



REPORT

EMERGENCY ACTION PLAN

Gypsum Storage Area Cell #2

Gulf Clean Energy Center

Pensacola, Florida

Submitted to:

Florida Power & Light Company

Submitted by:

Golder Associates Inc.

5170 Peachtree Road Building 100 Suite 300

Atlanta, Georgia, USA 30341

+1 770 496-1893

Project No. 21482735

Revision 0 - April 2022

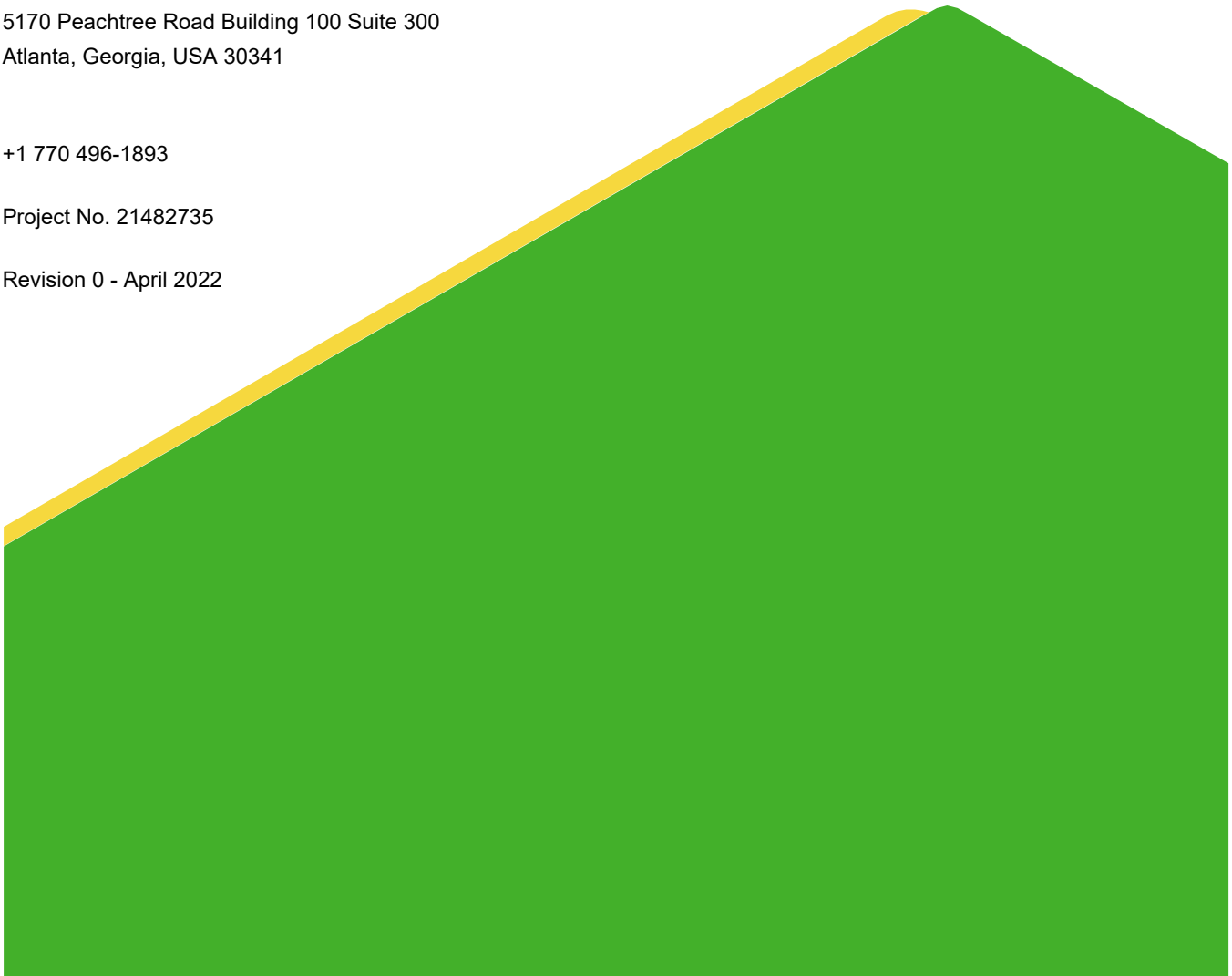


Table of Contents

1.0	EMERGENCY ACTION PLAN DEVELOPMENT AND REGULATORY REQUIREMENTS	3
2.0	STATEMENT OF PURPOSE	3
3.0	SITE DESCRIPTION	4
3.1	Unit Details	5
3.2	Regional Topography	5
3.3	Area Development	5
4.0	NOTIFICATION FLOWCHART AND EAP PROCESS	6
4.1	The Five Step EAP Process	16
4.1.1	STEP 1 – Event Detection and Initial Notification	18
4.1.2	Step 2 Emergency Level Determination	18
4.1.3	STEP 3 – Notification and Communication	18
4.1.4	Step 4 – Expected Actions	19
4.1.4.1	GREEN Event – Nonemergency, An Unusual Event is Slowly Developing	19
4.1.4.2	YELLOW Event – A Potential Dam Failure Situation is Rapidly Developing	19
4.1.4.3	RED Event – Urgent; An Embankment Failure Appears Imminent or Is in Progress	20
4.1.4.4	Emergency Remedial Actions	21
4.1.4.4.1	Failure or Blockage of Spillway	21
4.1.4.4.2	Embankment Overtopping	21
4.1.4.4.3	Seepage and Sinkholes	21
4.1.4.4.4	Embankment Movement or Settlement	21
4.1.4.4.5	Malicious Human Activity (Sabotage, Vandalism or Security Breach)	22
4.1.5	Step 5 – Termination	22
4.1.5.1	Post Termination Activities	22
5.0	EMERGENCY DETECTION, EVALUATION, AND CLASSIFICATION	23
5.1	Emergency Detection	23
5.2	Evaluation	23
5.2.1	Adverse or Unusual Loading Conditions	23

5.2.2	Rising Water Level and Embankment Overtopping	24
5.2.3	Seeps and Sinkholes	24
5.2.4	Embankment Movement and Cracking.....	24
5.2.5	Security Threat, Security Breach, Sabotage, and Vandalism.....	25
5.3	Classification	25
5.3.1	GREEN Event – Nonemergency, an unusual event that is slowly developing	25
5.3.2	YELLOW Event – A potential dam failure situation is rapidly developing.....	26
5.3.3	RED Event – Urgent; dam failure appears imminent or is in progress	26
6.0	GENERAL RESPONSIBILITIES UNDER THE EAP	26
6.1	Plant Responsibilities	26
6.2	Responsibility for Notifications	26
6.3	Responsibility for Evacuation	27
6.4	Responsibility for Termination and Follow-Up	27
6.5	EAP Annual Review and Revisions	27
7.0	PREPAREDNESS.....	27
7.1	Inspection	27
7.2	Response During Periods of Darkness.....	28
7.3	Access to the Site	28
7.4	Response During Weekends and Holidays	28
7.5	Response During Periods of Adverse Weather	28
7.6	Alternative Systems of Communication	28
7.7	Emergency Supplies and Information	28
8.0	INUNDATION MAPS.....	28

FIGURES

<i>Figure 1: 5-Step EAP Process</i>	<i>17</i>
---	-----------

APPENDICES

APPENDIX A

5-STEP EAP SUMMARY AND NOTIFICATION PROCEDURES

Appendix A-1 EAP Overview – The 5-Step Process
Appendix A-2 Guidance for Determining the Emergency Level

APPENDIX B

AT-RISK HAZARDS AND FLOOD INUNDATION ZONE

Appendix B-1 Location and Breach Maps
 Figure B-1A North Double Breach Aerial Map
 Figure B-1B North Double Breach Topography Map
 Figure B-2A Northwest Breach Aerial Map
 Figure B-2B Northwest Breach Topography Map
 Figure B-3A East Breach Aerial Map
 Figure B-3B East Breach Topography Map

APPENDIX C

FORMS AND EVENT LOGS

Appendix C-1 Contact Checklist
Appendix C-2 Unusual or Emergency Event Log Form
Appendix C-3 Dam Emergency Situation Report Form
Appendix C-4 Glossary of Terms

APPENDIX D

CALCULATION PACKAGE

Appendix D-1 Breach Inundation Calculation Package

APPENDIX E

Sensitive Area Summary

HOLDERS OF CONTROL COPIES

Copy Number	Organization	Person receiving copy	Concurrence Signature & Date*
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

* By my signature, I acknowledge that I, or my representative, have reviewed this plan and concur with the tasks and responsibilities assigned herein for me and my organization.

RECORD OF AMENDMENTS & REVISIONS

Revision Number	Description	Revisions Made by	Reviewed	Approved	Date
0	Initial Plan Preparation	LS / JDG	LS	KSB	4/14/2022

REVIEWED BY:

Name - Discipline	Initials	Date
Kevin S. Brown, PE – Golder Associates USA	KSB	4/14/2022
Lizmarie Steel, PE – Golder Associates USA	LS	4/14/2022
James Grimes, PE Golder Associates USA	JDG	4/14/2022

1.0 EMERGENCY ACTION PLAN DEVELOPMENT AND REGULATORY REQUIREMENTS

The United States Environmental Protection Agency's (EPA) "Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments" Final Rule (40 C.F.R. Part 257, Subpart D) (CCR Rule) requires the owner or operator of an existing or new CCR surface impoundment to prepare and maintain a written Emergency Action Plan (EAP) for CCR surface impoundments classified as a high or significant hazard potential CCR surface impoundment in accordance with 40 C.F.R. § 257.73. The EAP must be reviewed and approved by a professional engineer to certify the plan meets the requirements of the Federal CCR rule.

On October 15, 2021, the hazard classification for the Gulf Clean Energy Center (GCEC) Gypsum Storage Area (GSA) Cell #2 was revised to a significant hazard potential during a periodic hazard potential classification update. The change in hazard classification was based on the unlikely scenario of an embankment failure which could result in potential environmental impacts offsite. Per 40 C.F.R. § 257.73(a)(3)(iii)(B), a CCR EAP must be prepared whenever there is a change in the hazard classification from a low hazard potential to a significant or high hazard potential. The change in hazard classification required preparation of the following written GSA CCR EAP within six months of completing the hazard assessment update.

The breach analysis performed as part of development of the EAP indicated that no off-site evacuations or roadway closures would be required under the three scenarios considered. The breach analysis was performed assuming the water level in GSA Cell #2 was at the designed full pool capacity; however, the water levels in the pond are currently maintained at a lower level now that the facility has ceased coal-fired operations and no longer routes industrial wastewater to the pond. The GSA is undergoing engineering design evaluation for closure by removal of CCR while gypsum is being reclaimed from GSA Cell #2 for beneficial reuse. Closure is scheduled to begin once gypsum removal is complete.

2.0 STATEMENT OF PURPOSE

The purpose of this plan is to define the responsibilities and procedures to identify conditions for the GCEC GSA Cell #2 unit and embankments which may endanger plant facilities and downstream areas in the unlikely event of embankment failure in order to take mitigative actions and notify the appropriate emergency management officials and plant personnel of a potential or actual failure of the unit embankments. The objectives of the plan are:

- To identify conditions which could lead to an embankment failure in order to initiate measures which could prevent or minimize the potential for personnel injury and damage to property.
- To provide an outline of pre-planned coordination between Florida Power & Light Company (FPL) and emergency management officials in the event of an emergency condition at the GSA. The plan will define responsible personnel and their respective duties.
- To provide notification procedures and contact information for timely notification of an emergency condition at the GSA to FPL personnel, responding agencies, and contractor support teams.
- To provide inundation maps to assist emergency management officials in preparing notification and evacuation plans.
- To provide provisions for an annual face-to-face meeting or exercise between FPL personnel and local emergency responders.

This plan is intended to provide a coordinated and effective emergency response. It is essential that the proper organizations and agencies be notified on a timely basis so that the properly trained personnel can effectively perform the functions that they are most qualified to undertake.

3.0 SITE DESCRIPTION

The GCEC GSA Cell #2 is located approximately 12 miles north of Pensacola, Florida within the FPL GCEC generation facility. The unit is a manmade 15.5-acre lined gypsum storage pond that no longer receives CCR following the facility ceasing coal fired operations in October 2020. The GSA is undergoing engineering design evaluation for closure by removal of CCR while gypsum is being reclaimed from Cell #2 for beneficial reuse. Closure is scheduled to begin once gypsum removal is complete

The embankments of GCEC GSA Cell #2 are formed by perimeter dikes, consisting of locally borrowed, compacted soils of the Gulf Coastal Plain Geologic Province generally consisting of dense silty sands. The subsurface near the perimeter berms of GCEC GSA Cell #2 consists of the following major layers:

- Clayey Soils
- Organic Clayey Soils
- Clayey and Silty Sands
- Clayey Soils (in select areas)
- Silty Sands
- Limestone

The embankments were originally constructed using compacted structural fill, founded on stable foundation soils. The downstream embankment slopes are vegetated and well maintained, with CCR within the lined slopes on the interior slopes, and grassy vegetation with some riprap and gravel for erosion control as needed on exterior slopes. GSA Cell #2 is not operated in a manner to normally be subject to wave action or rapid drawdown.

GSA Cell #2 was originally designed with the following discharge structures:

- A stop-log riser structure that flows into a 30-inch diameter HDPE pipe via penetration of the bottom liner at the base of the facility and continuing into a 48-inch diameter pipe toward the Sedimentation Pond. The 30-inch diameter HDPE pipe is located beneath the liner surface and does not penetrate the exterior embankment.
- A box culvert flowing into the Sedimentation Pond

There are no pipes that penetrate any of the exterior embankments. The water levels within GSA Cell #2 are maintained such that there is adequate storage to manage the inflow during the 1,000-year, 24-hr design storm event.

There is a low probability of inundation of the downstream slopes of the embankment due to surge from tropical storms. Currently, the embankment is protected from erosion in the event of inundation by vegetative cover at the downstream toe of the embankment. Portions of the lower embankment along the northwest and northern boundaries are also protected with rip rap.

The GCEC Sedimentation Pond is located directly north of GSA Cell #2, and a separate return water pond is located northeast of GSA Cell #2. Each of these three ponds is connected through pumps and spillway systems in order to provide for facility water resource, water treatment, and material storage needs.

3.1 Unit Details

GENERAL INFORMATION

Name of Dam:	Gulf Clean Energy Center Gypsum Storage Area Cell #2		
State ID:	N/A		
Location Address:	11999 Pate Street, Pensacola, FL 32514		
Longitude:	-87.233 Degrees	Latitude:	30.569 degrees
Design Classification:	N/A		
Current Classification:	Significant Hazard		
Year Built:	2008	Modification:	N/A
Dam Designer:	Southern Company Services	Purpose:	Industrial

OWNER/ OPERATOR INFORMATION

Dam Owner/Operator: Florida Power & Light Company

EMBANKMENT INFORMATION

Embankment Type:	Earth Fill	Dam Height Low Point:	49.3	feet
Crest Width:	Varies	Crest Length:	Ring dike	
Upstream Slope:	2:1 (h:v)	Downstream Slope:	2:1	(h:v)

RESERVOIR AND WATERSHED INFORMATION

Normal Pool Elevation:	37.3 feet-msl	Pool Area:	3.4 acres	Volume:	10.2 acre-feet
TOD Crest Elevation:	49.3 feet-msl	TOD Area:	17.3 acres	Volume:	156.1 acre-feet
Toe Elevation:	31.3 feet-msl				

SPILLWAYS

Principal Spillway:	30" HDPE
Auxiliary Spillway:	CD7' x 5' Box Culvert into the Sedimentation Pond
Low Level Drain:	N/A

3.2 Regional Topography

The GCEC GSA Cell #2 is a ring dike style gypsum storage pond. The topography of the areas to the South and Southeast of the pond lie at a higher elevation compared to the pond. The areas surrounding the GSA Cell #2 to the north and northwest are situated at a lower elevation compared to the pond.

The surrounding terrain varies from approximately 15 ft-msl in areas immediately north of the pond to 55 ft-msl in areas immediately south of the pond.

3.3 Area Development

The Gulf Clean Energy Center GSA Cell #2 is located in the northeast area of the Gulf Clean Energy Center generation facility. Plant facility buildings and generation facilities are located southeast of GSA Cell #2.

Undeveloped areas consisting of the floodplains of the Escambia River are located to the north and northwest of GSA Cell #2.

4.0 NOTIFICATION FLOWCHART AND EAP PROCESS

Implementation of this GSA Cell #2 EAP will occur for either an **ACTUAL** or **POTENTIAL** failure condition of the unit or for an unusual occurrence that requires immediate attention. It is intended that the following notification charts be used for any conditions at GSA Cell #2 which are considered to be emergency conditions or potentially dangerous to the safe operation of the unit. Notifications shall be made as outlined in order to minimize the potential for personnel injury and impact to structures and property within the potential inundation area. It is the responsibility of those on the contact list to understand their role when the EAP has been activated.

The flow charts in this Section are designed to make notifications to key personnel for either an **ACTUAL** or **POTENTIAL** failure condition. The charts shall be prominently displayed at the GCEC control rooms, the administration building, and the fuel handling building.

