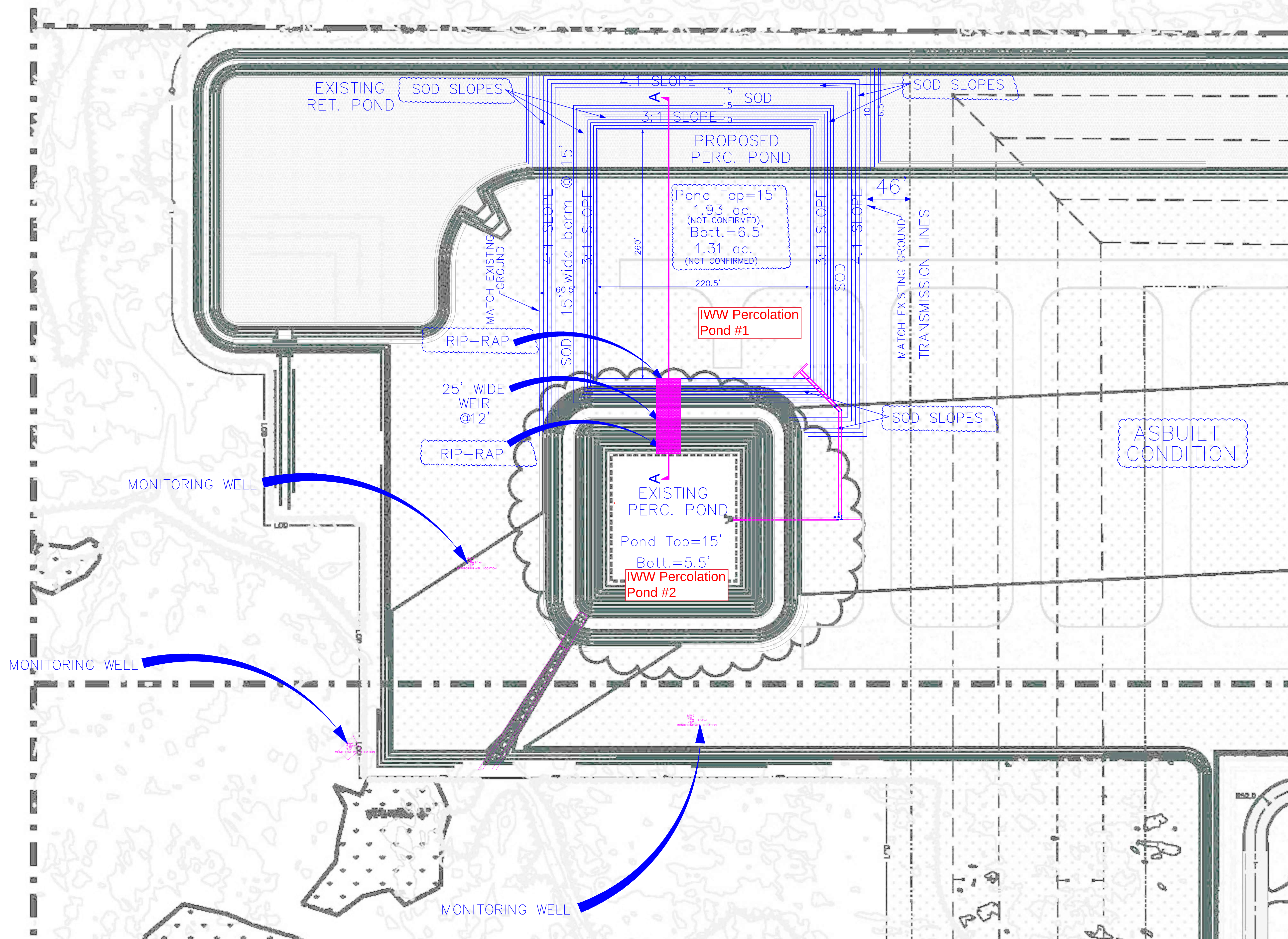


Figure 1 -
Map of Delineated Drainage Areas

APPENDIX G - PERCOLATING POND – SITE PLAN



Survey provided by Duke Energy.
Geotechnical information and reports provided by Duke Energy.
Process flow and piping provided by Duke Energy.
Design is based on direction provided by Duke Energy and industry best management practices.
Engineer has made no independent detailed assessment of design viability for this application.
MEI makes no claim as to the actual percolation rate for the initial or secondary percolation ponds.

