



Indianapolis Power & Light Company  
Petersburg Generating Station

Ash Pond System  
Emergency Action Plan  
for CCR Rule Compliance

Prepared by



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**INDIANAPOLIS POWER & LIGHT COMPANY  
PETERSBURG GENERATING STATION  
ASH POND SYSTEM EMERGENCY ACTION PLAN**

**ISSUE SUMMARY & CERTIFICATION**

This is to confirm that this report has been prepared, reviewed, and approved in accordance with Sargent & Lundy's Standard Operating Procedure SOP-0405, which is based on ANSI/ISO/ASSQC Q9001 Quality Management Systems.

<u>Rev.</u>	<u>Issue Purpose</u>	<u>Issue Date</u>	<u>Prepared By</u>	<u>Reviewed By</u>	<u>Approved By</u>	<u>Pages Affected</u>
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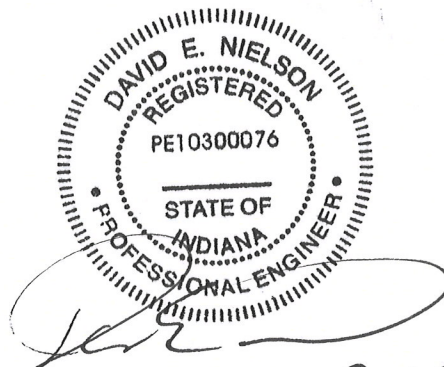
I certify that this amended emergency action plan meets the requirements of 40 CFR 257.73(a)(3).

I certify that this report was prepared by me or under my direct supervision and that I am a registered professional engineer under the laws of the State of Indiana.