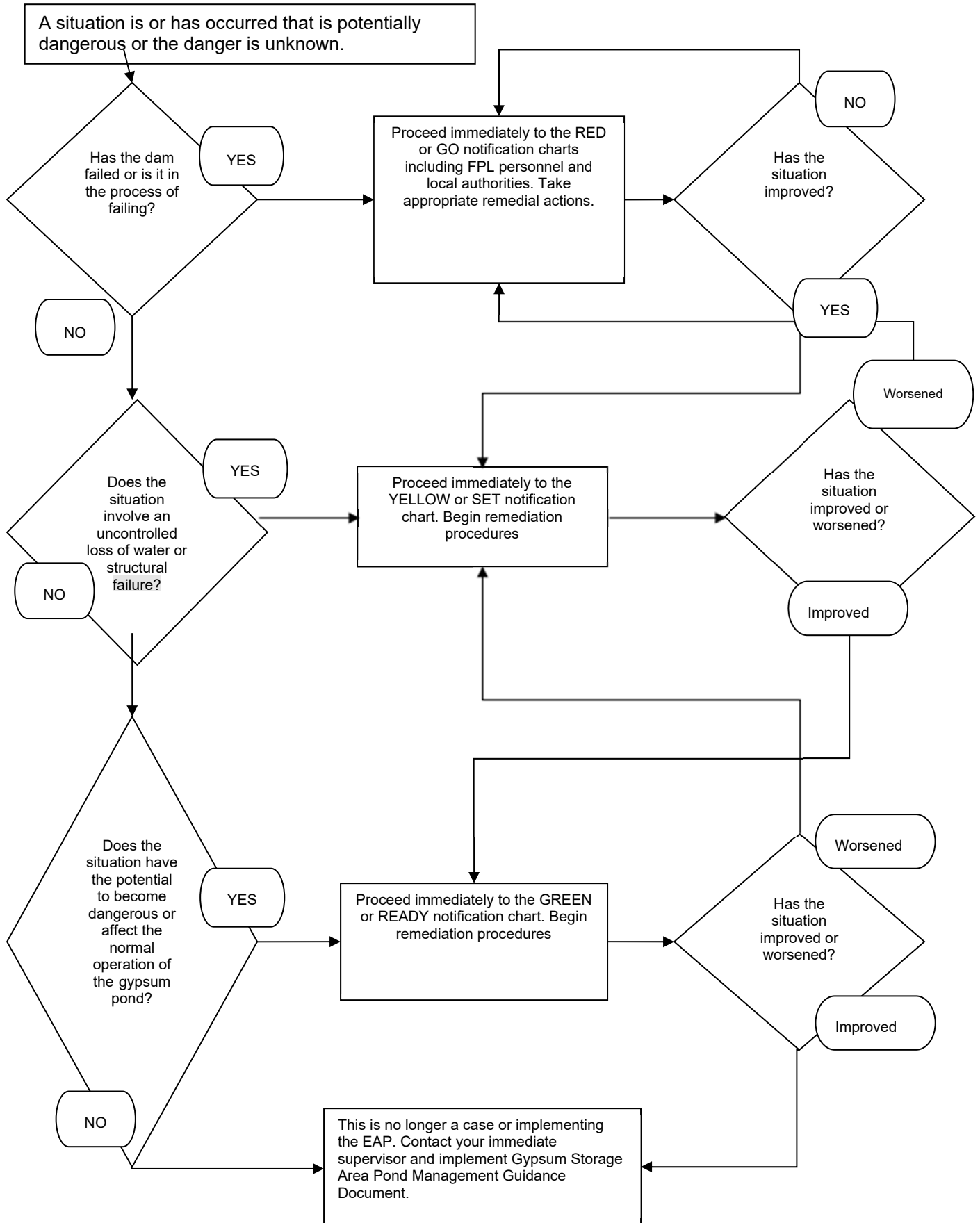
The flow charts indicate the sequence and priority for the notification process in the event of an emergency condition. If a situation has arisen and the degree of severity of the emergency is not immediately known, turn to the decision flow chart on the next page. The flow charts are designed to follow the READY, SET, GO philosophy; the purpose of this design is to provide the appropriate level of action for a given situation to prevent personnel injury and property damage.

For a **FAILURE IN PROGRESS OR ALREADY OCCURRED** turn to the **RED** or **GO** notification flow chart.

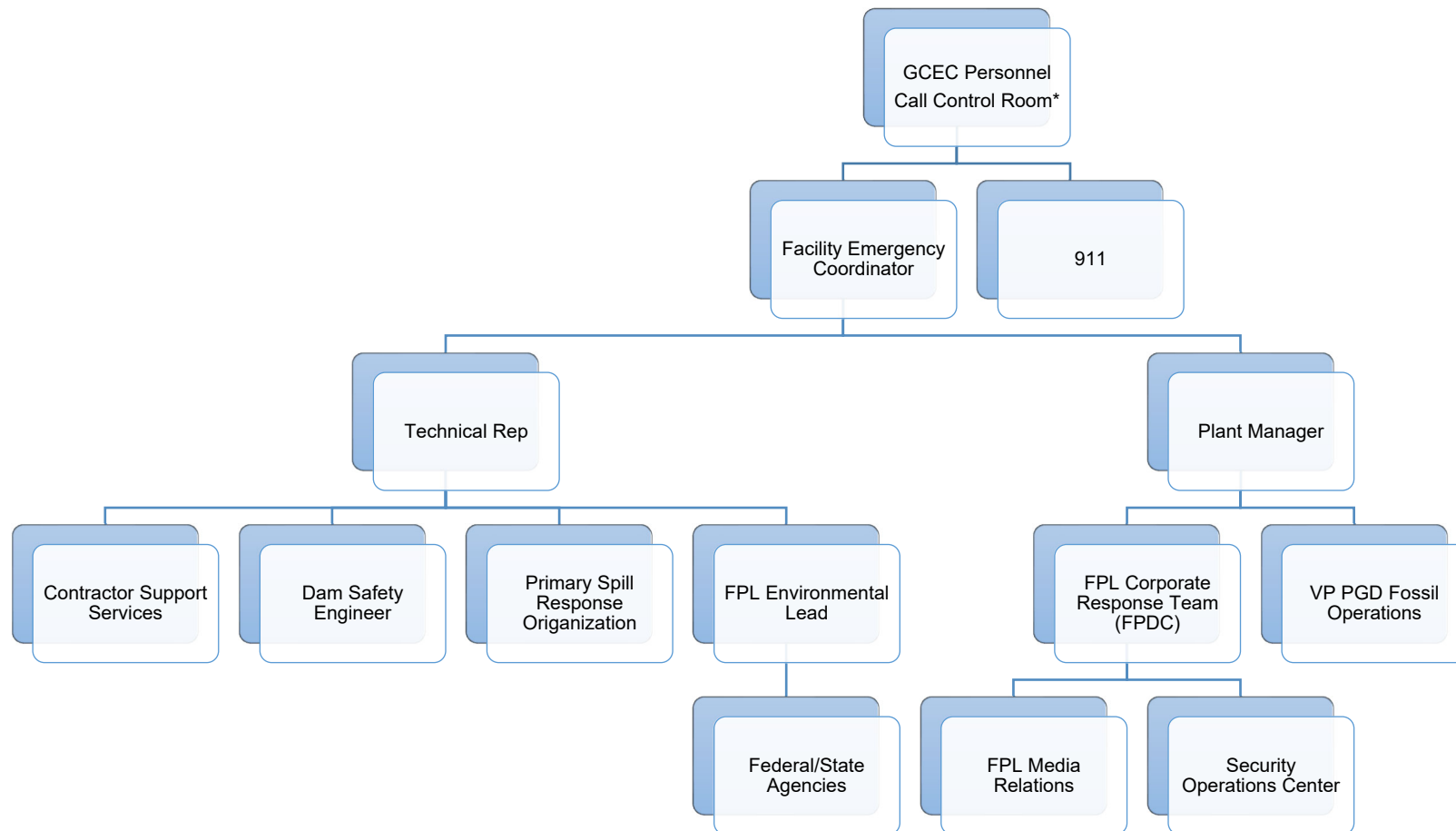
For a **POTENTIAL FOR IMMEDIATE FAILURE** turn to the **YELLOW** or **SET** notification flow chart.

For an **UNUSUAL OR POTENTIALLY DANGEROUS SITUATION** turn to the **GREEN** or **READY** notification chart.

For additional guidance, refer to the GCEC Gypsum Storage Area Pond Management Guidance Document.



Emergency Contact List Gulf Clean Energy Center Gypsum Storage Area Cell #2 Condition “RED” or “GO”



*The control room will notify the FPL Corporate Response Team (FPDC) if the Plant Manager and Facility Emergency Coordinators are not available to make required notifications. The Control Room will also call the Plant Manager and Technical Representative if they are unable to reach the Facility Emergency Coordinators.

Emergency Contact List Gulf Clean Energy Center

Gypsum Storage Area Cell #2

Condition “RED” or “GO”

Alternate Contacts

1. Potential Off-Site Impacts

Businesses

Economic areas of concern within the Escambia River and Pensacola Bay System primarily consist of the Port of Pensacola, marinas, barge traffic and recreation and commercial fishing. There are no downstream businesses located within the modeled breach impact area. The University of West Florida is located southeast of the GCEC. Rural areas and suburban development exist south and west of the GCEC. Ascend Performance Materials, Cerex Advanced Fabrics, Huntsman Company, and Exxon Mobil Chemical are located approximately 3.6 miles northwest of GCEC. Since these companies are located upriver, these businesses are unlikely to be directly affected by a breach from GSA Cell #2

Barges are frequently used on the Escambia River to bring chemicals to the industrial facilities located north of the GCEC.

The Escambia Bay and River System is considered a valuable natural resource, the waters of which are used for commercial harvesting of shellfish (crabs, oysters, and shrimp), recreational fishing, bathing and boating activities. There is at least one public beach on Escambia Bay and there are other sites that also have sandy shores suitable for beach activities.

Fish and Wildlife

Information regarding the type of fish and wildlife located within the modeled breach impact area is presented in the Environmentally Sensitive Area summary provided in Appendix E for reference. The Environmentally Sensitive Area summary discusses the types of coastal birds, fish, invertebrates, marine mammals, shoreline habitats, aquatic vegetation, threatened and endangered species, aquatic preserves, and conservation lands in the Pensacola Bay System.

2. Available Contractor Support Services

Civil and Liner Contractors

Roberson Excavation -6013 Southridge Road, Milton, FL: 850-626-9911

WDR Mechanical Contractors-3018 N. Davis Highway, Pensacola, FL: 850-432-0160

CBP Environmental -1928 Executive Park Drive, Statham GA: 770-725-7400

Atlantis Commercial Group-4085 Riverside Drive, Douglasville, GA: 404-437-7802

Environmental Response and Remediation Contractors

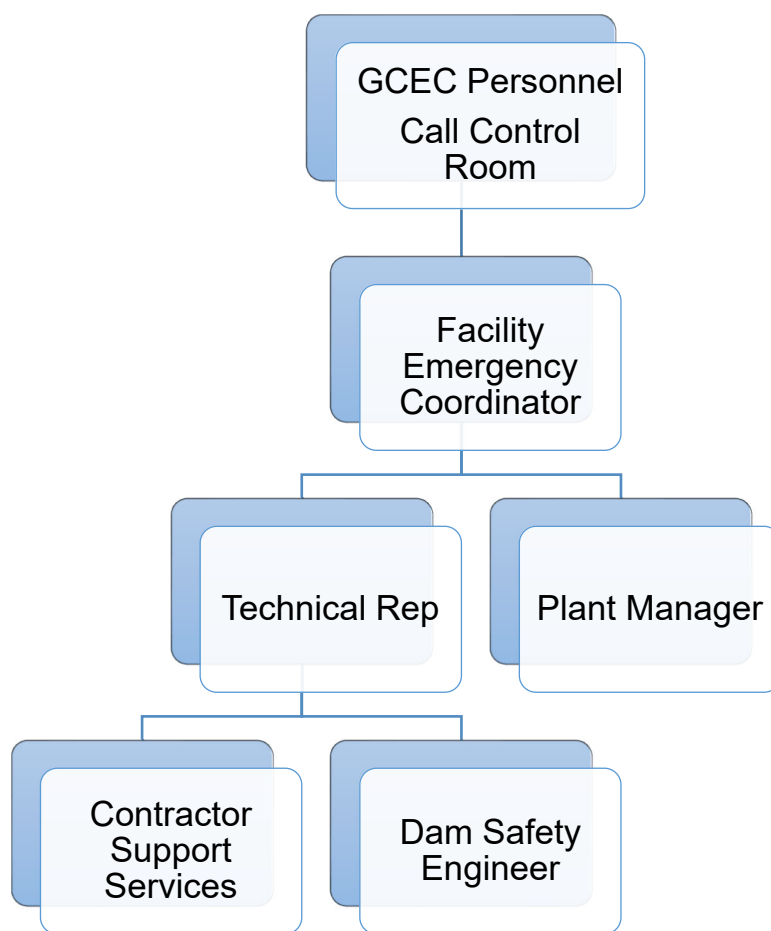
NRC / US Ecology: **(800) 899-4672** or (877) 742-4215 (24 HR)
1783 W 9 Mile Road Pensacola, FL

E3 Environmental: (844) 333-0939 (24 HR)
9361 Hamman Avenue, Pensacola, FL

3. Local Environmental Agencies

FDEP State Watch Office	2555 Shumard Oak Blvd., Tallahassee, FL 32399	1-800-320-0519 (24 hours)
FDEP Pensacola Office	160 West Government Street, Suite 308 Pensacola, FL 32502	850-595-8300
Florida Department of Health (Escambia County)	1300 West Gregory Street Pensacola, FL 32502	850-595-6700 ext. 2004
Northwest Florida Water Management District	81 Water Management Drive Havana, FL 32333	850-539-5999

Emergency Contact List Gulf Clean Energy Center Gypsum Storage Area Cell #2 Condition “YELLOW” or “SET”



*The control room will notify the Plant Manager and Technical Representative if the Facility Emergency Coordinators are not available.

Emergency Contact List Gulf Clean Energy Center Gypsum Storage Area Cell #2 Condition “YELLOW” or “SET” Alternate Contacts

1. Potential Off-Site Impacts

Businesses

Economic areas of concern within the Escambia River and Pensacola Bay System primarily consist of the Port of Pensacola, marinas, barge traffic and recreation and commercial fishing. There are no downstream businesses located within the modeled breach impact area. The University of West Florida is located southeast of the GCEC. Rural areas and suburban development exist south and west of the GCEC. Ascend Performance Materials, Cerex Advanced Fabrics, Huntsman Company, and Exxon Mobil Chemical are located approximately 3.6 miles northwest of the GCEC. Since these companies are located upriver, these businesses are unlikely to be directly affected by a breach from GSA Cell #2.

Barges are frequently used on the Escambia River to bring chemicals to the industrial facilities located north of the GCEC.

The Escambia Bay and River System is considered a valuable natural resource, the waters of which are used for commercial harvesting of shellfish (crabs, oysters, and shrimp), recreational fishing, bathing and boating activities. There is at least one public beach on Escambia Bay and there are other sites that also have sandy shores suitable for beach activities.

Fish and Wildlife

Information regarding the type of fish and wildlife located within the modeled breach impact area is presented in the Environmentally Sensitive Area summary provided in Appendix E for reference. The Environmentally Sensitive Area summary discusses the types of coastal birds, fish, invertebrates, marine mammals, shoreline habitats, aquatic vegetation, threatened and endangered species, aquatic preserves, and conservation lands in the Pensacola Bay System.

2. Available Contractor Support Services

Civil and Liner Contractors

Roberson Excavation -6013 Southridge Road, Milton, FL: 850-626-9911

WDR Mechanical Contractors-3018 N. Davis Highway, Pensacola, FL: 850-432-0160

CBP Environmental -1928 Executive Park Drive, Statham GA: 770-725-7400

Atlantis Commercial Group-4085 Riverside Drive, Douglasville, GA: 404-437-7802

Environmental Response and Remediation Contractors

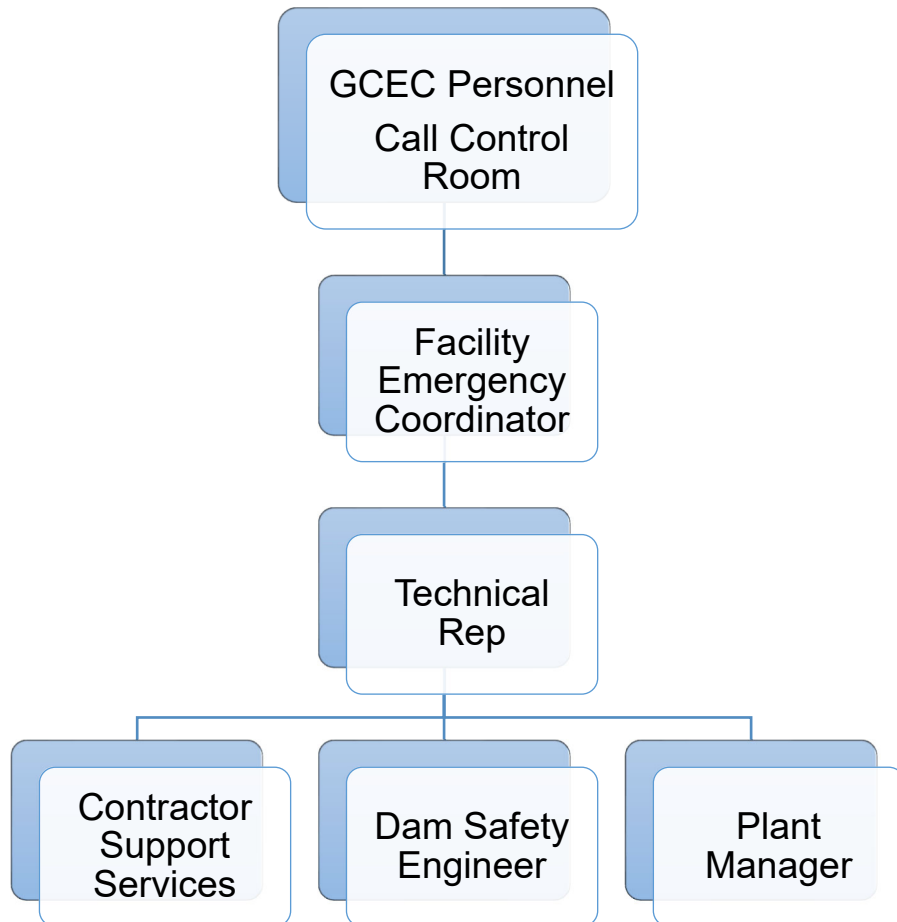
NRC / US Ecology: **(800) 899-4672** or (877) 742-4215 (24 HR)

1783 W 9 Mile Road Pensacola, FL

E3 Environmental: (844) 333-0939 (24 HR)

9361 Hamman Avenue, Pensacola, FL

Emergency Contact List Gulf Clean Energy Center Gypsum Storage Area Cell #2 Condition “GREEN” or “READY”



*The control room will notify the Technical Representative if the Facility Emergency Coordinators are not available to make required notifications.

Emergency Contact List Gulf Clean Energy Center Gypsum Storage Area Cell #2 Condition “GREEN” or “READY” Alternate Contacts

1. Available Contractor Support Services

Civil and Liner Contractors

Roberson Excavation -6013 Southridge Road, Milton, FL: 850-626-9911

WDR Mechanical Contractors-3018 N. Davis Highway, Pensacola, FL: 850-432-0160

CBP Environmental -1928 Executive Park Drive, Statham GA: 770-725-7400

Atlantis Commercial Group-4085 Riverside Drive, Douglasville, GA: 404-437-7802

Environmental Response and Remediation Contractors

NRC / US Ecology: **(800) 899-4672** or (877) 742-4215 (24 HR)
1783 W 9 Mile Road Pensacola, FL

E3 Environmental: (844) 333-0939 (24 HR)
9361 Hamman Avenue, Pensacola, FL

4.1 The Five Step EAP Process

The EAP process is broken down into 5 steps detailed below and shown in the following flow chart:

- Step 1 – Event Detection: A person at, or downstream of the embankment sees a situation developing at the dam. The Control Room is notified and then contacts the on-site Facility Emergency Coordinator. The control room will notify the Plant Manager and Technical Representative if the Facility Emergency Coordinators are not available.
- Step 2 – Emergency Level Determination: The Facility Emergency Coordinator with support from the on-site Technical Representative investigates the situation and assigns an emergency level.
- Step 3 – Notification and Communication: The control room will make calls to Emergency 911 if needed and will notify the FPL Corporate Response Team (FPDC) if the Plant Manager and Facility Emergency Coordinator are not available to make required notifications. The Facility Emergency Coordinator makes the appropriate calls to the Plant Manager who will serve as the Site Leader and Incident Commander. The Technical Representative will contact Contractor Support Services, the Dam Safety Engineer, FPL Environmental Lead, and the Primary Spill Response Organization representatives, as appropriate. The Environmental Lead will notify the Florida Department of Environmental Protection, Florida Dam Safety Program (NFWFMD), and the Florida Department of Health in Escambia County as required.
- Step 4 – Emergency Actions: Appropriate steps are taken by the Facility Emergency Coordinator, Incident Commander, Technical Representative, and other responders for on-site evacuation of the breach zone and to initiate mitigative measures.
- Step 5 – Termination and Follow-up: The situation is stabilized, and notifications are made to stand down. A root cause investigation is performed. The embankment is to be regularly monitored and inspected.