DUKE ENERGY CRYSTAL RIVER, FLORIDA	SITE PLAN	 4000 Highway 60 East Maitland, Florida 32751 Phone (853) 648-0906 Fax (853) 648-4998	NOT VALID WITHOUT SEAL	DRAWN BY: G.T.	REVISIONS: 9-6-2019 ASBUILT
				DATE: 3/8/2019	
JOB # 18-470 SHEET 2			STUART D. ARTMAN, P.E. 50692 DATE:		



Burns & McDonnell World Headquarters
9400 Ward Parkway
Kansas City, MO 64114
Phone: 816-333-9400
Fax: 816-333-3690
www.burnsmcd.com

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Notice of Intent to Use an Environmental Resource and/or State 404 Program General Permit

Instructions: This form is for projects that qualify for a General Permit in accordance with Chapter 62-330 F.A.C., and/or Chapter 62-331, F.A.C. General Permits (GP) are provided for certain activities that have been determined to have minimal impacts to the water resources of the state when conducted in compliance with the terms and conditions of the general permit. Complete and submit this form to the appropriate agency as identified in Part 3 below.

If activity is located on, or has the potential to be located on, state-owned sovereignty submerged lands (SSL), the reviewing Agency will begin processing the request for state-owned sovereignty submerged lands authorization. If you know that your project is located on SSL, (i.e., waterward of the line of mean or ordinary high water of rivers, streams, bays, bayous, sounds, the Gulf of Mexico, the Atlantic Ocean, or certain natural lakes, we recommend completing Section F of the Environmental Resource Permit Application. You are not required to complete Section F to receive a General Permit, but it will help the agency process the SSL authorization. Both authorizations are required prior to construction on SSL.

Part 1: General Information

A. Rule section number of the GP(s) for which you are applying:
62-330. / 62-331. ,F.A.C.

We recommend contacting your local Corps district office if your project is not within state-assumed waters regulated under Chapter 62-331, F.A.C., does not qualify for the State Programmatic General Permit (SPGP) and you are not sure whether the project requires separate Corps authorization. If Corps authorization is required, you will need to submit the appropriate federal application form separately to the Corps. Corps contact information may be found online at the Jacksonville District Regulatory Division website.

B. Applicant ☐ **This is a Contact Person for Additional Information**

Name: Last: Drango First: Martin Middle: J.
Title: Citrus Combined Cycle Station Manager Company: Duke Energy Florida, LLC
Address: 14385 North Access Road
City: Crystal River State: FL Zip: 34428
Home Telephone: Work Telephone: (352) 501-2003
Cell Phone:
E-mail Address: Martin.Drango@Duke-Energy.com
Correspondence will be sent via email, unless you check here to receive it via ☐ **US Mail**



C. Consultant/Agent X This is a Contact Person for Additional Information

Name: Last: Linton First: William Middle: R.

Title: Sr Environmental Specialist Company: Duke Energy Florida, LLC

Address: 299 First Avenue North FL903

City: St Petersburg State: FL Zip: 33701

Home Telephone:

Work Telephone: 727 560-4803

Cell Phone:

E-mail Address: william.Linton@duke-energy.com

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

D. Land Owner(s) (If Different or in Addition to Applicant Identified Above)

Name: Last: First: Middle:

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. Location of proposed activities:

Tax Parcel Identification Number:

Address: 14385 North Access Road

City: Crystal River County: Citrus Zip: 34428

Latitude (DMS) 28° 58' 03.88" Longitude (DMS) 82° 40' 23.79"

F. Date activity is proposed: To Commence: 4/2022 To be Completed: 8/2022

G. Describe in general terms the proposed project, system, or activity: Please refer to the attached project report from Burns & McDonnell.