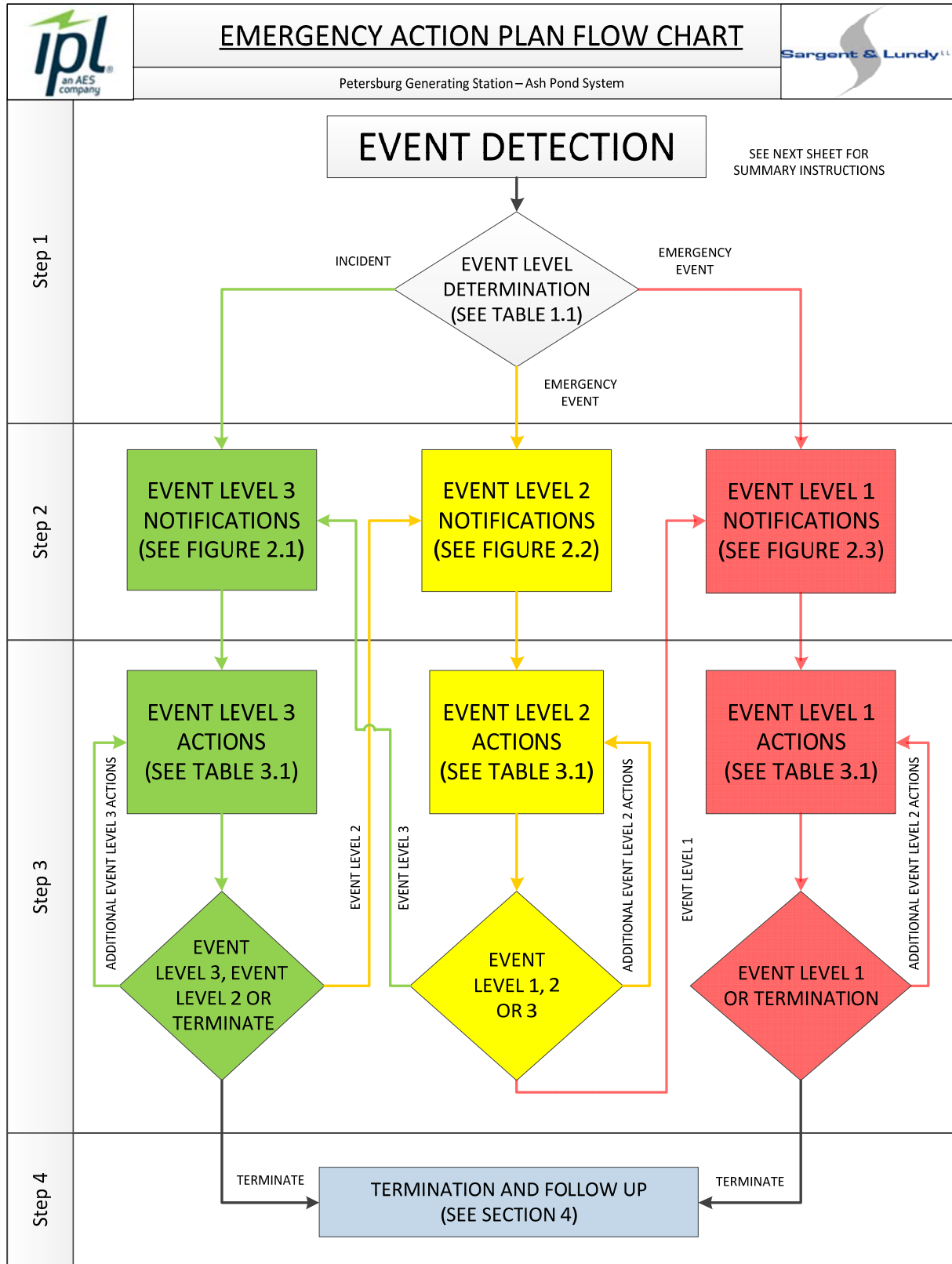
Certified By: David E. Nielson

Date: March 22, 2019

Seal:



3-22-2019



**FIGURE i**

## SUMMARY OF EMERGENCY ACTION PLAN PROCESS

There are four steps that must be followed anytime an incident or emergency event is detected at the Petersburg Generating Station – Ash Pond System. The steps are:

- Step 1: Event Detection and Level Determination
- Step 2: Notification and Communication
- Step 3: Expected Actions
- Step 4: Termination and Follow-up

Incident and emergency events are defined in Section 1.2.1 and Table 1.1 of this Emergency Action Plan (EAP). Specific actions required for each step will depend on the severity of the situation as defined during

Step 1. The actions required for each step of the EAP are summarized graphically on the EAP Flow Chart (Figure i) and are described in the corresponding EAP Section. A summary of each step is provided below.

### Step 1 - Event Detection and Level Determination

During the initial step, an incident or emergency event is detected within the Ash Pond System and classified by the EAP Coordinator (or designee) into one of the following event levels:

- Event Level 3: Incident, slowly developing
- Event Level 2: Emergency Event, rapidly developing
- Event Level 1: Emergency Event, imminent dike failure or flash flooding

Information to help the EAP Coordinator (or designee) determine which of the above event levels is applicable is provided in Section 1 of this EAP.

### Step 2 - Notification and Communication

After the event level has been determined, notifications are made in accordance with the appropriate notification flow chart provided in Section 2 of this EAP.

### Step 3 - Expected Actions

After the initial notifications are made, the EAP Coordinator (or designee) should refer to Table 3.1 and confer with the Engineering Director (or designee) to develop and execute appropriate preventative actions. During this step of the EAP, there is a continuous process of taking actions, assessing the status of the situation, and keeping others informed through communication channels established during the initial notifications. The EAP may go through multiple event levels during Steps 2 and 3 as the situation either improves or worsens.

### Step 4 - Termination and Follow-Up

Once the event has ended or been resolved, termination and follow-up procedures should be followed as outlined in Section 4 of this EAP. EAP operations can only be terminated after completing operations under Event Level 3 or 1. If Event Level 2 is declared, the operations must be designated Event Level 3 or 1 before terminating the EAP operations.

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## **PRIVACY STATEMENT**

This document contains private contact information that is to be used only in matters related to this EAP. The contact information included herein is provided as required for the prompt communication of critical life safety information and is subject to the provisions of the applicable Federal and State privacy acts and regulations.

## **PURPOSE**

The purpose of the EAP is to reduce the risk of human loss of life and injury during an incident or emergency event at the Petersburg Generating Station – Ash Pond System.

A secondary purpose of the EAP is to minimize the potential for property damage during an incident or emergency event at Petersburg Generating Station – Ash Pond System. The intent of the EAP is to identify problems early and repair them before they result in failure of any of the dikes at the Petersburg Generating Station.

## **ASH POND SYSTEM**

The location and layout of the ash ponds and associated dikes at the Ash Pond System of the Petersburg Generating Station is shown on Figure 5.2. There are three active ash ponds at the station. The ponds are identified as Pond A, Pond A', and Pond C. Former Ponds B and D were regraded prior to October 19, 2015 such that these former ponds can no longer impound water. Construction details of the perimeter dikes for these ponds are available on file in the EAP office at the station.

Prior to recent plant improvements, the coal ash produced as a byproduct of generating electricity was combined with water and transported and discharged into the southwest portion of Pond A, the station's primary ash settling pond. Ash particles settled to the floor of the pond as the water moved across the pond to the pond's outlet pipes. Processed water from Pond A was then transferred to Pond A' through two 36-inch-diameter corrugated metal pipes where any ash particles that remained suspended were allowed additional time to settle to the floor of Pond A'. Water was then discharged from Pond A' to a discharge canal and Lick Creek through a concrete outlet structure (National Pollutant Discharge Elimination System-permitted Outfall 001) with a 6-foot-wide sharp-crested weir and a 24-inch-diameter reinforced concrete pipe. Rain water collected within Pond C is discharged through a concrete outlet structure with stop logs located in the southern-most corner of Pond C to an adjacent swale. The adjacent swale directs the effluent from Pond C to a 30-inch -diameter reinforced concrete pipe which discharges into the northeast corner of Pond A.