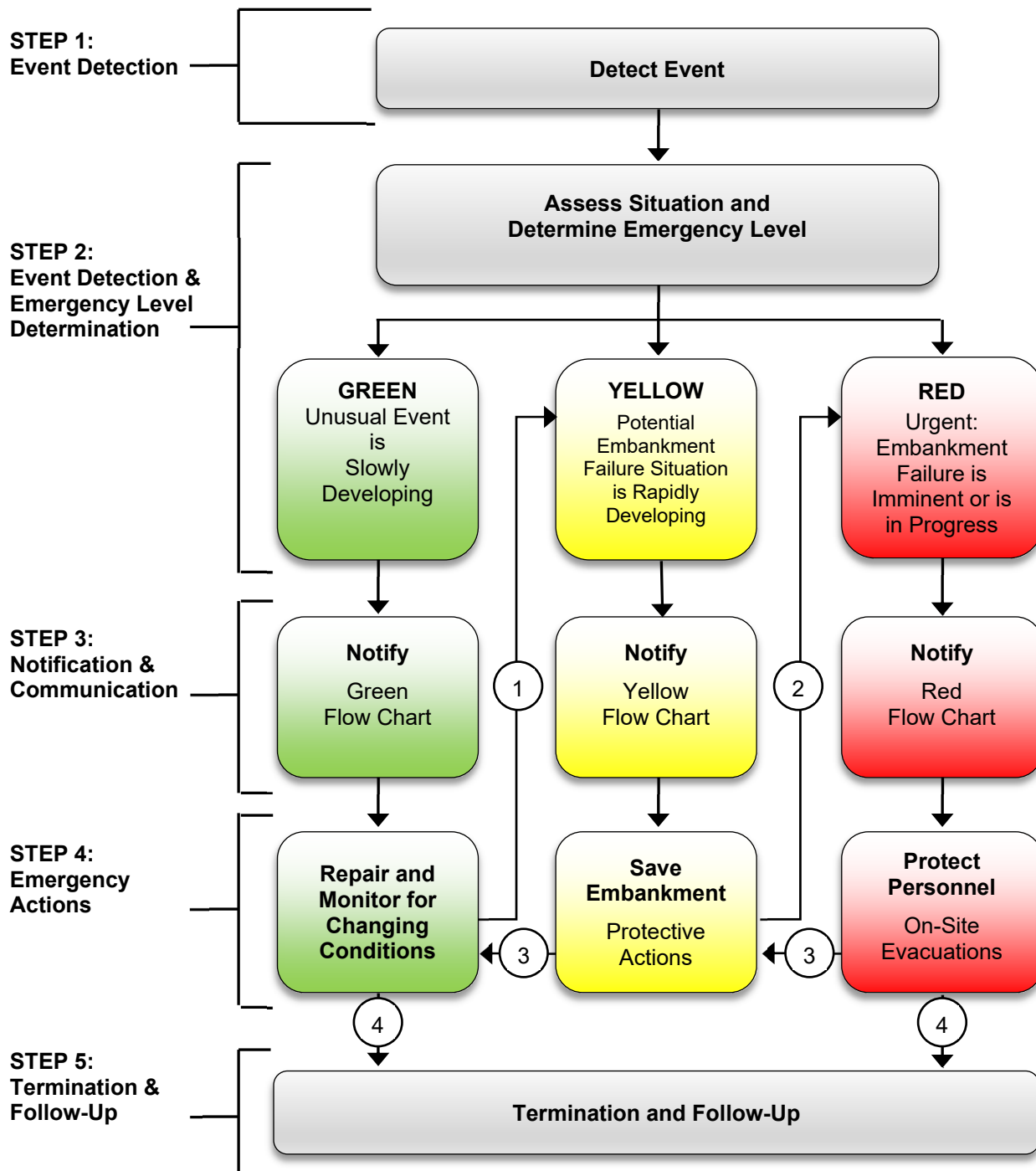


Figure 1: 5-Step EAP Process

- 1) If the situation continues to develop, initiate Yellow Level.
- 2) If protective actions fail, or situation develops further, initiate Red Level.
- 3) As the situation improves, downgrade the emergency level.
- 4) Terminate EAP once the situation is stabilized. Follow-up with monitoring and incident analysis.

4.1.1 STEP 1 – Event Detection and Initial Notification

This step describes the detection of an unusual or emergency event and provides information to assist the Plant Manager and Facility Emergency Coordinator in determining the appropriate emergency level for the event.

The observer of a dam safety event shall immediately contact the Control Room who will then notify the Facility Emergency Coordinator. If at any time any individual (facility employee or a dam inspector) sees the embankment is failing, the Control Room should call Emergency 911 dispatch immediately and the FPL Corporate Response Team (FPDC).

Regular and routine embankment inspections are an integral part of early detection of emergency events. The embankment shall be inspected at a minimum as required by EPA's CCR Rule. All maintenance and other staff regularly on site should be encouraged to routinely observe the dam and report any deficiencies identified.

An unusual or emergency event requiring activation of this EAP may be detected by:

- Observations of the embankment by on-site personnel working in the area or during regular inspections.
- Observations of changes in flow downstream not associated with a rainfall event.
- Earthquakes felt or reported in the vicinity of the dam, followed up by an inspection of the embankment by a competent person trained in identifying dam deficiencies or the Technical Representative.

Reference: <http://earthquake.usgs.gov/earthquakes/map/>

- Prediction of severe weather by the issuance of a tropical storm warning, hurricane warning, or other severe weather warning by the National Weather Service when the water levels of the unit are already at a heightened level.

Reference: <http://www.weather.gov/>

- A high-intensity rainfall over a short duration of time, or a large accumulation of rainfall over a long duration of time such as a 100-year return period rainfall depth, followed by an inspection of the embankment by a competent person trained in identifying dam deficiencies or the Technical Representative.

Reference: <http://water.weather.gov/precip/>

4.1.2 Step 2 Emergency Level Determination

Upon detecting a potential failure event, the incident observer shall immediately contact the Control Room who will then notify the Facility Emergency Coordinator. With the assistance from the Technical Representative, the Facility Emergency Coordinator shall classify the event into one of the following emergency levels and initiate the EAP.

- **GREEN** Event – Nonemergency, an unusual event is slowly developing
- **YELLOW** Event – A potential dam failure situation is rapidly developing
- **RED** Event – Urgent, dam failure appears imminent or is in progress

4.1.3 STEP 3 – Notification and Communication

After the Facility Emergency Coordinator determines the emergency level, personnel identified on the notification charts for either a GREEN, YELLOW, or RED emergency level shall be notified immediately.

4.1.4 Step 4 – Expected Actions

If the Control Room receives a call regarding observations of an unusual or emergency event at the dam, or unexpected increased flows in the stream west (downstream) of the embankment or in the Sedimentation Pond downstream of the embankment, they should immediately contact the Facility Emergency Coordinator. After the Facility Emergency Coordinator or their designee reports to the site and determines the emergency level, the following actions should be taken.

4.1.4.1 GREEN Event – Nonemergency, An Unusual Event is Slowly Developing

- 1) The Technical Representative or their designee shall report to the site and immediately identify the potential hazards of the situation and restrict access to the embankment and remove all persons and vehicles from the property in the vicinity of the potential inundation zones north-northwest of the GSA access roads, including GSA Cell #2, Sedimentation Pond, and Return Water Pond access roads, if necessary.
- 2) The Technical Representative or their designee shall inspect the embankment to familiarize themselves with the situation, to confirm the situation is stable, and to identify the affected components of the embankment. As safe access permits, inspect the full length of the upstream slope, crest, downstream slope and toe. Inspect the spillways to ensure they are functioning appropriately. Extreme caution should be exercised in approaching any potentially unstable areas or areas with high velocity flow. Rope off or place barriers around areas that are unsafe.

The Technical Representative should contact the Plant Manager to communicate the findings of the initial inspection and request that the appropriate technical staff reinspect the embankment, investigate the situation, and recommend corrective actions. The Technical Representative should contact the Dam Safety Engineer for technical consultation and engage contractor support services if needed. Environmental Services should be notified of releases to the environment from the GSA.

- 3) Record all contacts that were made on the Contact Checklist (Appendix C-1). Record all information, observations, and actions taken on the Event Log Form (Appendix C-2). Note the time of changing conditions. Document the situation with photographs and video, if possible.
- 4) **If at any time increased seepage, erosion, cracking, settlement, or damage to geomembrane liner is observed, immediately report the observed conditions to the Technical Representative and refer to this EAP for guidance in determining the appropriate event level for the new condition and recommended actions.**

4.1.4.2 YELLOW Event – A Potential Dam Failure Situation is Rapidly Developing

- 1) The Plant Manager or designated Facility Emergency Coordinator shall report to the site and immediately restrict access to the embankment and remove all persons from the property in the vicinity of the potential inundation zones north-northwest of the GSA access roads, including GSA Cell #2, Sedimentation Pond, and Return Water Pond access roads. Vehicles should only be removed from the property if doing so would not put people at risk or aggravate the situation by placing undue stress on the dam. No persons, including the Facility Emergency Coordinator, should approach potentially unstable areas of the dam. Rope off or place barriers around areas that are unsafe.
- 2) The Facility Emergency Coordinator should contact and inform the Control Room that the EAP has been activated, and if current conditions get worse, an emergency situation may require on-site evacuation. Preparations should be made for possible on-site access road closures and evacuations.

- 3) The Facility Emergency Coordinator should contact the Technical Representative to report the situation and, if time permits, request technical staff to investigate the situation and recommend corrective actions. When time permits, the Technical Representative should contact the Dam Safety Engineer for technical consultation and engage contractor support services. Environmental Services should be notified of releases from the GSA to the environment.
- 4) If possible, from a point of safety, the Facility Emergency Coordinator should mobilize the appropriate personnel and equipment to lower the unit water and/or gypsum level. The first priority should be to the safety of those working on and around the embankment. Only after their safety is ensured, should workers begin to repair and stabilize the embankment.
- 5) Provide updates to the Plant Manager or designees to assist in making timely decisions concerning the need for warnings, on-site access road closures, and on-site evacuations.
- 6) Record all contacts that were made on the Contact Checklist. Record all information, observations, and actions taken on the Event Log Form. Note the time of changing conditions. Document the situation with photographs and video, if possible.
- 7) **If at any time the condition is found to be deteriorating, or an uncontrolled release of water appears imminent or is initiating, activate RED Emergency Level and contact the Control Room to call 911.**

4.1.4.3 *RED Event – Urgent; An Embankment Failure Appears Imminent or Is in Progress*

- 1) The Control Room shall immediately notify the Emergency Coordinator and call Emergency 911 Services. The Emergency Coordinator will then notify the Technical Representative and Plant Manager to notify others shown on the RED notification chart for immediate on-site evacuation of the downstream breach inundation zone as shown on the figures in Appendix B. The control room will notify the FPL Corporate Response Team (FPDC) if the Plant Manager and Facility Emergency Coordinator are not available to make required notifications. The Control Room will also call the Plant Manager and Technical Representative if they are unable to reach the Facility Emergency Coordinators.
- 2) On-site evacuation of all persons within the breach inundation zone shall be conducted. No persons, including the Facility Emergency Coordinator, should approach potentially unstable areas of the dam even to remove vehicles and heavy equipment from the dam and downstream areas.
- 3) The responding emergency agency (fire or sheriff) shall assign an Incident Commander to lead the efforts and carry out public warnings, and waterway closures of downstream inundation zone as shown on the figures in Appendix B.
- 4) The responding emergency agency shall alert the public in the impacted areas and implement any waterway closures that may be required.
- 5) The Facility Emergency Coordinator and the Incident Commander shall maintain continuous communication.
- 6) The Facility Emergency Coordinator should record all contacts that were made on the Contact Checklist. Record all information, observations, and actions taken on the Event Log Form. Note the time of changing conditions. Document the situation with photographs and video, if possible.

4.1.4.4 Emergency Remedial Actions

The primary goal in a RED Level emergency is to ensure the safety of people on-site near and within the breach zone. All personnel should be removed from the embankment and positioned on high ground to observe the situation. If time permits during GREEN or YELLOW Emergency Level conditions, the following emergency remedial actions should be considered. Implementation of these remedial actions may delay, moderate, or prevent the failure of the embankment. Several of the listed adverse or unusual conditions may be apparent at the embankment at the same time, requiring implementation of several modes of remedial action. Close monitoring of the embankment must be maintained to confirm the success of any remedial action taken at the embankment. Any remedial action should be developed and executed through consultation with the Technical Representative with support from the Dam Safety Engineer, as needed. See alternate contacts lists for sources of equipment and materials to assist with remedial actions.

4.1.4.4.1 Failure or Blockage of Spillway

- 1) If the blockage cannot be safely accessed and dislodged, first lower the water levels using pumps or siphons below the level of the inlet to prevent inflow into the spillway.
- 2) Inspect the spillway inlets and outlets for potential blockage, collapse or other damage.
- 3) Ensure the auxiliary spillway remains functional in the event the principal spillway cannot be cleared.

4.1.4.4.2 Embankment Overtopping

- 1) If the water level nears or overtops the embankment crest, provide additional discharge capacity using pumps or siphons.
- 2) Place sandbags along the low areas of the top of the embankment to control wave action and to reduce the likelihood of flow overtopping should the water levels continue to rise.

4.1.4.4.3 Seepage and Sinkholes

- 1) Prevent vehicles and equipment from driving between the seepage exit points and the embankment to avoid potential loss from the collapse of an underground void.
- 2) Lower the water level with pumps or siphons to a level that stops or decreases the seepage to a non-erosive velocity.
- 3) Cover the seepage exit area with a reverse filter consisting of layers of sand and gravel to hold fine-grained embankment or foundation materials in place. Alternatively, construct sandbag or other types of ring dikes around the seepage exit areas to retain a pool of water, providing backpressure and reducing the erosive nature of the seepage, in case of deterioration of the geomembrane liner.
- 4) If the entrance to the seepage origination point is observed in the unit (possible whirlpool) and is safely accessible, attempt to reduce the flow by plugging the entrance with readily available materials such as hay bales, bentonite, soil or rockfill, plastic sheeting, or geomembrane.

4.1.4.4.4 Embankment Movement or Settlement

- 1) Prevent vehicles and heavy machinery from driving on the crest in the vicinity of the unstable material.
- 2) Lower the water level to a safe level with pumps or siphons at a rate commensurate with the urgency and severity of the condition of the slide or slump.

- 3) Stabilize slides by placing a soil, rock or gravel buttress against the toe of the slide.
- 4) Place sandbags at the crest to restore a lowered dam crest provided the increased weight won't further destabilize the slope.

4.1.4.4.5 Malicious Human Activity (Sabotage, Vandalism or Security Breach)

- 1) If malicious human activity occurs or is suspected that could endanger public safety, contact FPL Security to help evaluate the situation. FPL Security will request support from local law enforcement as needed.
- 2) If the dam and property is safe to approach, evaluate the situation and refer to the sections of this EAP related to the effect of the malicious action.

4.1.5 Step 5 – Termination

Once all EAP actions have been completed and the situation stabilized, either through repair of the structure or release of the reservoir, the EAP operations can be terminated and follow-up procedures implemented. EAP operations can only be terminated when under a GREEN Level event after the situation is stabilized, or under a RED Level emergency, after the reservoir is lowered or released downstream. If under a YELLOW Level emergency, a GREEN Level event or RED Level emergency must be declared first.

The Facility Emergency Coordinator may terminate a GREEN Level event once the situation is stabilized and after consulting with the Technical Representative.

The Incident Commander may terminate a RED Level emergency once the inundation zone has been secured and after consulting with the Facility Emergency Coordinator that the water level has been lowered and the site is stable. Following termination of a RED Level emergency, follow-up including contacting the Technical Representative and/or Dam Safety Engineer of Record for Post Termination Activities should begin within two (2) days.

It is then the responsibility of the Facility Emergency Coordinator to notify the same group of contacts that were notified during the original event notification process to inform those people that the event has been terminated.

4.1.5.1 Post Termination Activities

The Escambia County Sheriff should coordinate with the appropriate state or county agency to inspect affected downstream areas to determine if any damage has been sustained as a result of the dam failure.

The Technical Representative with support from the Dam Safety Engineer shall fully inspect the dam once it is stabilized to determine if the incident caused additional damage that could potentially threaten the safety of the dam.

The Facility Emergency Coordinator shall complete the Dam Emergency Situation Report to document the emergency event and all actions that were taken. The EAP Coordinator shall distribute copies of the completed report to all parties involved, including Escambia County Emergency Management, if applicable. Note that, if in the event of a GREEN Level event initiation, it is determined that the EAP is not required to be activated, a Dam Emergency Situation Report is not required as described above.

Once the dam is fully stabilized and clean-up activities complete, the Plant Manager and Facility Emergency Coordinator, with the assistance of the Technical Representative and Dam Safety Engineer should complete a

root-cause investigation to help determine the appropriate means of rehabilitation and management of the dam in the future to avoid the situation from reoccurring.

5.0 EMERGENCY DETECTION, EVALUATION, AND CLASSIFICATION

5.1 Emergency Detection

GCEC GSA Cell #2 is a manned facility. Operations staff located at the GCEC inspect the GSA, its spillway systems, embankments and related facilities in accordance with the procedures outlined in the O&M Plan for the GSA. Data collected during the inspections are reviewed on a regular basis.

If, during the course of these inspections or review of the data, any abnormalities are found in the embankment, notification and mitigation procedures are implemented in accordance with the O&M Plan, and the Technical Representative is notified immediately. These issues may or may not trigger implementation of the EAP.

5.2 Evaluation

The inspectors are trained to recognize conditions, which could be or are potentially hazardous to the embankment and downstream areas. Excessive changes in water levels, observation of seeps, and/or settlement along the embankment would initiate a notification condition. A notification condition would trigger immediate inspection of the dam and possible initiation of the EAP.

Examples of emergency situations and dam failure progression mechanisms are further explained in the following sections.