H. Describe wetland and aquatic habitats to be affected: N/A

I. Construction methods and schedule: Please refer to the attached project report from Burns & McDonnell..

J. Additional information that demonstrates that you qualify for the general permit, addressing all the parameters, thresholds, and conditions required in the general permit.

K. Additional information for State 404 Program General Permits (available within state-assumed waters only - leave blank if not applicable)

1. Describe the project purpose (*Describe the purpose and need for the proposed project. Why are you proposing the work? How will you use the proposed structure(s); and/or, how will the proposed fill area(s) be used?*): N/A

2. Describe direct and indirect adverse environmental effects the activity will cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the activity. Include acres and square feet of impact. If this notice is for a linear project that includes multiple "single and complete projects", include quantity of impact for each single and complete crossing. (see section 3.2.1 of the 404 Handbook): N/A

3. If the General Permit specifically requires mitigation, or if the proposed activity will result in the loss of more than 1/10 acre of wetlands, describe proposed mitigation measures (see preferential mitigation hierarchy in Rule 62-331.130, F.A.C.). If no mitigation is proposed, explain why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. The Agency shall determine if the described mitigation or explanation is appropriate and sufficient. N/A

4. List any other State 404 Program general permits or individual permits used or intended to be used to authorize any part of the proposed project or any related activity, including, but not limited to other separate and distant crossings for linear projects that require a GP but do not require pre-construction notification: N/A

5. Include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations shall be prepared in accordance with Chapter 62-340, F.A.C. N/A

6. Describe any listed species or designated critical habitat that might be affected by, or is in the vicinity of, the proposed activity. Include the name(s) of those listed species or critical habitat areas. Describe any actions proposed to be taken to avoid or minimize adverse effects to listed species. N/A

7. If the activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, describe which historic property might have the potential to be affected by the proposed activity and include a vicinity map indicating the location of the historic property (see paragraph 62-331.200(3)(j), F.A.C.) N/A

8. If the activity will occur in a component of the National Wild and Scenic River System, or is a river officially designated by congress as a "study river" for possible inclusion in the system while the river is in an official study status, identify the Wild and Scenic River or the "study river" (see paragraph 62-331.200(3)(d), F.A.C.) N/A

9. For activities that require permission from the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a Corps federally authorized civil works project, include a statement confirming that a written request for section 408 permission has been submitted to the Corps office having jurisdiction over that Corps project. The permittee is responsible for obtaining such permission separately from the Corps. Failure to obtain permission from the Corps may subject you to enforcement action by the Corps. N/A

Part 2: Certification

I hereby certify I have read and will conduct the above activities in accordance with the criteria, limitations, and specific conditions of the general permit(s) identified in Part 1 Section A, and in accordance with the general conditions of Rule 62-330.405, and/or 62-331.201, F.A.C., as applicable. Unless otherwise provided in Chapter 62-330, F.A.C., or unless the timeframes in 62-330.402(4), F.A.C. have been waived below, activities conducted pursuant to an ERP general permit may commence thirty (30) days after providing written notice to the Department of Environmental Protection or the Water Management District, along with any required additional documentation which may be required to fulfill the requirements of the general permit, unless the Agency responds that the proposed work does not qualify for a general permit. For State 404 Program general permits that require pre-construction notice under Chapter 62-331, F.A.C., the activity shall not commence until the permittee receives written confirmation of qualification for the general permit from the Agency. If both an ERP and State 404 Program general permit is required for such projects, the activity shall not commence until thirty (30) days after notice is received by the Agency, or until written confirmation of qualification for the State 404 Program general permit is received by the permittee, whichever is later.

I understand I may have to provide any additional information/data that may be necessary to provide reasonable assurance or evidence that the proposed project will comply with the applicable state water quality standards or other environmental standards both before construction and after the process is completed.

I further acknowledge that work done under the general permit(s) may also require the review and approval of other federal, state, or local agencies, and that commencement of construction before such federal, state, or local agency approvals or permits are obtained may subject me to enforcement action and fines or penalties by such agencies. Further, the work shall be conducted in a manner that does not violate applicable water quality standards.