Following the recent plant improvements, the CCR streams are intermittent while other wastewater streams are diverted to the new wastewater treatment plant. The aforementioned ponds are to be closed upon completion of permit and design activities.

## **EAP ANNUAL REVIEW**

This EAP document will require an annual review and update to stay current. For annual review and periodic test procedures, see Section 6.6.1.

## REVISIONS

For revision procedures, see Section 6.6.1.

Revision No.	Date	Revisions Made
0	03/23/2017	EAP published in IDNR 2012 format
1	03/15/2019	Modified Ash Pond System description Revised Section 1.2.4, including the addition of “Environmental Affairs Director” to EAP personnel Updated contact information in notification flowcharts (Figures 2.1, 2.2, and 2.3) Added recommended actions for the Engineering Director and On-Call Engineer in the Action Data Sheets in Section 3 Modified Form 3.1 Added Section 6, “Emergency Preparedness” Moved Appendix D provisions to Sections 6.1 and 6.2 Added Form D.2
2	03/22/2019	Modified Ash Pond System description Modified Tables 1.1 and 1.2 Updated Event Level 1 broadcast message Updated alternate Engineering Director contact information Modified Action Data Sheets A1-A3 and E1-E3 Updated Section 6.1, “Surveillance and Monitoring”

## **SECTION 1.**

### **EVENT DETECTION AND LEVEL DETERMINATION**

This section of the EAP describes the first step that must be followed whenever an incident or emergency event is detected at the Petersburg Generating Station – Ash Pond System. The layout and location of ash ponds and associated dikes at the Ash Pond System of Petersburg Generating Station is shown on Figure 5.2. This section also describes event detection and information to assist the EAP Coordinator (or designee) in determining the appropriate level for the event.

#### **1.1 EVENT DETECTION**

Incidents or emergency events may be detected by various means including but not limited to the following:

1. Results of inspections.
2. Instrument readings on the dikes or in the plant.
3. Notification by local emergency services personnel, especially during a severe weather or other natural event such as an earthquake.
4. Notification by on-site employees.
5. Notification by off-site personnel or neighbors.

After any incident or emergency event is detected and reported to the EAP Coordinator, the EAP Coordinator (or Acting EAP Coordinator) is responsible for determining the level of the event. If the Local Emergency Services Agency receives a 911 call regarding observations of an incident or emergency event at the Ash Pond System, the dispatcher shall first contact the EAP Coordinator. The EAP Coordinator shall determine the appropriate event level (as defined in Section 1.2.2) and advise the dispatcher of the event level.

#### **1.2 EVENT LEVEL DETERMINATION**

##### **1.2.1 Incidents and Emergency Events**

An incident is defined as an event, which takes place, or a condition, which is slowly developing, that is not normally encountered in the routine operation of the Ash Pond System, or necessitates a variation from Standard Operating Procedures. Such events are more common than emergency conditions and often offer time to conduct preplanned responses to the slowly developing situation. If addressed in a timely manner, such events can often be prevented from progressing into a much worse event. An incident requires operations in accordance with Event Level 3 of this EAP.

An emergency event is defined as an event, which takes place, or a condition, which develops, that is of a serious nature that may endanger the dikes of the Ash Pond System, or endanger persons or property, and

demands immediate attention. An emergency event requires immediate operations in accordance with Event Level 2 or 1 of this EAP.

### 1.2.2 Level Determination

The EAP Coordinator shall be responsible for defining incidents or emergency events as one of the three following event levels:

**Event Level 3** - This is an incident that is defined as a slowly developing situation that may endanger the structural integrity of the Ash Pond System dikes. This event level also involves a determination if it will be possible to retain the structural integrity of the Ash Pond System dikes and avoid release of fluids and ash. If it is likely that the structural integrity of the Ash Pond System cannot be maintained, then Event Level 3 is not applicable.

**Event Level 2** - This is an emergency event that is defined as rapidly developing and could quickly lead to dike failure and flash flooding downstream of the Ash Pond System. This event level also involves a determination if it may be possible to retain the structural integrity of the Ash Pond System dikes and avoid release of fluids and ash beyond the perimeter of the existing dike involved. All decisions to prevent this occurrence must fully consider the safety of those involved in any repairs to be undertaken. If fluid levels within the ash pond in question cannot be reduced significantly to prevent release, the possibility of repair should not be considered. If it is likely that the structural integrity of the Ash Pond System cannot be maintained, and that the release of fluids and ash beyond the Ash Pond System's boundary cannot be avoided, then Event Level 2 is not applicable.