5.2.1 Adverse or Unusual Loading Conditions

Adverse or unusual loading conditions can initiate a dam deficiency that may result in an emergency condition and can be an indication that an emergency condition exists. Event-based loading may be discreetly identified (e.g., an earthquake) and at times predictable (e.g., severe weather). Time-based loading increases with time and may be visible and inspected (e.g., surface erosion, corrosion of metal spillway components) or may be hidden from view (e.g., internal erosion). The occurrence of failure due to time-based loading may be largely unpredictable. Immediately following an identified adverse loading condition, the dam should be inspected by the Technical Representative and evaluated for an emergency situation as prescribed by this EAP. Examples of event-based and time-based loading are listed below:

Event-Based Loading

- Earthquake
- Record rainfall
- Sudden and excessive external loading
- Security breach or bomb detonation
- Sabotage and vandalism

Time-Base Loading

- Normal but ongoing external loading
(e.g., crest traffic or maintenance equipment)
- Aging structural components
- Construction material or practices
- Maintenance required
- Continuous seepage and surface flow
- Sustained high water level

5.2.2 Rising Water Level and Embankment Overtopping

The principal spillway structure is a concrete riser structure that maintains the normal pool of around 37.3 feet-msl. Rising water may be associated with recent and ongoing rainfall, or blockage or another malfunction of the principal spillway. If the water level unexpectedly rises, inspect the spillway inlet and outlet for blockages. Activate GREEN Level event if the blockage cannot be cleared or the reason for the rise in water level cannot be determined. If the water level rises to the level of the auxiliary spillway elevation and engages the spillway, activate GREEN Level event and refer to the above section for additional guidance.

If the water rises to within 3 feet of the dam crest, and further rainfall is expected, or the reservoir continues to rise, activate YELLOW Level event. If overtopping flow occurs resulting in the erosion of the downstream slope, activate RED Level emergency. Erosion of the downstream slope and dam crest due to overtopping flow can effectively lower the dam crest resulting in a dam failure and uncontrolled release of water.

5.2.3 Seeps and Sinkholes

When a new small seep, small increase in seepage, or small depression is discovered, the occurrence and the dam in general should be inspected by the Technical Representative who shall consult with the Dam Safety Engineer. The Technical Representative/Dam Safety Engineer may recommend a GREEN Level event be activated or may recommend further monitoring or investigation. A large sink hole, a sink hole associated with increased seepage, or turbid seepage may indicate the initiation of internal erosion, which if left unaddressed could lead to the formation of voids within the embankment. In such a case, activate GREEN Level event. Rapidly increasing seepage, or sudden sinkhole formation indicates large voids have likely formed within the embankment increasing the ability for flow to pass through the embankment. Activate YELLOW Level event. Once noticeable erosion at the point of emanation of any high-flow seep occurs, an unobstructed flow path through the dam (piping) may have formed and the dam may be in the process of failing. Activate RED Level event. In this case, a whirlpool in the reservoir may be visible near the inlet to the unobstructed flow path.

5.2.4 Embankment Movement and Cracking

The appearance of cracks in the embankment could be an initial sign of potential embankment instability. If a crack forms with displacement greater than 1 inch, activate GREEN Level event. Even a small movement of material could open up new seepage pathways. Have the crack and embankment inspected by the Technical Representative who shall consult with the Dam Safety Engineer. The Technical Representative/Dam Safety Engineer may recommend a change to the event level or may recommend further monitoring or investigation.

If a large slough or slide occurs that approaches or lowers a part of the dam crest in cross-section, activate YELLOW Level Emergency. If an occurrence of seepage is related to a large movement of material, activate YELLOW Level event and refer to the previous section Seeps and Sinkholes for further guidance.

If a slough that results in a lowered crest elevation occurs or appears imminent during a period of heightened reservoir stage, prior to or during expected rainfall, or associated with the inability to lower the reservoir level where overtopping of the lowered crest height is a possibility, activate RED Level emergency.

Final dam failure could occur either by piping as a result of the increased hydraulic gradient through the remaining material, or because the embankment crest elevation is lowered below the water surface elevation.

5.2.5 Security Threat, Security Breach, Sabotage, and Vandalism

Security Threats, Security Breaches, Sabotage and Vandalism are special situations that require steps outside considerations for dam safety and the scope of this EAP. However, if a security breach, act of sabotage or vandalism causes or can cause severe damage to the dam, which may lead to a dam failure, refer to the appropriate section of this EAP relating to the expected result of the incident (rising water level, seepage, sinkholes, embankment moving or cracking) for implementation. After such an event, the dam should be inspected provided the safety of all persons can be confirmed.

In the event of a security threat, (e.g., a bomb threat), FPL Security will be notified to contact the proper authorities (Emergency 911 or Escambia County Sheriff) and the nature and credibility of the threat determined. This EAP should be activated and downstream on-site areas evacuated at the discretion of the Facility Emergency Coordinator and the emergency responders depending on the nature and credibility of the threat.

5.3 Classification

The response to an embankment failure condition at the GCEC GSA Cell #2 will depend on the type of failure, level of the pond and location at the time of the occurrence.

A failure condition at the GSA Cell #2 must be identified as either a **POTENTIAL** failure or an **ACTUAL** failure.

A **POTENTIAL** failure is any condition that is likely to result in the uncontrolled and unscheduled release of water under, around, or through the embankment, but the embankment has not yet failed. A potential failure can result in the implementation of the EAP in either “GREEN or READY” mode or “YELLOW or SET” mode. A “GREEN” condition is one that does not apparently indicate a failure in progress but the situation is new and the proper response to the condition is known to the first observer. A “YELLOW” condition is one that the observer believes could lead to a failure of the dam if not attended to immediately. The location and an accurate description of the situation need to be communicated to the proper personnel according to the contact sheet. Descriptions of water clarity, flow rate, or size of movement should be estimated as accurately as possible.

An **ACTUAL** failure is a condition where there is an uncontrolled and unscheduled release of water occurring or actively developing. This condition requires a “RED or GO” implementation of the EAP. The location and an accurate description of the situation need to be communicated to the proper personnel according to the contact sheet.

The **LOCATION** of the emergency condition is also a critical piece of information. The potential downstream impact from a failure of GSA Cell #2 varies depending on the location of the emergency condition. Because the GSA Cell #2 has no defined downstream channel and the fact that an emergency condition could result at any location along the perimeter of GSA Cell #2, the zone of failure needs to be identified to the responding agencies in order for them to take the appropriate action in the event of an emergency. To address this issue, we have divided the GSA Cell #2 into five areas: northwest, northeast, southeast, south, and west.

5.3.1 GREEN Event – Nonemergency, an unusual event that is slowly developing

The EAP should be initiated in GREEN mode if a dam deficiency is identified that does not immediately threaten dam safety, but if left unaddressed could progress to a YELLOW or RED emergency over time. In a GREEN event situation, the identified deficiency should be inspected by the Dam Safety Engineer or the Technical Representative and repaired or stabilized as needed. Examples of a GREEN event are the development of new or increased seepage, small sinkholes not associated with seepage, or embankment cracking without significant movement or displacement.

5.3.2 YELLOW Event – A potential dam failure situation is rapidly developing

The EAP should be initiated in YELLOW mode if a dam deficiency is directly threatening the safety of the dam, but if immediately repaired and stabilized, the dam will not fail. The primary goal in a YELLOW event is to repair and stabilize the dam. Contact the EAP representative, Technical Representative and Dam Safety Engineer immediately for direction on potential repair and stabilization measures. Examples of a YELLOW event are a rapid increase in seepage, a sudden movement of earthfill, or the reservoir is nearing or has overtopped the crest.

5.3.3 RED Event – Urgent; dam failure appears imminent or is in progress

This is an extremely urgent situation when a dam failure is occurring or is about to occur and cannot be prevented. The primary goal of a RED emergency is to protect downstream population and property. The Control Room should be contacted immediately to notify Emergency 911 Services so emergency services can begin to close waterways as needed and notify surrounding areas. Plant personnel should be evacuated from all facility areas downstream of GSA Cell #2. Examples of a RED level emergency are: active overtopping flow is eroding the downstream slope, seepage is eroding the downstream slope, or a slope failure has occurred resulting in a lowered crest elevation.

6.0 GENERAL RESPONSIBILITIES UNDER THE EAP

6.1 Plant Responsibilities

Once it has been determined that the failure of the embankment structure has occurred or has the potential to occur, the Plant Manager, or designated Facility Emergency Coordinator, will immediately initiate the EAP and corresponding notification chart.

The designated Facility Emergency Coordinator will be the primary or secondary Facility Emergency Coordinator designated by the Plant Manager in the plant Emergency Action Plan for the particular type of emergency. The chain of command for outside local authorities will be determined by them but it is usually the first person at the scene.

The primary responsibility for any emergency action at GSA Cell #2 is with the Plant Manager or designated Facility Emergency Coordinator unless a civil authority with some type of judicial or emergency powers intercedes. It is important to notify all appropriate responding personnel and agencies in a timely manner, but it is also important that the notification process be done in a predetermined manner to avoid confusion and omissions. This will increase the effectiveness of the plan and improve the reliability of the notification process.

During an actual emergency condition, it is essential that all communications be clear and concise. All persons responsible for communicating information during an emergency situation should clearly state their name, their location, the status of the event or emergency, and the time.

6.2 Responsibility for Notifications

FPL has no police or civil resources normally available on-site. Once notified of the emergency condition at GSA Cell #2, it will be the responsibility of the local officials to make the necessary downstream notifications and any off-site waterway closures and public notices unless they request FPL assistance or inform FPL that they are unable to do so.

6.3 Responsibility for Evacuation

The local officials will be responsible for making any off-site evacuations they deem necessary in the event of an emergency condition at the site. It should be noted that per this EAP and conditions at the GSA Cell #2 for all emergency levels, offsite evacuations are not anticipated.

6.4 Responsibility for Termination and Follow-Up

The Plant Manager, or designated Facility Emergency Coordinator, will be responsible for determining when the emergency condition is over and making the necessary notifications. The Plant Manager or Designee will also be responsible for the follow up on-site including post emergency repairs and maintenance.

6.5 EAP Annual Review and Revisions

The EAP is a living document that requires an annual review and updates as needed, in accordance with 40 C.F.R. §257.73(a)(3)(ii). Documentation of completion of annual review will be recorded. Conducting annual training seminars and annual tests of the EAP are two ways of insuring that the EAP is up to date and will be effective if ever needed.

Periodic reviews and updates should be conducted whenever there have been significant personnel changes or changes to the unit operations and/or maintenance procedures: The periodic and annual reviews should include the following listed items.

- Review of the notification flow chart – all names and contact phone numbers should be verified and corrected as appropriate.
- Confirm plant surveillance and emergency procedures regarding GSA Cell #2 are correct and effective.
- Conduct personnel training and plan refresher training sessions.
- Ensure that plan updates are distributed to the appropriate FPL personnel and outside agencies.
- Conduct and document completion of an annual face to face meeting or exercise between plant representative and the local emergency responders.

In accordance with 40 C.F.R. §257.73(a)(3)(ii), the CCR EAP must be amended whenever there is a change in condition that would substantially affect the EAP in effect, including changes to the hazard classification. At a minimum, the plan must be revised and recertified every five years. Amendments to the CCR EAP must be reviewed and approved by a professional engineer to certify the plan meets the requirements of the federal CCR rule.

Any questions regarding the plan should be directed to the Plant Manager or Environmental Leader.

7.0 PREPAREDNESS

7.1 Inspection

GCEC is manned on a 24-hour, 7 day per week basis. However, operations during nighttime periods are at a minimal staffing level. The O&M Manual outlines all aspects of the inspection and operational procedures required for the operation of the GCEC GSA Pond system, including GSA Cell #2.

Inspection anomalies are noted in an inspection report. Inspection reports are the means used to ensure that potentially problematic inspection anomalies are reported and addressed immediately. Inspection reports may or may not trigger the initiation of the EAP. The procedures for addressing inspection report findings are specified in the O&M Manual. Activation of the EAP does not require an inspection report to be submitted first.

7.2 Response During Periods of Darkness

Surveillance during nighttime periods is minimal. The Plant is operated with reduced staff; however, on-call personnel are available at all hours. Portable lighting and equipment will be brought in as required.

7.3 Access to the Site

Access to the GCEC site is possible through the GCEC Security area located south of the generation facilities on Pate St. Coordination with FPL security and Plant staff is required for access to the GSA site.

7.4 Response During Weekends and Holidays

GCEC is manned 24 hours per day, 365 days per year. Although minimum staff is on-duty during weekend and holiday periods, the call-out schedule provides additional manpower as required and routine rounds continue to be performed.

7.5 Response During Periods of Adverse Weather

GCEC SOPR 279 for Severe Weather Manual outlines the special operations to be used during periods of adverse weather. The Manual specifies that no outside activity will be conducted when sustained wind speeds exceed 40 MPH. Special inspections are normally performed immediately after periods of adverse weather such as hurricanes. No additional special provisions during periods of adverse weather are required.

7.6 Alternative Systems of Communication

The primary means of communication is the phone system. In the event that phone communication is not possible, cell phones and hand-held radios are the secondary means of communication. In the event where these systems are not operational, the Plant is equipped with a satellite phone.

7.7 Emergency Supplies and Information

The following equipment shall be readily available from on-site stockpiles or readily available from local equipment and material vendors:

- Portable lighting to illuminate work area during an emergency
- Portable diesel generators and fuel for back-up power supply
- Portable pumps equipped with flex hoses are also available in an emergency condition.
- Some material, such as stone and bulk fill material, are stored on site and can be mobilized very quickly, if needed. Additional materials are available from nearby local contractors.

8.0 INUNDATION MAPS

Inundation maps were prepared that illustrate the impact which would be expected from a dam failure under a sunny day normal pond scenario at various breach locations.

Inundation areas were determined via the breach analyses described in Appendix A. At GCEC GSA Cell #2, three locations around the unit were selected for analyses. These were as follows:

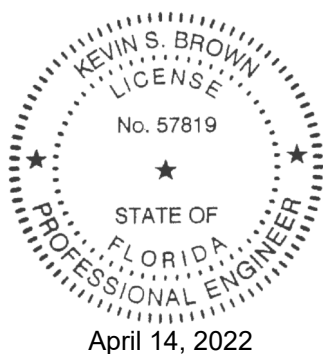
- Northwest – Breach along the northwest corner of the GSA Pond.
- North Double Breach - Breach at the embankment between the GSA Pond and Sedimentation Pond, followed by a breach in the Sedimentation Pond outer embankment.
- East - Breach along the east berm of the pond, west of the Process Return Water Pond.

Each breach inundation map has two versions, one using a topographic base map and another using an aerial image. The topographic map is from the NRCS USGS and the aerials are sourced from USDA National Agriculture Imagery Program (NAIP).

The attached inundation maps illustrate the potential impact area that would result from the assumed embankment failure. The breach calculation data, contained in Appendix D-1 note the estimated peak breach elevation and time to peak breach elevation. Off-site evacuations are not anticipated following the enactment of the EAP under any level event or emergency, however, waterway closures of the Governors Bayou waterway immediately upstream and downstream of the GCEC would be required due to possible sudden rises in the waterway depth and velocity. On-site evacuations would be required under the RED emergency level for all Plant areas within and adjacent to the provided inundation zones, in particular the wastewater facility area directly northeast of GCEC GSA Cell #2 (see Figure 3 Location 1).

Signature Page

Golder Associates Inc.



Kevin S. Brown, PE

Assistant Vice President, Director

Lizmarie Steel, PE

Senior Engineer

[https://golderassociates.sharepoint.com/sites/130174/project files/21482735 ccr permitting/200_draft reports/2022 eap/20220414_gcec gsa cell 2 eap.docx](https://golderassociates.sharepoint.com/sites/130174/project%20files/21482735%20ccr%20permitting/200_draft%20reports/2022%20eap/20220414_gcec%20gsa%20cell%202%20eap.docx)

[illegible]

APPENDIX A

**5-STEP EAP SUMMARY AND
NOTIFICATION PROCEDURES**

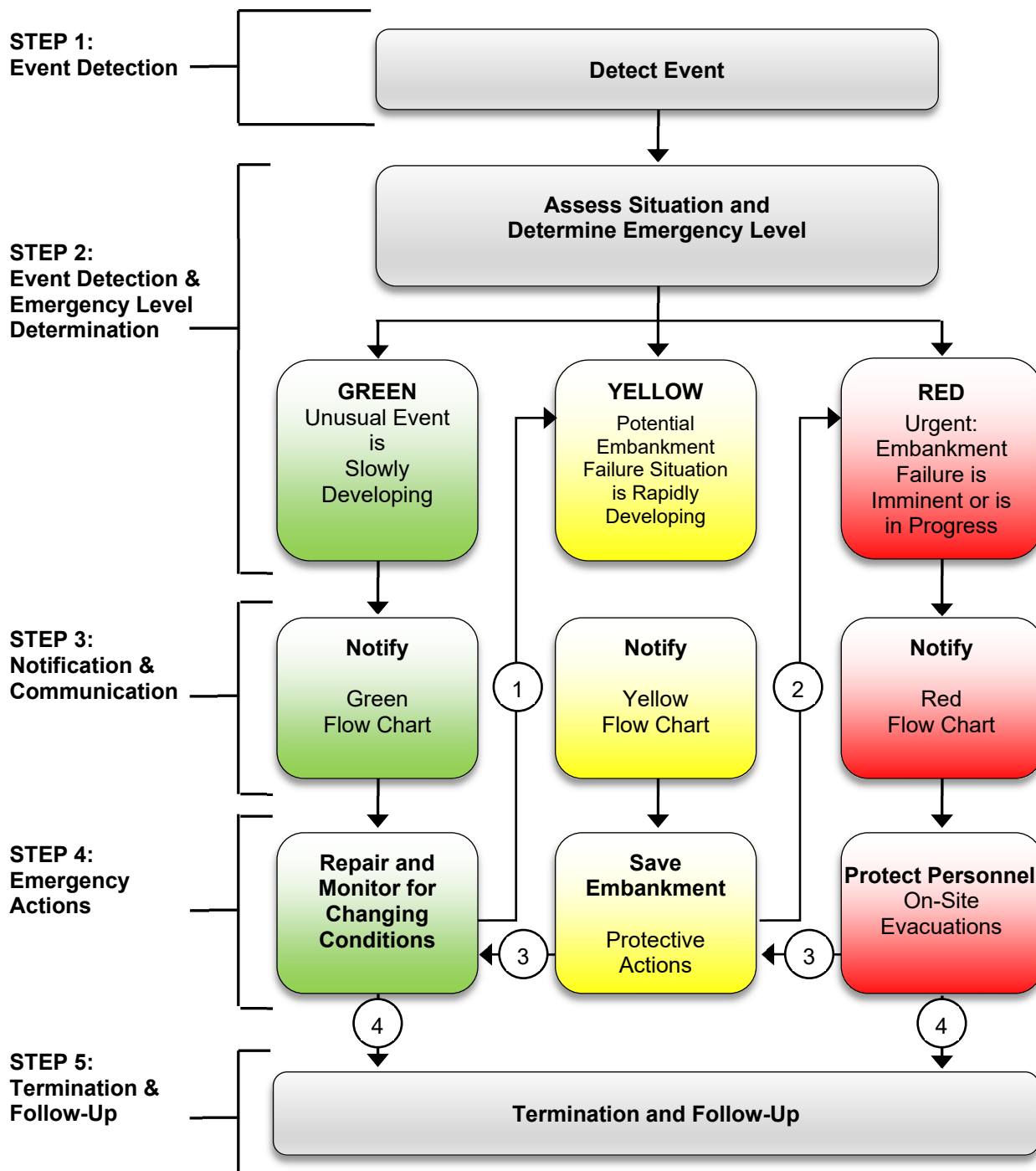
APPENDIX A

5-STEP EAP SUMMARY AND NOTIFICATION PROCEDURES

Appendix A-1 EAP Overview – The 5-Step Process

Appendix A-2 Guidance for Determining the Emergency Level

A-1 EAP OVERVIEW – THE 5-STEP PROCESS



- 1) If the situation continues to develop, initiate Yellow Level.
- 2) If protective actions fail, or situation develops further, initiate Red Level.
- 3) As the situation improves, downgrade the emergency level.
- 4) Terminate EAP once the situation is stabilized. Follow-up with monitoring and incident analysis.