☐

By checking this box, I hereby voluntarily waive, in accordance with subsection 62-330.402(7), F.A.C., the 30-day or 60-day deadline in subsection 62-330.402(4), F.A.C., 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 general permit and State 404 Program 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 for the ERP and State 404 Program 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(ies) will continue to abide by subsection 62-330.402(4), F.A.C.

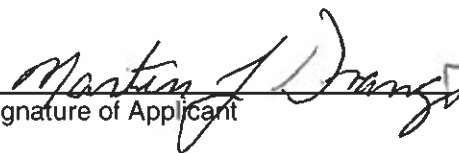
William R. Linton
Sr. Environmental Specialist
Duke Energy Florida, LLC
Typed/Printed Name of Applicant or Agent


Signature of Applicant or Agent 3/29/2022
Date

An Agent May Sign Above If Applicant Completes the Following:

I hereby designate and authorize the agent listed in Item Part 1 Section C to act on my behalf as my agent in the processing of this permit application and to furnish on request, supplemental information in support of the application.

Martin J. Drango, P.E.
Citrus Combined Cycle Plant Manager
Duke Energy Florida, LLC
Typed/Printed Name of Applicant
(And corporate title, if applicable)


Signature of Applicant 3/29/2022
Date

Certification of Sufficient Real Property Interest and Authorization for Staff to Access the Property:

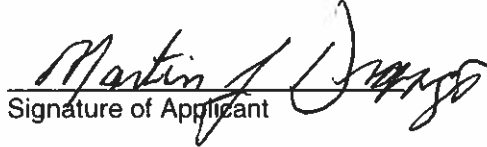
I certify that:

X 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. 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, I agree to provide entry to the project site for such agents or personnel to monitor and inspect permitted work if a permit is granted.

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 access, inspect, and sample the property as described above.

Martin J. Drango, P.E.
Citrus Combined Cycle Station Manager
Duke Energy Florida, LLC
Typed/Printed Name of Applicant
(And corporate title, if applicable)


Signature of Applicant
3/29/2022
Date

Part 3: Submittal

In addition to the information described in this form, any Notice of Intent to use a General Permit must also include the following, as described in Section 4.2.2 of the Applicant's Handbook, Volume I:

- Location map(s) of sufficient detail to allow someone who is unfamiliar with the site to travel to and locate the specific site of the activity.
- One set of plans and drawings, calculations, environmental information, and other supporting documents that clearly and legibly depict and describe the proposed activities in sufficient detail to demonstrate that the work qualifies for the specified General Permit(s).
- The required fee made payable to the appropriate agency.

Fees for the appropriate agency are established in the rules adopted in subsection 62-330.071(1), F.A.C., as listed below:

Rule 62-4.050, F.A.C. (Department of Environmental Protection or the Northwest Florida Water Management District)
Rule 40B-1.706, F.A.C. (Suwannee River Water Management District)
Rule 40C-1.603, F.A.C. (St. Johns River Water Management District)
Rule 40D-1.607, F.A.C. (Southwest Florida Water Management District)
Rule 40E-1.607, F.A.C. (South Florida Water Management District)

Operating Agreements between the Department and the water management districts specify which agency will process any given application. For copies of the operating agreements, go to <https://floridadep.gov/ogc/ogc/content/operating-agreements>

This application form may be submitted online; to do so, follow the on-line submittal requirements of the agency:

- o **Florida Department of Environmental Protection: <http://www.fldeportal.com/go/>**

- o **Northwest Florida Water Management District:**
<https://permitting.sjrwmd.com/nwepermitting/jsp/start.jsp>
- o **Suwannee River Water Management District:**
<https://permitting.sjrwmd.com/srepermitting/jsp/start.jsp>
- o **St. Johns River Water Management District:**
<https://permitting.sjrwmd.com/epermitting/jsp/AccountOverview.do?command=init>
- o **Southwest Florida Water Management District:**
<http://www.swfwmd.state.fl.us/permits/epermitting/>
- o **South Florida Water Management District:** <http://my.sfwmd.gov/ePermitting/MainPage.do>

If submitting a paper application, please see Appendix A of Applicant's Handbook, Volume I for submittal locations.