A-2 GUIDANCE FOR DETERMINING THE EMERGENCY LEVEL

EVENT	SITUATION	EMERGENCY LEVEL
Unexpected and Uncontrolled Release of Water.		Red
Water Level is Rising	Water level has risen unexpectedly, or the principal spillway is non-operational	Green
	Water level has risen to within 1 foot of the dam crest and further rainfall is expected, or the reservoir continues to rise.	Yellow
	Water level has overtopped the dam and the fill embankment is eroding.	Red
Auxiliary Spillway Flow	The water level has risen and the auxiliary spillway channel has engaged.	Green
	Erosion has initiated in the auxiliary spillway channel or at the toe of the dam.	Yellow
	A vertical headcut feature has formed in the auxiliary spillway channel and is progressing upstream.	Red
Seepage	New low flow seep of clear water, or new damp area is identified.	0
	New seep, or a change in the location, flow rate or color of an existing seep.	Green
	Rapidly or steadily increasing seepage flow rate	Yellow
	High flow seepage causing noticeable erosion of the dam, or whirlpool is occurring in the reservoir.	Red
Sink Holes	A small depression on the crest or slope develops.	0
	New sinkhole on the embankment, crest or slope.	Green
	Slowly developing sinkhole, large sinkhole, or multiple sinkholes in line.	Yellow
	Rapidly enlarging sinkhole or large sinkhole associated with seepage.	Red
Embankment Cracking and Movement	New cracks in the embankment ¼-inch to 1-inch wide without seepage.	0
	Identifiable but small movement or slippage of the embankment slope, or cracks larger than 1-inch wide.	Green
	Movement of embankment slope that approaches or effectively removes or lowers the dam crest even partially in cross-section.	Yellow
	Movement that lowers the crest during unusually high water, rising water, when extreme rainfall is expected, or the possibility of water nearing or overtopping the lowered crest elevation exists.	Red
	Rapid seepage is occurring in conjunction with embankment movement.	Red
	Sudden or rapidly progressing slides of the embankment slopes.	Red

- **Event Level 0:** No action is required, but a situation is developing that requires heightened awareness and monitoring or special inspection by an Engineer of Record or the Technical Representative.
- **Event Level Green:** Nonemergency unusual event, slowly developing
- **Event Level Yellow:** Potential embankment failure situation, rapidly developing
- **Emergency Level Red:** Urgent; embankment failure appears imminent or is in progress

In the event of an adverse or unusual loading event, thoroughly inspect the dam and contact an Engineer of Record or Technical Representative for further guidance. Refer to the above chart for assigning an emergency level based on the damage incurred as a result of the loading condition. Examples of event-based and time-based loading are listed below:

Event-Based Loading

- Earthquake
- Record rainfall
- Sudden and excessive external loading
- Security breach or bomb detonation
- Sabotage and vandalism

Time-Base Loading

- Normal but ongoing external loading (e.g., crest traffic or maintenance equipment)
- Aging structural components
- Construction material or practices
- Maintenance required
- Continuous seepage and surface flow
- Sustained high reservoir level

Sabotage and Vandalism

In the event of an act of sabotage or vandalism, refer to the effect of the act as it relates to the events listed in the table above (e.g., embankment movement, spillway cracking)

Security Threats and Breaches

Security threats such as a bomb threat poses a unique situation outside the coverage of this EAP. In the event of a bomb or similar threat, **Emergency 911 or the Florida Bureau of Investigation should be contacted first regardless of the emergency level assigned.** With their assistance, the nature and credibility of the threat should be determined. This EAP should be activated and the Emergency Level evaluated based on the nature and credibility of the treat and the expected result of the incident as provide in the table above.

APPENDIX B

**AT-RISK HAZARDS AND FLOOD
INUNDATION ZONE**

APPENDIX B

AT-RISK HAZARDS AND FLOOD INUNDATION ZONE

Appendix B-1 Breach Maps

Figure B-1A	North Double Breach Aerial Map
Figure B-1B	North Double Breach Topography Map
Figure B-2A	Northwest Breach Aerial Map
Figure B-2B	Northwest Breach Topography Map
Figure B-3A	East Breach Aerial Map
Figure B-3B	East Breach Topography Map

LOCATION	PEAK DEPTH (FEET)	PEAK VELOCITY (FEET/SEC)	ARRIVAL TIME* (MINUTES)
1	1.5	1.4	45
2	2.0	3.5	23
3	3.2	3.7	13
4	3.2	4.7	15
5	1.9	3.0	25

*ARRIVAL TIME IS ELAPSED TIME FROM THE BREACH INITIATION TO THE TIME WATER FIRST APPROACHES THE RIVER LOCATION.



LEGEND

STREAM

BREACH INUNDATION ZONE

RIVER LOCATION

NOTES & REFERENCES

THE BREACH ZONE SHOWN WAS DEVELOPED FOR A SUNNY DAY BREACH AT FULL POOL, AN AVERAGE BREACH WIDTH OF 61 FEET AND A TIME OF BREACH FORMATION OF 27 MINUTES FOR THE GYPSUM POND. THE SEDIMENTATION POND BREACH WAS MODELED WITH AN AVERAGE BREACH WIDTH OF 50.7 FEET AND A TIME OF BREACH FORMATION OF 11.4 MINUTES. THE ACTUAL BREACH ZONE DEPTHS AND EXTENTS WILL BE DEPENDENT ON THE BREACH AND HYDROMETEROLOGICAL CONDITIONS AT THE TIME OF BREACH. ADDITIONAL HAZARDS MAY BE LOCATED DOWNSTREAM. A REVIEW OF THE INUNDATION ZONE SHOULD BE PERFORMED REGULARLY TO CHECK FOR NEW HAZARDS.

SERVICE LAYER CREDITS: USDA NAIP

CLIENT
FLORIDA POWER & LIGHT

DATE

2022-02-14

PREPARED

SEB

REVIEW

JDG

APPROVED

-

PROJECT
2022 EMERGENCY ACTION PLAN

TITLE
BREACH INUNDATION MAP- NORTH DOUBLE BREACH- AERIAL

PROJECT No.

21482735

CONTROL

Rev.

0

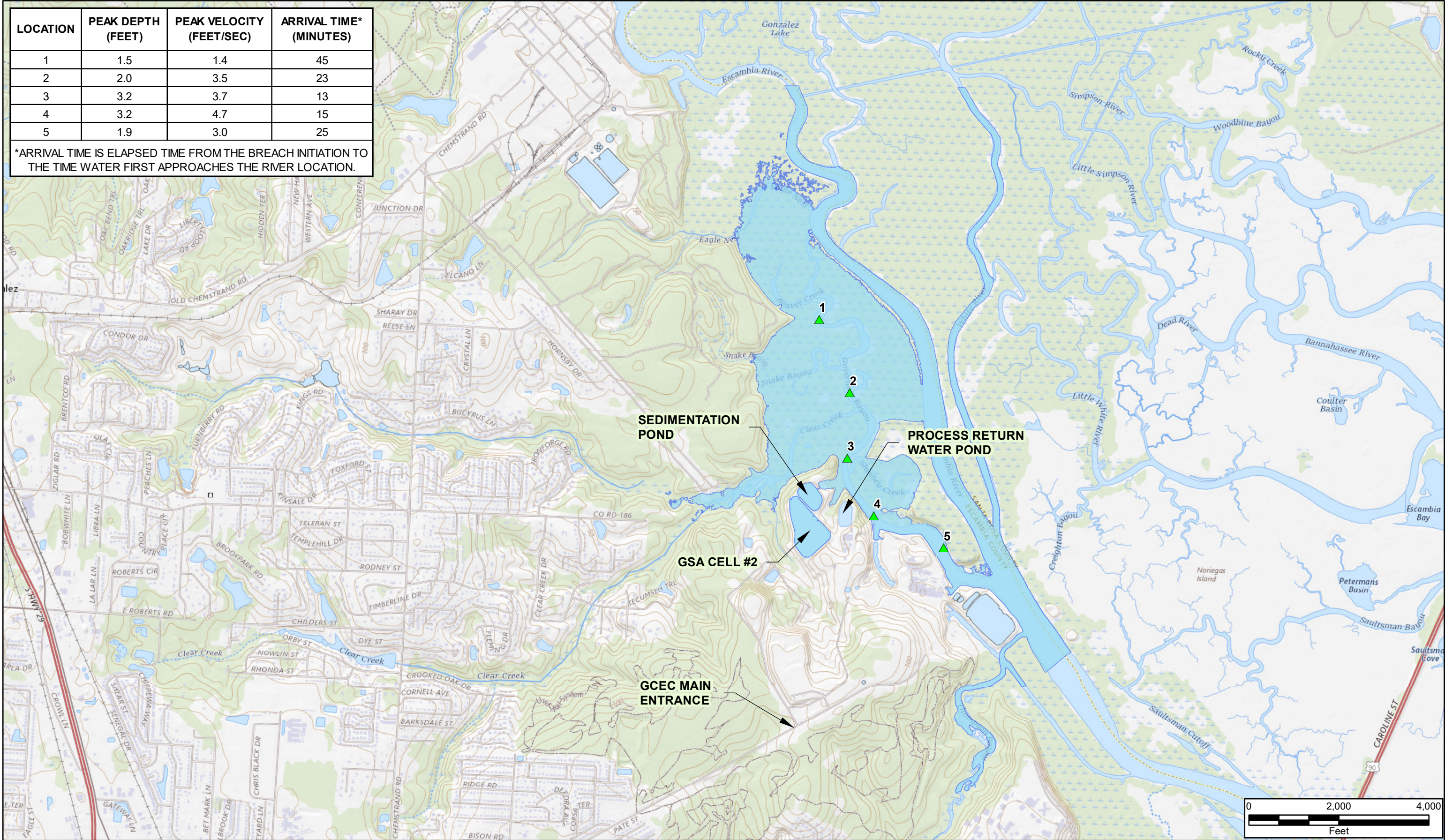
FIGURE
1A

wsp

GOLDER

Path: C:\Users\jrdaniel\OneDrive - Golder Associates\Cart\21482735_CCB Permitting\2022 EAP & Breach Model\N_Double_BreachMap_Aerial.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANS/B



LEGEND

STREAM

BREACH INUNDATION ZONE

RIVER LOCATION

NOTES & REFERENCES

THE BREACH ZONE SHOWN WAS DEVELOPED FOR A SUNNY DAY BREACH AT FULL POOL, AN AVERAGE BREACH WIDTH OF 61 FEET AND A TIME OF BREACH FORMATION OF 27 MINUTES FOR THE GYPSUM POND. THE SEDIMENTATION POND BREACH WAS MODELED WITH AN AVERAGE BREACH WIDTH OF 50.7 FEET AND A TIME OF BREACH FORMATION OF 11.4 MINUTES. THE ACTUAL BREACH ZONE DEPTHS AND EXTENTS WILL BE DEPENDENT ON THE BREACH AND HYDROMETEOROLOGICAL CONDITIONS AT THE TIME OF BREACH. ADDITIONAL HAZARDS MAY BE LOCATED DOWNSTREAM. A REVIEW OF THE INUNDATION ZONE SHOULD BE PERFORMED REGULARLY TO CHECK FOR NEW HAZARDS.

SERVICE LAYER CREDITS: USGS THE NATIONAL MAP: NATIONAL BOUNDARIES DATASET, 3DEP ELEVATION

CLIENT
FLORIDA POWER & LIGHT

DATE2022-02-14

PREPAREDSEB

REVIEWJDG

APPROVED-

PROJECT
2022 EMERGENCY ACTION PLAN

TITLE
BREACH INUNDATION MAP- NORTH DOUBLE BREACH- TOPO

PROJECT No.
21482735

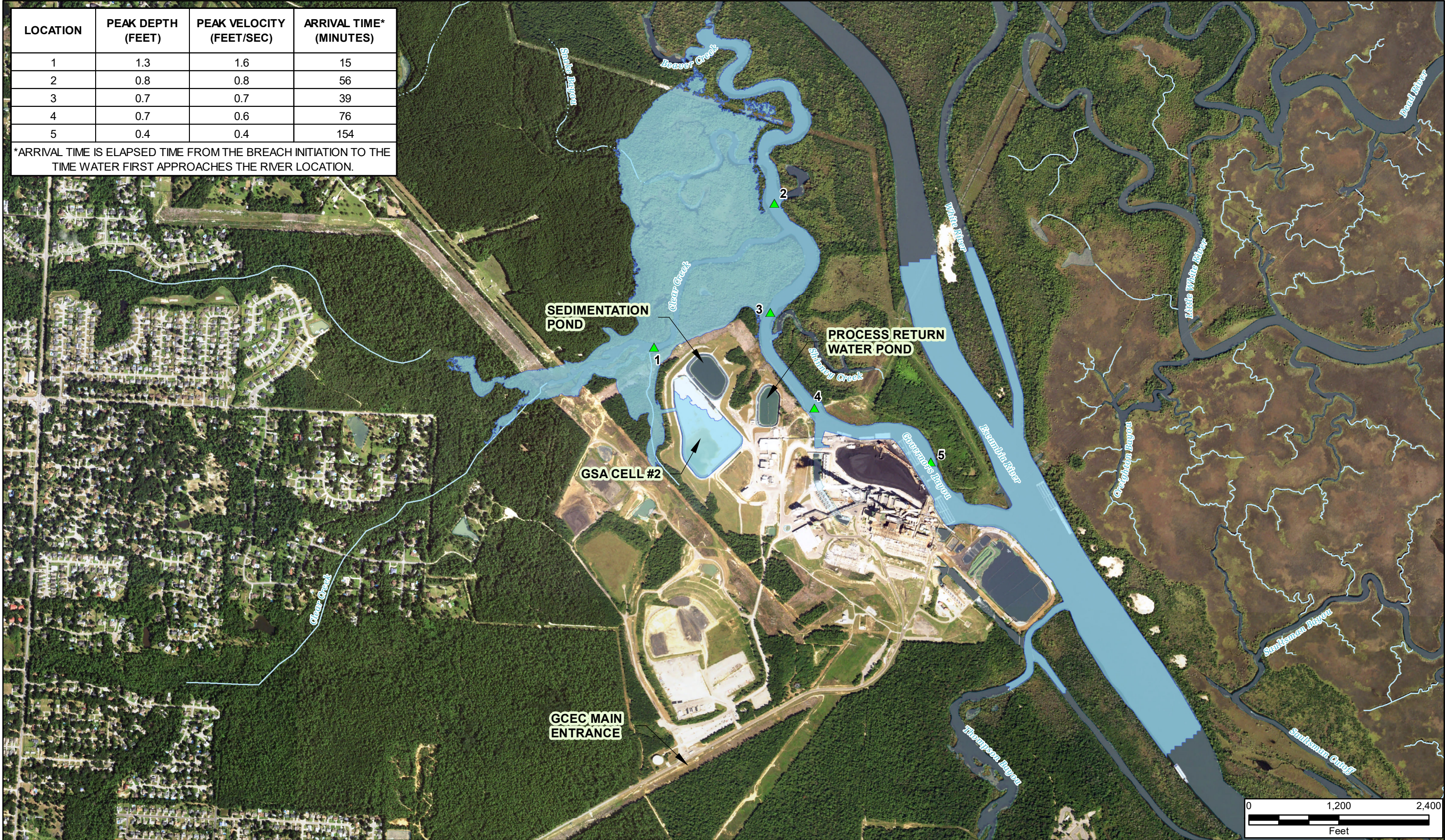
CONTROL

Rev.
0

FIGURE
1B

Path: C:\Users\jrodol\OneDrive - Golder Associates\Cart\21482735 CCR Permitting\2022 EAP & Breach Model\N_Double_BreachMap_Topo.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANS/B



LOCATION	PEAK DEPTH (FEET)	PEAK VELOCITY (FEET/SEC)	ARRIVAL TIME* (MINUTES)
1	1.3	1.6	15
2	0.8	0.8	56
3	0.7	0.7	39
4	0.7	0.6	76
5	0.4	0.4	154

*ARRIVAL TIME IS ELAPSED TIME FROM THE BREACH INITIATION TO THE TIME WATER FIRST APPROACHES THE RIVER LOCATION.

LEGEND

—

STREAM

BREACH INUNDATION ZONE

RIVER LOCATION

NOTES & REFERENCES

THE BREACH ZONE SHOWN WAS DEVELOPED FOR A SUNNY DAY BREACH AT FULL POOL, AN AVERAGE BREACH WIDTH OF 61 FEET AND A TIME OF BREACH FORMATION OF 23.4 MINUTES. THE ACTUAL BREACH ZONE DEPTH AND EXTENT WILL BE DEPENDENT ON THE BREACH AND HYDROMETEROLOGICAL CONDITIONS AT THE TIME OF BREACH. ADDITIONAL HAZARDS MAY BE LOCATED DOWNSTREAM. A REVIEW OF THE INUNDATION ZONE SHOULD BE PERFORMED REGULARLY TO CHECK FOR NEW HAZARDS.

SERVICE LAYER CREDITS: USDA NAIP

CLIENT

FLORIDA POWER & LIGHT

DATE

2022-02-14

PREPARED

SEB

REVIEW

JDG

APPROVED

-

PROJECT

2022 EMERGENCY ACTION PLAN

TITLE

BREACH INUNDATION MAP- NORTHWEST BREACH-AERIAL

PROJECT No.

21482735

CONTROL

Rev.

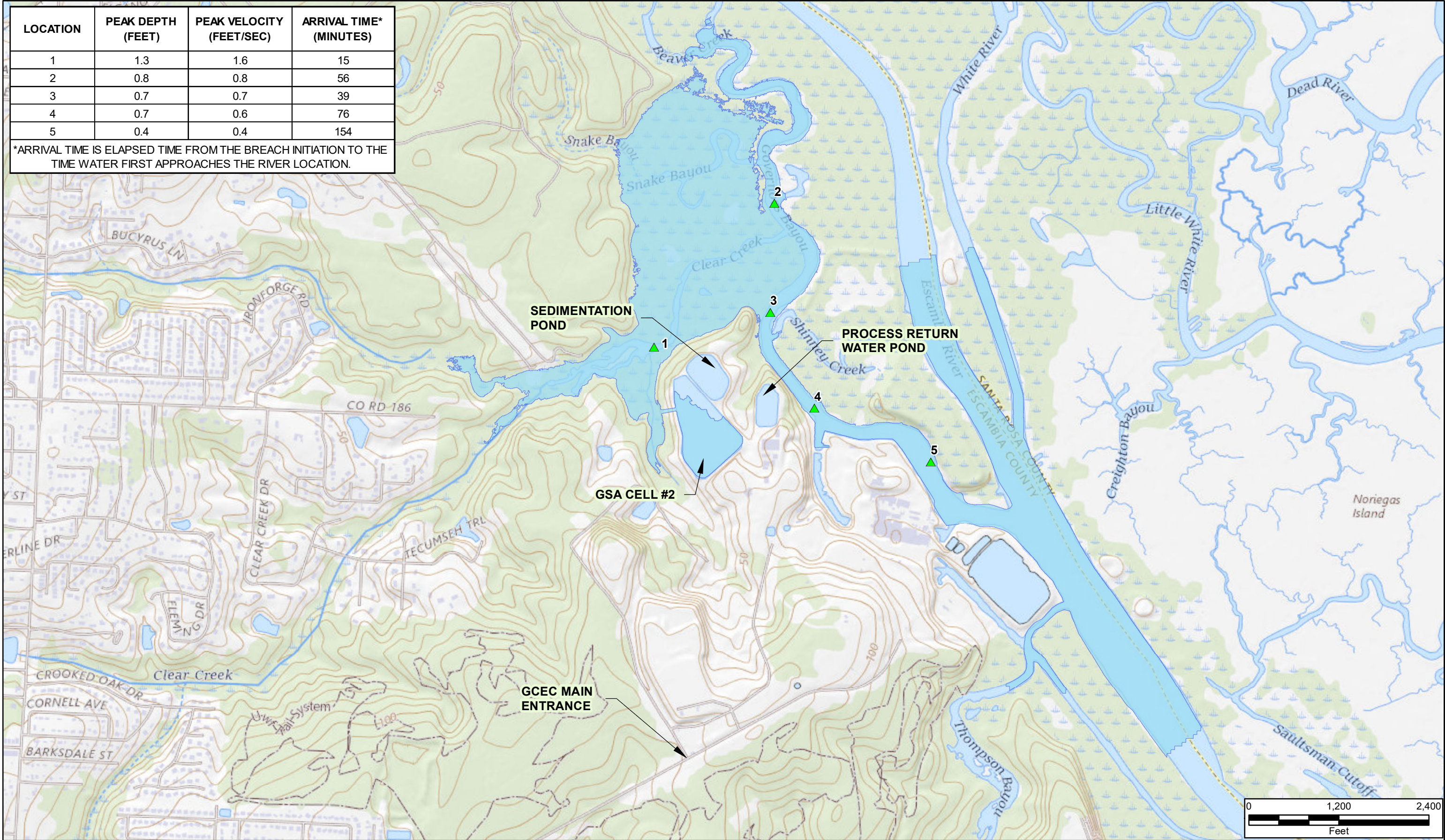
0

FIGURE

2A

Path: C:\Users\jrodri\OneDrive - Golder Associates\Cart\21482735_CCR Permitting\2022 EAP & Breach Model\NW_BreachMap_Aerial.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANS15



LOCATION	PEAK DEPTH (FEET)	PEAK VELOCITY (FEET/SEC)	ARRIVAL TIME* (MINUTES)
1	1.3	1.6	15
2	0.8	0.8	56
3	0.7	0.7	39
4	0.7	0.6	76
5	0.4	0.4	154
*ARRIVAL TIME IS ELAPSED TIME FROM THE BREACH INITIATION TO THE TIME WATER FIRST APPROACHES THE RIVER LOCATION.			

LEGEND

STREAM

BREACH INUNDATION ZONE

RIVER LOCATION

NOTES & REFERENCES

THE BREACH ZONE SHOWN WAS DEVELOPED FOR A SUNNY DAY BREACH AT FULL POOL, AN AVERAGE BREACH WIDTH OF 61 FEET AND A TIME OF BREACH FORMATION OF 23.4 MINUTES. THE ACTUAL BREACH ZONE DEPTH AND EXTENT WILL BE DEPENDENT ON THE BREACH AND HYDROMETEROLOGICAL CONDITIONS AT THE TIME OF BREACH. ADDITIONAL HAZARDS MAY BE LOCATED DOWNSTREAM. A REVIEW OF THE INUNDATION ZONE SHOULD BE PERFORMED REGULARLY TO CHECK FOR NEW HAZARDS.

SERVICE LAYER CREDITS: USGS THE NATIONAL MAP: NATIONAL BOUNDARIES DATASET, 3DEP ELEVATION

CLIENT

FLORIDA POWER & LIGHT

PROJECT

2022 EMERGENCY ACTION PLAN

DATE

2022-02-14

PREPARED

SEB

REVIEW

JDG

APPROVED

-

TITLE

BREACH INUNDATION MAP- NORTHWEST BREACH-TOPO

PROJECT No.

21482735

CONTROL

Rev.

0

FIGURE

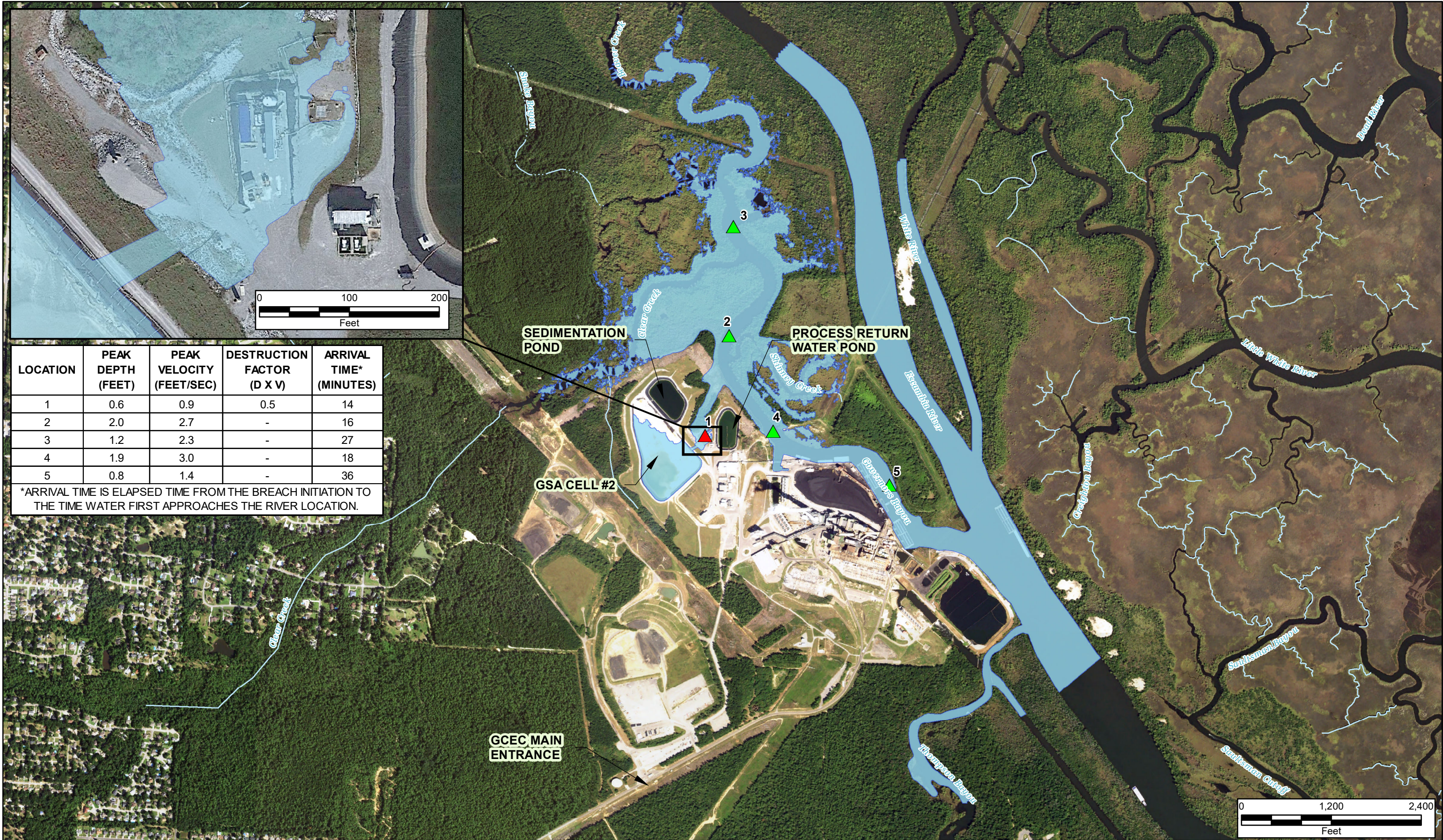
2B

wsp

GOLDER

Path: C:\Users\jrodell\OneDrive - Golder Associates\Cart\21482735_CCR Permitting\2022 EAP & Breach Model\NW_BreachMap_Topo.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANS/B



LOCATION	PEAK DEPTH (FEET)	PEAK VELOCITY (FEET/SEC)	DESTRUCTION FACTOR (D X V)	ARRIVAL TIME* (MINUTES)
1	0.6	0.9	0.5	14
2	2.0	2.7	-	16
3	1.2	2.3	-	27
4	1.9	3.0	-	18
5	0.8	1.4	-	36

*ARRIVAL TIME IS ELAPSED TIME FROM THE BREACH INITIATION TO THE TIME WATER FIRST APPROACHES THE RIVER LOCATION.

LEGEND

STREAM

BREACH INUNDATION ZONE

IMPACTED STRUCTURE - TRAILER

RIVER LOCATION

NOTES & REFERENCES

THE BREACH ZONE SHOWN WAS DEVELOPED FOR A SUNNY DAY BREACH AT FULL POOL, AN AVERAGE BREACH WIDTH OF 55 FEET AND A TIME OF BREACH FORMATION OF 20.4 MINUTES. THE ACTUAL BREACH ZONE DEPTH AND EXTENT WILL BE DEPENDENT ON THE BREACH AND HYDROMETEROLOGICAL CONDITIONS AT THE TIME OF BREACH. ADDITIONAL HAZARDS MAY BE LOCATED DOWNSTREAM. A REVIEW OF THE INUNDATION ZONE SHOULD BE PERFORMED REGULARLY TO CHECK FOR NEW HAZARDS.

SERVICE LAYER CREDITS: USDA NAIP AND GOOGLE EARTH 2022

CLIENT

FLORIDA POWER & LIGHT

wspGOLDER

PROJECT

2022 EMERGENCY ACTION PLAN

TITLE

BREACH INUNDATION MAP- EAST BREACH - AERIAL

DATE

2022-02-14

PREPARED

SEB

REVIEW

JDG

APPROVED

-

PROJECT No.

21482735

CONTROL

Rev.

0

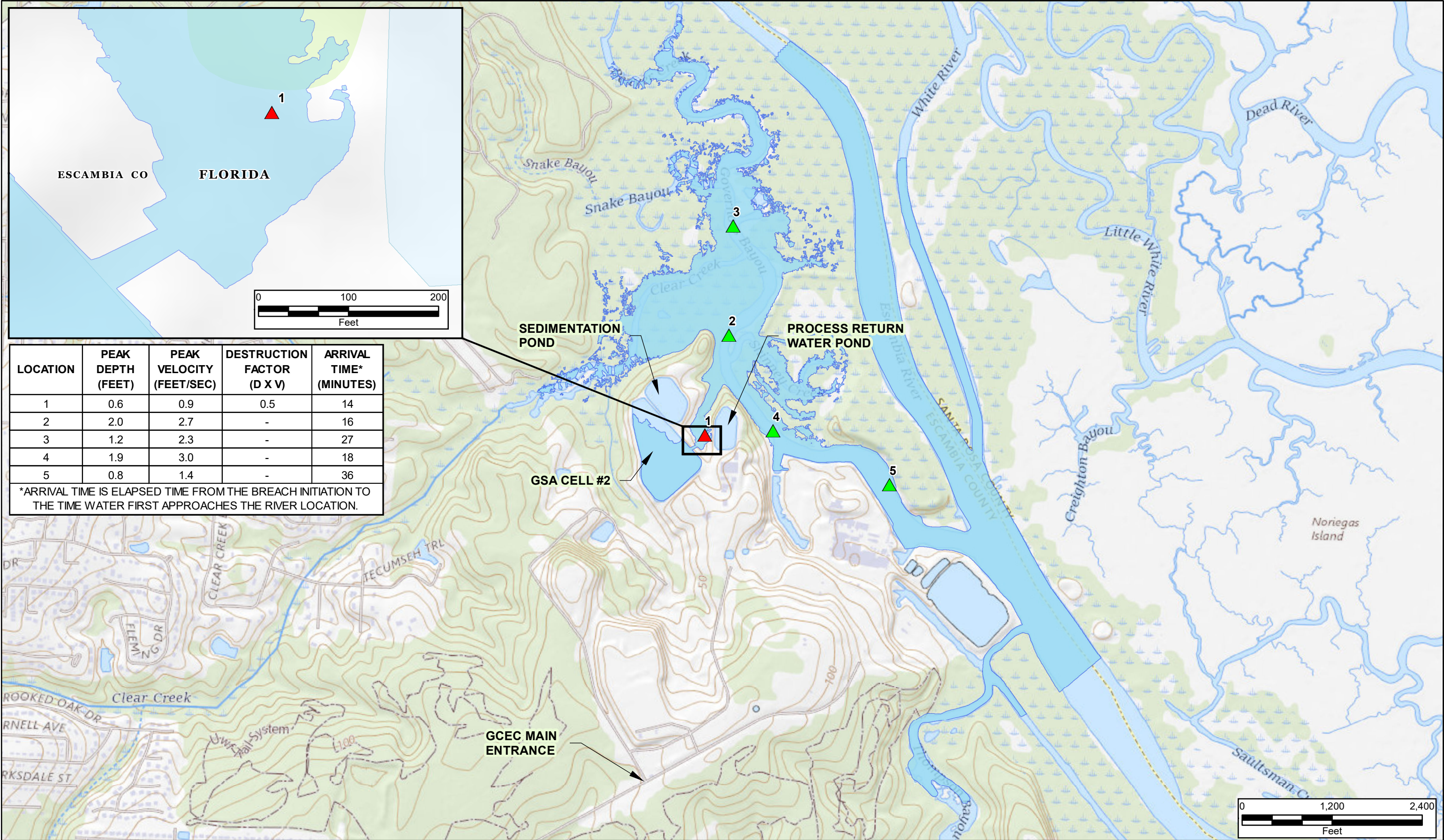
FIGURE

3A

Path: C:\Users\jrdell\OneDrive - Golder Associates\Cart\21482735_CCB Permitting\2022 EAP & Breach Model\East_BreachMap_Aerial.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANSI/B

1in



LEGEND

STREAM

BREACH INUNDATION ZONE

IMPACTED STRUCTURE - TRAILER

RIVER LOCATION

NOTES & REFERENCES

THE BREACH ZONE SHOWN WAS DEVELOPED FOR A SUNNY DAY BREACH AT FULL POOL, AN AVERAGE BREACH WIDTH OF 55 FEET AND A TIME OF BREACH FORMATION OF 20.4 MINUTES. THE ACTUAL BREACH ZONE DEPTH AND EXTENT WILL BE DEPENDENT ON THE BREACH AND HYDROMETEROLOGICAL CONDITIONS AT THE TIME OF BREACH. ADDITIONAL HAZARDS MAY BE LOCATED DOWNSTREAM. A REVIEW OF THE INUNDATION ZONE SHOULD BE PERFORMED REGULARLY TO CHECK FOR NEW HAZARDS.

SERVICE LAYER CREDITS: USGS THE NATIONAL MAP: NATIONAL BOUNDARIES DATASET, 3DEP ELEVATION PROGRAM, GEOGRAPHIC NAMES INFORMATION SYSTEM, NATIONAL HYDROGRAPHY DATASET, NATIONAL LAND COVER DATABASE, NATIONAL STRUCTURES DATASET, AND NATIONAL TRANSPORTATION DATASET; USGS GLOBAL

CLIENT

FLORIDA POWER & LIGHT

PROJECT

2022 EMERGENCY ACTION PLAN

DATE

2022-02-14

PREPARED

SEB

REVIEW

JDG

APPROVED

-

TITLE

BREACH INUNDATION MAP- EAST BREACH - TOPO

PROJECT No.

21482735

CONTROL

Rev.

0

FIGURE

3B

Path: C:\Users\lrodell\OneDrive - Golder Associates\Cart\21482735_CCR Permitting\2022 EAP & Breach Model\East_BreachMap_Topo.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET HAS BEEN MODIFIED FROM ANSI/B

APPENDIX C

FORMS AND EVENT LOGS

APPENDIX C

FORMS AND EVENT LOGS

Appendix C-1 Contact Checklist

Appendix C-2 Unusual or Emergency Event Log Form

Appendix C-3 Dam Emergency Situation Report Form

Appendix C-4 Termination of Dam Emergency Situation Form

Appendix C-5 Glossary of Terms

C-1 CONTACT CHECKLIST

Gulf Clean Energy Center GSA Cell #2

Date _____

The following contacts should be made immediately after the emergency level is determined. See Appendix A for guidance to determine the appropriate emergency level for a specific situation, and notification protocol. The person making the contacts should initial and record the time of the call and who was notified for each contact made. See the Notification Charts tab for critical contact information.

Green Event Level

Organization	Person Contacted	Time Contacted	Contacted By
Control Room			
Facility Emergency Coordinator			
Technical Representative			
Plant Manager			
Dam Safety Engineer			
Contractor Support Services			

Yellow Event Level

Organization	Person Contacted	Time Contacted	Contacted By
Control Room			
Facility Emergency Coordinator			
Technical Representative			
Plant Manager			
Dam Safety Engineer			
Contractor Support Services			

Red Emergency Level

Organization	Person Contacted	Time Contacted	Contacted By
Control Room			
Facility Emergency Coordinator			
Technical Representative			
Plant Manager			
Dam Safety Engineer			
Contractor Support Services			

Primary Spill Response Organization			
FPL Environmental Lead			
FPL Corporate Response Team			
VP PGD Fossil Operations			
FPL Media Relations			
Security Operations Center			
Federal/State Agencies			
Federal/State Agencies			

C-2 UNUSUAL OR EMERGENCY EVENT LOG

Gulf Clean Energy Center GSA Cell #2

Date _____

When and how was the event detected?

Weather conditions: _____

General description of the emergency situation:

Emergency level determination: _____ Made by: _____

Actions and Event Progression

Date and Time	Action or Event Progression	Noted By

C-3 DAM EMERGENCY SITUATION REPORT

Gulf Clean Energy Center GSA Cell #2

Date _____

Dam Location: Pensacola Escambia
(city) (county)

Date: _____ Time: _____

Weather Conditions: _____

General Description of Emergency Situation:

Areas of the Dam Affected:

Extent of Damage: _____

Possible Causes: _____

Effect on Dam Operation: _____

Initial Reservoir Elevation: _____ Time: _____

Maximum Reservoir Elevation: _____ Time: _____

Final Reservoir Elevation: _____ Time: _____

Description of Areas Flooded Downstream, Damages, and/or Injuries:

Other Data and Comments:

Observers Name: _____ Telephone No.: _____

Report Prepared By: _____ Date: _____

C-4 TERMINATION OF DAM EMERGENCY SITUATION

Gulf Clean Energy Center GSA Cell #2

Date _____

Dam Location: Pensacola Escambia
(city) (county)

General Description of Emergency Situation:

Follow Up Actions Needed:

Other Data and Comments:

Terminating Party Name: _____ Telephone No.: _____

Terminating Party Role: _____ Signature: _____

C-5 GLOSSARY OF TERMS

Abutment	That part of the valley side against which the dam is constructed. The left and right abutments of dams are defined with the observer looking downstream from the dam.
Acre-foot	A unit of volumetric measure that would cover 1 acre to a depth of 1 foot. One acre-foot is equal to 43,560 cubic feet or 325,850 gallons.
Berm	A nearly horizontal step (bench) in the upstream or downstream sloping face of the dam.
Boil	A disruption of the soil surface due to water discharging from below the surface. Eroded soil may be deposited in the form of a ring (miniature volcano) around the disruption.
Breach	An opening through the dam that allows draining of the reservoir. A controlled breach is an intentionally constructed opening. An uncontrolled breach is an unintended failure of the dam.
Conduit	A closed channel (round pipe or rectangular box) that conveys water through, around, or under the dam.
Control section	A usually level segment in the profile of an open channel spillway above which water in the reservoir discharges through the spillway.
Cross section	A slice through the dam showing elevation vertically and direction of natural water flow horizontally from left to right. Also, a slice through a spillway showing elevation vertically and left and right sides of the spillway looking downstream.
Dam	An artificial barrier generally constructed across a watercourse for the purpose of impounding or diverting water.
Dam failure	The uncontrolled release of a dam's impounded water.
Dam Operator	The person(s) or unit(s) of government with responsibility for the operation and maintenance of dam.
Drain, toe or foundation, or blanket	A water collection system of sand and gravel and typically pipes along the downstream portion of the dam to collect seepage and convey it to a safe outlet.
Drainage area (watershed)	The geographic area on which rainfall flows into the dam.
Drawdown	The lowering or releasing of the water level in a reservoir over time or the volume lowered or released over a particular period of time.
Emergency	A condition that develops unexpectedly, endangers the structural integrity of the dam and/or downstream human life and property, and requires immediate action.
Emergency Action Plan (EAP)	A formal document identifying potential emergency conditions that may occur at the dam and specifying preplanned actions to minimize potential failure of the dam or minimize failure consequences including loss of life, property damage, and environmental impacts.
Evacuation map	A map showing the geographic area downstream of a dam that should be evacuated if it is threatened to be flooded by a breach of the dam or other large discharge.
Filter	The layers of sand and gravel in a drain that allow seepage through an embankment to discharge into the drain without eroding the embankment soil.
Freeboard	Vertical distance between a stated water level in the reservoir and the top of dam.
Gate, slide or sluice valve	An operable, watertight valve to manage the discharge of water from the dam.
Groin	The area along the intersection of the face of a dam and the abutment.

Hazard classification	A system that categorizes dams (high, significant, or low) according to the degree of their potential to create adverse incremental consequences such as loss of life, property damage, or environmental impacts of a failure or misoperation of a dam.
Height, dam	The vertical distance between the lowest point along the top of the dam and the lowest point at the downstream toe, which usually occurs in the bed of the outlet channel.
Hydrograph, inflow or outflow, or breach	A graphical representation of either the flow rate or flow depth at a specific point above or below the dam over time for a specific flood occurrence.
Incident Commander	The highest predetermined official available at the scene of an emergency situation.
Instrumentation	An arrangement of devices installed into or near dams that provide measurements to evaluate the structural behavior and other performance parameters of the dam and appurtenant structures.
Inundation area or map	The geographic area downstream of the dam that would be flooded by a breach of the dam or other large discharge.
Notification	To immediately inform appropriate individuals, organizations, or agencies about a potentially emergency situation so they can initiate appropriate actions.
Outlet works (principal spillway)	An appurtenant structure that provides for controlled passage of normal water flows through the dam.
Piping	The progressive destruction of an embankment or embankment foundation by internal erosion of the soil by seepage flows.
Probable Maximum Precipitation (PMP) or Flood (PMF)	The theoretically greatest precipitation or resulting flood that is meteorologically feasible for a given duration over a specific drainage area at a particular geographical location.
Reservoir	The body of water impounded or potentially impounded by the dam.
Riprap	A layer of large rock, precast blocks, bags of cement, or other suitable material, generally placed on an embankment or along a watercourse as protection against wave action, erosion, or scour.
Risk	A measure of the likelihood and severity of an adverse consequence.
Seepage	The natural movement of water through the embankment, foundation, or abutments of the dam.
Slide	The movement of a mass of earth down a slope on the embankment or abutment of the dam.
Spillway (auxiliary or emergency)	The appurtenant structure that provides the controlled conveyance of excess water through, over, or around the dam.
Spillway capacity	The maximum discharge the spillway can safely convey with the reservoir at the maximum design elevation.
Spillway crest	The lowest level at which reservoir water can flow into the spillway.
Tailwater	The body of water immediately downstream of the embankment at a specific point in time.
Toe of dam	The junction of the upstream or downstream face of an embankment with the ground surface.
Top of dam (crest of dam)	The elevation of the uppermost surface of an embankment which can safely impound water behind the dam.

APPENDIX D

Breach Inundation Calculation Package



Subject:	APPENDIX D-1 - BREACH STUDY SUMMARY		
Date:	January 31, 2022	Made By:	SEB
Project No.:	21482735	Checked By:	LS
Project Short Title:	FPL/GCEC GSA Cell #2 Breach/FL	Reviewed By:	JDG

DAM BREACH MODEL SUMMARY

DESCRIPTION OF MODEL

The breach model was completed using the 2-dimensional routines in the Army Corps of Engineers HEC-RAS program Version 6.1. Three different breach scenarios were modeled. All scenarios were evaluated following the requirements of the TR-60 guidelines. Breach scenarios modeled:

- North Double Breach - Breach near the spillway of the Gypsum Storage Area leading into the Sedimentation Pond, followed by a breach of the Sedimentation Pond
- Northwest Breach - Breach along the Gypsum Storage Area Northwest berm
- East Breach - Breach along the Gypsum Storage Area East berm

TERRAIN AND OTHER DATA SOURCES

- National Oceanic Atmospheric Association (NOAA) 2017 DEM Escambia County, Florida
- Gulf Power Company Gypsum Storage-Area 1, Drawing E4C39054. 2008



Subject: APPENDIX D-1 - BREACH STUDY SUMMARY

Date: January 31, 2022

Made By: SEB

Project No.: 21482735

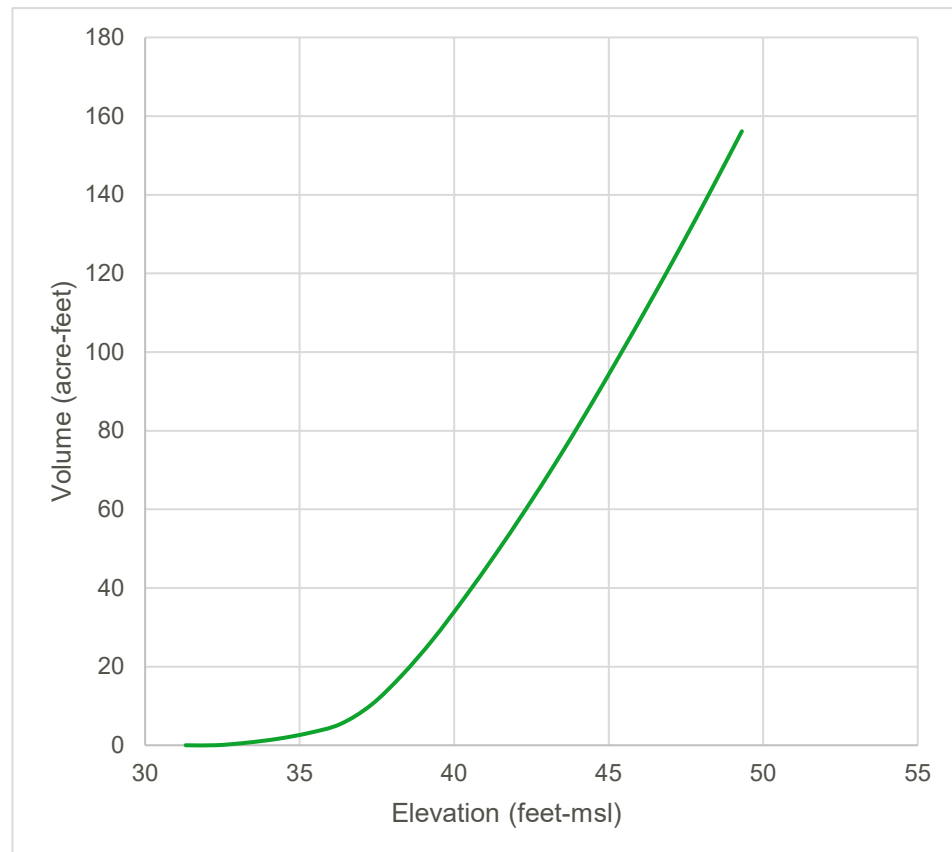
Checked By: LS

Project Short Title: FPL/GCEC GSA Cell #2 Breach/FL

Reviewed By: JDG

GYPSUM STORAGE AREA VOLUME - STAGE-AREA-STORAGE

Elevation (feet-msl)	Volume (acre-feet)
31.31	0.0
32.31	0.0
33.31	0.7
34.31	1.7
35.31	3.1
36.31	5.4
37.31	10.2
38.31	17.8
39.31	26.9
40.31	37.2
41.31	48.3
42.31	59.9
43.31	72.1
44.31	85.1
45.31	98.5
46.31	112.3
47.31	126.5
48.31	141.1
49.31	156.1





Subject: APPENDIX D-1 - BREACH STUDY SUMMARY

Date: January 31, 2022

Made By: SEB

Project No.: 21482735

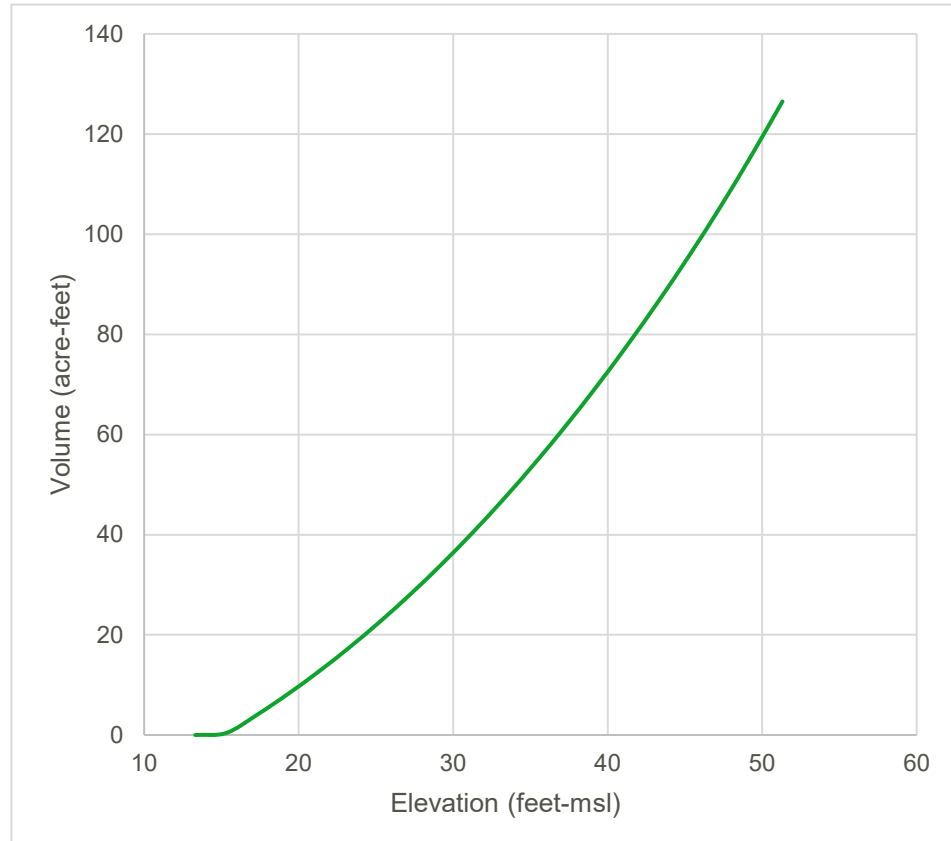
Checked By: LS

Project Short Title: FPL/GCEC GSA Cell #2 Breach/FL

Reviewed By: JDG

SEDIMENTATION POND VOLUME - STAGE-AREA-STORAGE

Elevation (feet-msl)	Volume (acre-feet)
13.31	0.0
15.31	0.4
17.31	4.0
19.31	8.2
21.31	12.7
23.31	17.6
25.31	22.8
27.31	28.3
29.31	34.3
31.31	40.6
33.31	47.3
35.31	54.4
37.31	61.8
39.31	69.7
41.31	78.0
43.31	86.7
45.31	95.9
47.31	105.6
49.31	115.8
51.31	126.5



NORTH BERM DOUBLE BREACH

The Gypsum Storage Area is set to breach into the Sedimentation Pond. The Sedimentation pond is then set to breach at the spillway located on its Northeast berm.

MODELED BREACH PARAMETERS

Gypsum Storage Area

	Bottom Width (feet)	Side Slope (z:1)	Average Breach Width (feet)	Breach Formation Time (hours)
Froehlich (2008)	43	1	61.0	0.45

Froehlich: Solved for in HEC-RAS for an overtopping event, a pool volume of 156.1 acre-feet.



Subject: APPENDIX D-1 - BREACH STUDY SUMMARY

Date: January 31, 2022

Made By: SEB

Project No.: 21482735

Checked By: LS

Project Short Title: FPL/GCEC GSA Cell #2 Breach/FL

Reviewed By: JDG

Sedimentation Pond

	Bottom Width (feet)	Side Slope (z:1)	Average Breach Width (feet)	Breach Formation Time (hours)
Froehlich (2008)	20	1	50.7	0.19

Froehlich: Solved for in HEC-RAS for an overtopping event, a pool volume of 99 acre-feet.

COMPUTATION PARAMETERS

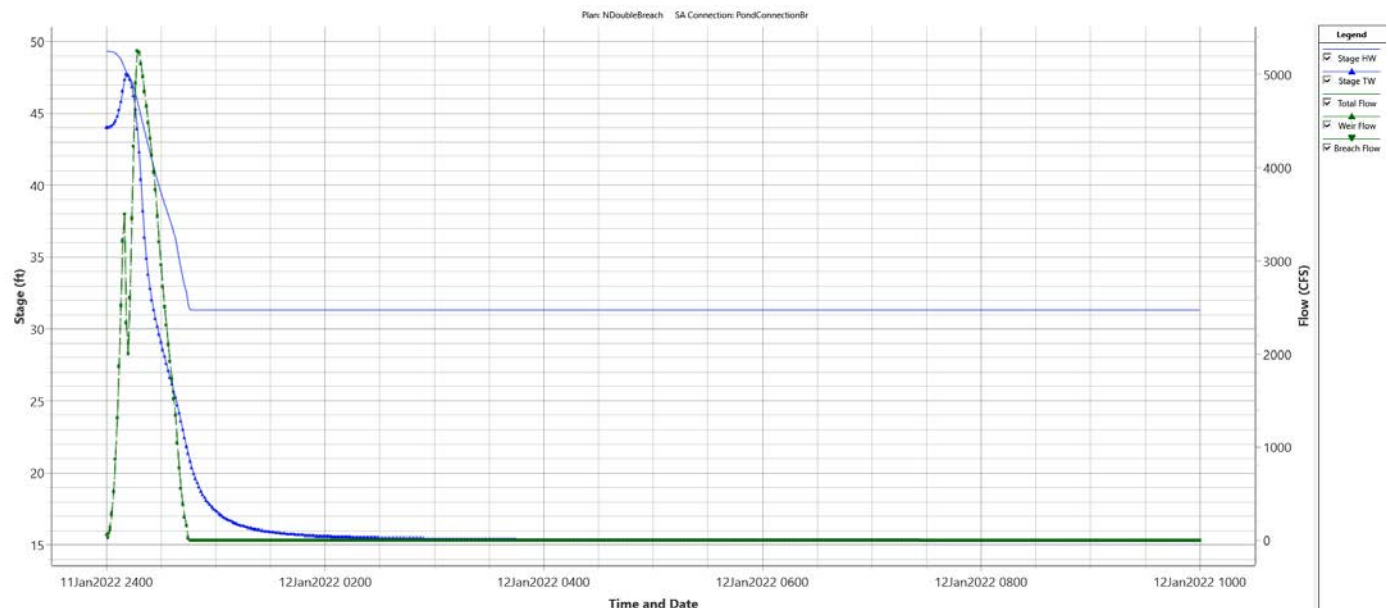
Main Grid Size 50 x 50 feet
Refinement Region Grid Size 30 x 30 feet

Time Step: 0:00-3:00 1 seconds
3:00-End 10 second

Maximum Courant Number	0.63
Continuity Error	<0.4 %
Manning's n Developed Areas	0.06
Manning's n Wooded Areas	0.1

Boundary Condition Normal depth; Slope = 0.00013
Equation Set Full Momentum

Gypsum Storage Area





Subject: APPENDIX D-1 - BREACH STUDY SUMMARY

Date: January 31, 2022

Made By: SEB

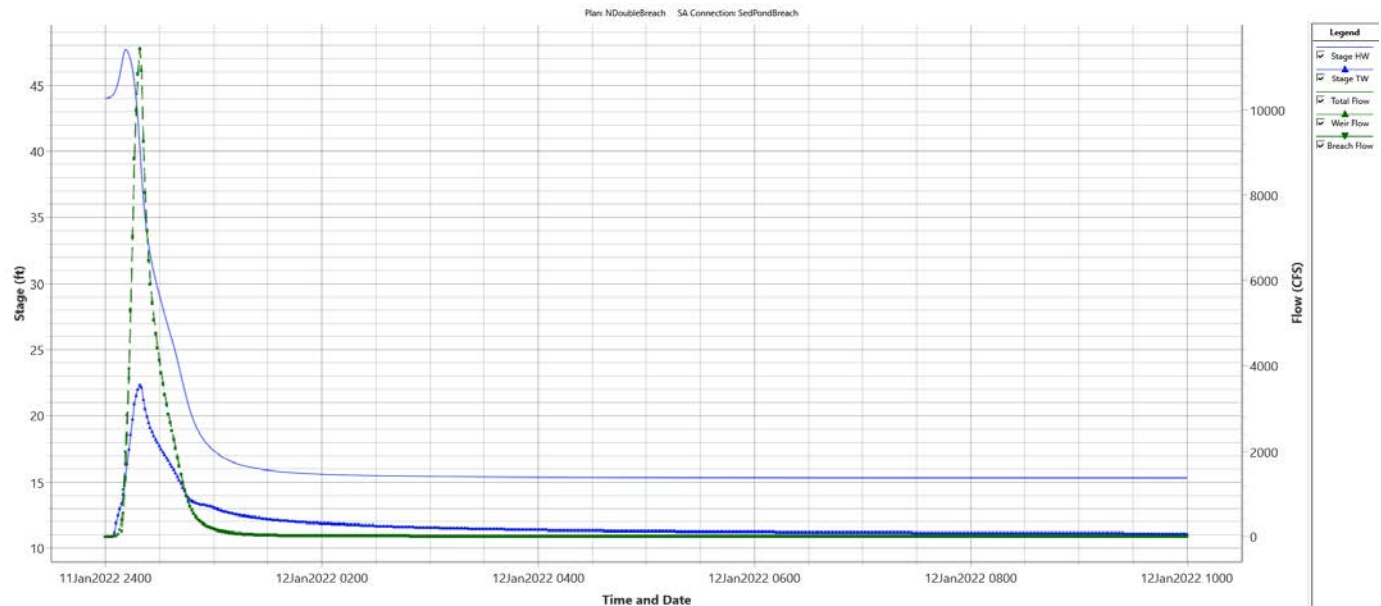
Project No.: 21482735

Checked By: LS

Project Short Title: FPL/GCEC GSA Cell #2 Breach/FL

Reviewed By: JDG

Sedimentation Pond



Subject: APPENDIX D-1 - BREACH STUDY SUMMARY

Date: January 31, 2022

Made By: SEB

Project No.: 21482735

Checked By: LS

Project Short Title: FPL/GCEC GSA Cell #2 Breach/FL

Reviewed By: JDG

NORTHWEST BERM BREACH

The Gypsum Storage Area is set to breach along the northwest berm.

MODELED BREACH PARAMETERS

	Bottom Width (feet)	Side Slope (z:1)	Average Breach Width (feet)	Breach Formation Time (hours)
Froehlich (2008)	40	1	61.0	0.39

Froehlich: Solved for in HEC-RAS for an overtopping event, a pool volume of 156.1 acre-feet.

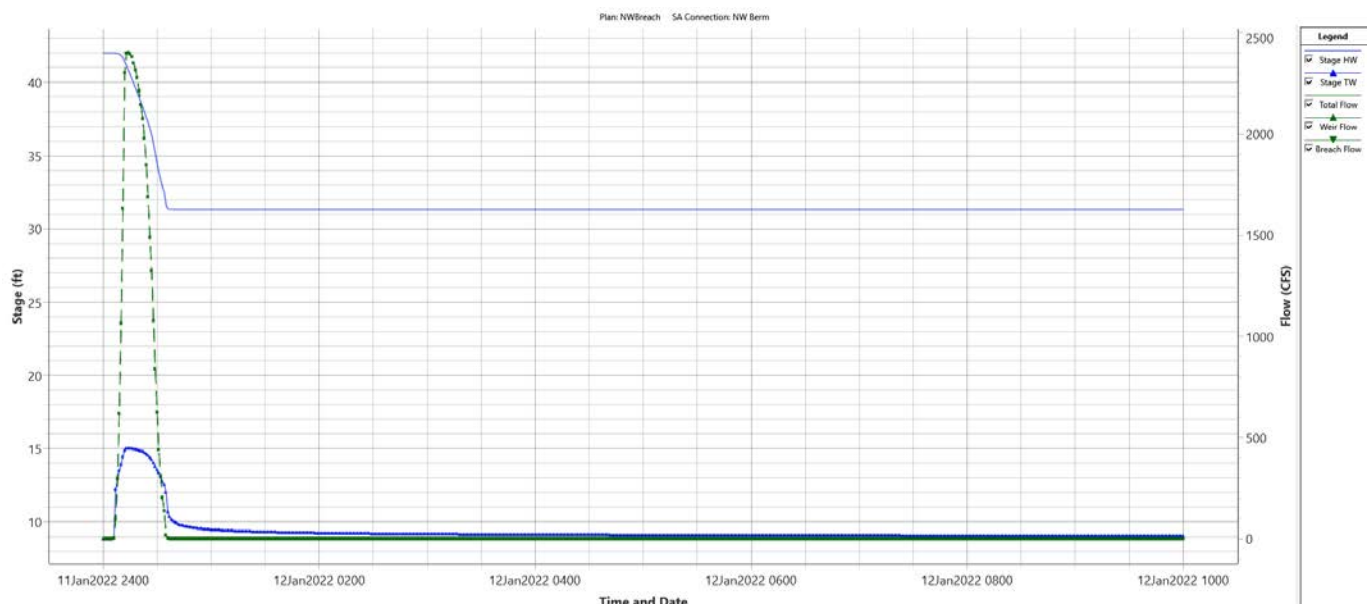
COMPUTATION PARAMETERS

Grid Size feet

Maximum Couraunt Number	<input type="text" value="0.83"/>
Continuity Error	<input type="text" value="<0.3"/> %
Manning's n Developed Areas	<input type="text" value="0.06"/>
Manning's n Wooded Areas	<input type="text" value="0.1"/>

Time Step: seconds

Boundary Condition
Equation Set





Subject: APPENDIX D-1 - BREACH STUDY SUMMARY

Date: January 31, 2022

Made By: SEB

Project No.: 21482735

Checked By: LS

Project Short Title: FPL/GCEC GSA Cell #2 Breach/FL

Reviewed By: JDG

EAST BERM BREACH

The Gypsum Storage Area is set to breach along the northwest berm.

MODELED BREACH PARAMETERS

	Bottom Width (feet)	Side Slope (z:1)	Average Breach Width (feet)	Breach Formation Time (hours)
Froehlich (2008)	37	1	55.0	0.34

Froehlich: Solved for in HEC-RAS for an overtopping event, a pool volume of 156.1 acre-feet.

COMPUTATION PARAMETERS

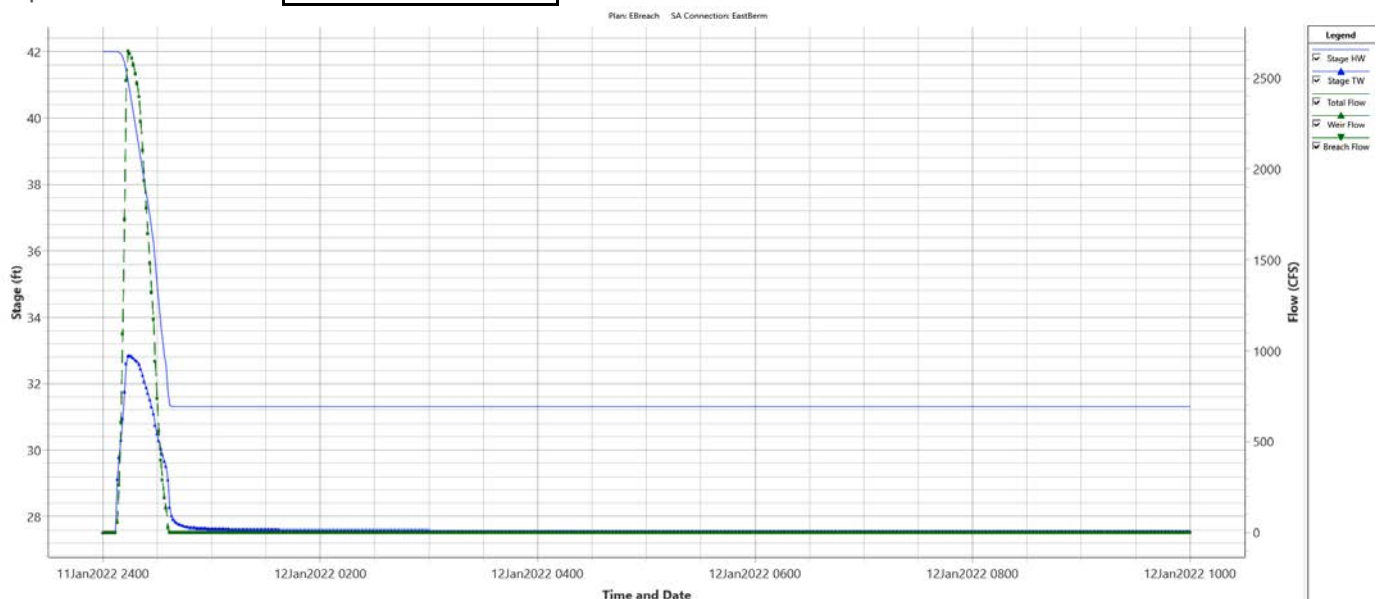
Main Grid Size 50 x 50 feet
Refinement Region Grid Size 20 x 20 feet

Time Step: 0:00-1:00 1 seconds
1:00-End 6 second

Maximum Courant Number	0.84
Continuity Error	<0.6 %
Manning's n Developed Areas	0.06
Manning's n Wooded Areas	0.1

Boundary Condition Normal depth; Slope = 0.00013

Equation Set Full Momentum





Subject: APPENDIX D-1 - BREACH STUDY SUMMARY

Date: January 31, 2022

Made By: SEB

Project No.: 21482735

Checked By: LS

Project Short Title: FPL/GCEC GSA Cell #2 Breach/FL

Reviewed By: JDG

IMPACTED STRUCTURES

Description	Peak Depth (feet)	Peak Velocity (feet/sec)	Destruction Factor (D xV)
Trailer	0.58	0.86	0.50

APPENDIX E

Sensitive Area Summary

APPENDIX E

ENVIRONMENTALLY SENSITIVE AREA SUMMARY

Environmentally Sensitive Area Summary

The Gulf Clean Energy Center is located adjacent to the Escambia River approximately 3.3 miles upstream from the convergence of the River with Escambia Bay. The Escambia River is a large alluvial river that flows south from Alabama through the Florida Panhandle to the Pensacola Bay Estuary and the Gulf of Mexico. The Escambia River Basin is highly productive, and serves as a nursery for commercially important shellfish and finfish, as well as a diverse array of flora and fauna. The Escambia River has an annual mean discharge of 6,730 cubic feet per second and contributes 80% of the surface water that enters the Pensacola Bay System.

Escambia Bay is a large shallow estuary located between Pensacola Bay and the Escambia River with depths varying from very shallow in the delta and wetlands to 17.7 ft at the junction of Escambia and Pensacola Bays. It is classified as a micro-tidal system with an average tidal range of 1.5 feet. The surface area of Escambia Bay is about 36 square miles with a mean depth of 8 ft. The watershed also includes three major river systems: the Escambia, Blackwater, and Yellow rivers and has a total surface area of 54.1 square miles. The Pensacola Bay System supports at least 1400 aquatic species. Their distribution around the bay is dependent on environmental conditions, such as temperature and salinity, and some are restricted to selected habitats, such as seagrass meadows. Oyster beds have the highest biodiversity of any habitat in Escambia Bay with seagrasses having the second.

Escambia Bay is dominated by the flows of the Escambia River and its associated channels. The freshwater flow from the rivers follows the western side of Escambia, White and Simpson Rivers as it flows south towards Escambia Bay. In Florida section, the river consists of multiple channels and is approximately 58 miles long but further north in Alabama it is a single channel named the Conecuh River. The total length of the river is about 230 miles for its extent in both Florida and Alabama.

Coastal Birds: Several species of birds are common in the area. These include, common loon, ringed-billed gull, osprey, least turn, laughing gull, brown pelican, black skimmer and bald eagles.

Fish: There are at least 200 species of fish identified from the bay system. The most common collected are silverside minnows, spot croaker, anchovies, menhaden, and pinfish. Mullet are one if the more common in the Perdido Key area and 81 species of fish have been identified from the Escambia River, making it the most fish diverse river system in the state.

Invertebrates: There are 187 species of large bottom dwelling invertebrates identified from the bay area. The diversity is higher in the upper parts if the bay near the rivers than it is at the lower end. Those that can tolerate the constant changing conditions, and live closer to the surface of the sand, are more common. The polychaete worm and the tubeworm are the most common bottom invertebrates in the bayous.

Marine Mammal: The Bottlenose Dolphin and the West Indianan Manatee are occasionally sighted near the Gulf Clean Energy Center, Escambia Bay and nearshore waters. The West Indian manatee is a threatened species of estuarine/aquatic mammal, which ranges throughout Florida. They are present year-round. Manatees tend to cluster around the warm water effluents of power plants during the colder months from November to March. Herding manatees away from impacted areas may be effective. Dolphins are known to inhabit Florida waters, most live offshore and are not likely to be directly affected by a nearshore spill. The Atlantic bottlenose dolphin is found in nearshore waters during spring and summer.

Shorelines, Wetlands and Submerged Aquatic Vegetation (SAV): The Escambia River North of the Plant primarily consists of freshwater marshes, swamps and scrub and shrub wetlands. Wetlands upstream of tidal influence are characterized by wet forests that have been subjected to logging activities, including dredging of channels for access and probably construction of temporary impoundments. Many minor channels exist in the Florida part of the watershed

some of which branch off of the Escambia River itself to enter the bay without rejoining the main trunk. The shoreline at the Plant consists of sheltered riprap, solid man-made structures and vegetated low banks. Extensive wetlands consisting of salt and brackish water marshes exist across from and northeast of the plant and extending down to the mouth of Escambia Bay. Salt marshes are dominated by black needlerush and smooth cordgrass. Salt Meadow Cordgrass (or marsh hay) is also common. The wetland area to the east and adjacent to US Highway 90 is separated from the downstream influence of the Escambia River and is likely saline. It consists mainly of emergent herbaceous vegetation.

There are at least three species of seagrass in the Bay. Turtle grass and shoal grass are the most common in the Sound and Big Lagoon. In upper portions of the bay widgeon grass becomes more common and eelgrass is found in the freshwater systems. Mapping and monitoring of SAV in the Pensacola Bay System has showed continuing improvement in upper Escambia Bay. Seagrass beds in areas characterized by lower salinities are recovering faster than those associated with higher salinity. The ability of seagrasses to exist long-term in the Pensacola Bay System is uncertain due to the adverse effects of rapid urbanization in the watershed.

Threatened and Endangered Species: There are thousands of animals, birds, and insects in this area of Florida and many are protected under state and/or federal law. The Escambia River supports a reproducing population of Gulf Sturgeon that annually migrate from estuarine and near-shore waters to spawning grounds in the Conecuh (upper Escambia) River. The primary use of the Escambia River located near the plant is as a migration route for Gulf Sturgeon between freshwater and estuarine/marine habitats. As such, the majority of sturgeon are not likely to enter Governor's Bayou or encounter the plant stormwater discharge outfalls. Based on the current population within the plant area, life history characteristics, the continued operation of the plant is "not likely to adversely affect" the Gulf Sturgeon as noted in the Gulf Sturgeon Evaluation report prepared by Golder Associates in early 2017.

There are also rare and imperiled fish and mussel species in the Escambia River watershed. In addition to the Gulf sturgeon the fish species include bluenose shiner, saltmarsh topminnow, crystal darter, and harlequin darter. Six mussel species are also listed by the U.S. Fish and Wildlife Service as threatened. Declining populations of several fish and mussel species have merited concern from the federal government.

The Pensacola Bay system sustains numerous listed species, as designated under the Endangered Species Act (ESA). The ESA also provides special protection for Critical Habitat of certain species, which may include an area that is not currently occupied by the species, but that will be needed for its recovery.

As described above, the Pensacola Bay system includes federally designated critical habitat for the threatened Gulf sturgeon and several species of freshwater mussels. The watershed also supports the threatened piping plover, the endangered reticulated flatwoods salamander, and the blackmouth shiner, which is considered endangered by the state of Florida.

Certain natural areas within the watershed have been identified by the FWC as Strategic Habitat Conservation Areas (SHCAs). SHCAs are important habitats in Florida that do not have conservation protection, which would increase the security of rare and imperiled species if they were protected. Within the Pensacola Bay watershed, SHCAs have been identified for several species, including the Florida black bear, pine barrens tree frog, seal salamander, and others.

Portions of the estuary adjacent to the Gulf of Mexico also provide habitat for three species of threatened and endangered sea turtles, and beach and dune communities also provide habitat for the endangered Santa Rosa Beach mouse.

Aquatic Preserves: The Pensacola Bay system includes two aquatic preserves: the Yellow River Marsh Aquatic Preserve, and the Fort Pickens Aquatic Preserve.

- The Yellow River Marsh Aquatic Preserve encompasses approximately 11,000 acres of the Yellow River, Blackwater Bay, and East Bay. The aquatic preserve is among the watershed's least impacted natural areas

and includes more than 3,000 acres of salt and freshwater marshes and approximately 5,000 acres of forested wetlands. The remainder of the preserve is open water. Eglin AFB and the NFWFMD manage almost half of the uplands adjacent to the preserve, which further protects water quality. The Yellow River Marsh Aquatic Preserve is located approximately 12 miles from the Gulf Clean Energy Center and is therefore, not within the potential area of impact.

- Fort Pickens Aquatic Preserve includes 34,000 acres of submerged lands adjacent to Gulf Islands National Seashore. The preserve includes sandy bottom and seagrass bed habitats that are for numerous species, including the loggerhead turtle, the southeastern snowy plover, the least tern, and the black skimmer. Fort Pickens Aquatic Preserve includes portions of Santa Rosa Sound, Pensacola Bay, and Big Lagoon, extending northward to the Gulf Intracoastal Waterway. The preserve also includes submerged lands in the Gulf of Mexico up to three miles south of the coastline. The Fort Pickens Aquatic Preserve is located approximately 16 miles from the Gulf Clean Energy Center and is therefore not within the potential impact area.

Conservation Lands: Approximately 520,000 acres, or 35 percent, of the watershed in Florida consists of public and conservation lands. The NFWFMD owns and manages over 55,000 acres within the watershed. The Yellow River, Escambia River, Blackwater River, and Garcon Point Wildlife Management Areas (WMAs) are public lands that provide joint conservation and recreational use. The District also manages 19 acres in the watershed as conservation easements, maintaining private ownership while protecting water resources. The Yellow, Blackwater, and Escambia River WMA tracts are also managed by FWC as Wildlife Management Areas. These areas are managed to protect and restore wildlife habitat, while also providing a resource for compatible public recreation. Land-management activities include prescribed burning, timber management, groundcover restoration, reforestation, and other activities (FWC 2016a, NFWFMD 2016). The FWC also manages the Lake Stone Fish Management Area in Escambia County. The Gulf Clean Energy Center is located within the Escambia

River Wildlife Management Area. The Yellow and Blackwater River WMAs are located outside of the Planning Distance.

The National Park Service owns and manages the Gulf Islands National Seashore, established in 1971. The seashore supports an abundance of natural habitats, including coastal dunes, scrub, and estuarine marsh ecosystems. Portions of the military lands within the watershed are managed as conservation areas, including 10,738 acres owned and managed by the U.S. Navy and 229,743 acres owned and managed by the U.S. Air Force (FNAI 2010). The Gulf Islands National Seashore is not within the Planning Distance as it is over 25 miles from the Gulf Clean Energy Center.

State lands in the watershed include the Blackwater River State Forest, Fort Pickens State Park, and Blackwater River State Park. The Blackwater River State Forest covers over 210,000 acres in northern Santa Rosa and Okaloosa counties, including significant portions of the Blackwater River and Yellow River watersheds. These park and forest lands protect water and other natural resources, while also providing important opportunities for public use and recreation. The state forest is also a resource for timber production, with harvesting following silvicultural Best Management Practices. These areas are also not within the potential impact area.