**Event Level 1** - This is an emergency event that is defined as the likely and imminent dike failure and the possibility of flash flooding downstream of the dike. This event may include the determination that it will not be possible to retain the structural integrity of the Ash Pond System dikes to avoid release of fluids and ash.

### 1.2.3 Level Determination Guidance

Table 1.1 shall be used as a guide for determining the appropriate event level. This table attempts to be all inclusive; however, an event or condition may arise that is not covered in this table. In the circumstance of multiple events occurring within the Ash Pond System with conflicting event levels, always designate the higher event level as the governing event level.

### 1.2.4 Roles, Responsibilities, and Authority

The EAP personnel for the Petersburg Generating Station Ash Pond System include the following:

EAP Coordinator – The EAP Coordinator is a designated Petersburg Generating Station employee experienced with the Ash Pond System. The EAP Coordinator shall function as the EAP operations coordinator and/or Incident Manager during any of the three event levels of operation described in this EAP. The EAP Coordinator has the authority and responsibility to take the necessary actions described in this EAP. As the situation requires and as time permits, the EAP Coordinator should

consult with the Engineering Director before initiating notifications described in this EAP. In the case of Event Levels 2 and 1, the EAP Coordinator and Engineering Director should consult with the On-Call Engineer throughout the decision process regarding actions to be undertaken.

The EAP Coordinator is responsible for providing initial, timely, and accurate notifications to the Warning/Evacuation Director and the Environmental Affairs Director after an Event Level 2 or 1 has been determined. The EAP Coordinator is also responsible for providing subsequent updates of the situation to the Warning/Evacuation Director to assist in making timely and accurate decisions regarding warning and evacuation responsibilities.

Once an Event Level 2 or 1 is terminated, the EAP Coordinator is responsible to submit to the Engineering Director, as soon as possible, an accurate summary document of the field observations and activities of the event.

Engineering Director – The Engineering Director is a designated Petersburg Generating Station employee experienced with the Ash Pond System. The Engineering Director is responsible for assisting in technical aspects of the Ash Pond System dikes, event level determination and evaluation, and anything that pertains to the condition of the dikes within the Ash Pond System, including any necessary any necessary follow-up activities. The Engineering Director will also assist in performing annual reviews and issuing updates to this EAP.

On-Call Engineer – The On-Call Engineer is a professional engineer licensed in the State of Indiana with special expertise in civil/geotechnical engineering and the design and operation of ash ponds.

Warning/Evacuation Director – The Warning/Evacuation Director is a Local Emergency Planning Commission or Emergency Management Agency member in Pike County, Indiana, who is familiar with the Petersburg Generating Station and its Ash Pond System. The Warning/Evacuation Director is primarily responsible for coordinating the preparation to evacuate people downstream of the Petersburg Generating Station, as well as the implementation of the evacuation itself, if necessary. Should an incident or emergency situation be detected by someone outside of the station, the Warning/Evacuation Director should notify the EAP Coordinator so that the latter can then notify other interested parties.

Environmental Affairs Director – The Environmental Affairs Director is a designated IPL employee familiar with the Petersburg Generating Station and its Ash Pond System, and is experienced in assessing and responding to environmental impacts from an emergency event. The Environmental Affairs Director is primarily responsible for assessing the environmental consequences of an emergency event, and for communicating these consequences, in addition to other relevant environmental data, to the EAP Coordinator during an emergency event.

External Affairs Manager – The External Affairs Manager is a designated IPL employee within their external affairs group who is familiar with the Petersburg Generating Station and its Ash Pond System. The External Affairs Manager is primarily responsible for representing IPL to local, state, and/or national media personnel during an emergency event through prepared statements and official press releases.

**TABLE 1.1 – EVENT LEVEL DETERMINATION GUIDANCE**

Event	Observation	Event Level
<b>Flooding and Overtopping</b>	In the event of potential flooding, the water surface elevation of each pond would be observed using the installed staff gauges and compared to each Event Level's specified threshold, which was developed from the elevations provided in Table 1.2. For an Event Level 3 to be declared as a result of flooding, the pond water surface elevation, $h$ , would be as follows:  Pond A: $435 \text{ ft} < h \leq 435.5 \text{ ft}$ Pond A': $435 \text{ ft} < h \leq 435.5 \text{ ft}$	3
	For an Event Level 2 to be declared as a result of flooding, no water would be overtopping the perimeter dikes, and the pond water surface elevation would be as follows:  Pond A: $435.5 \text{ ft} < h \leq 437 \text{ ft}$ Pond A': $435.5 \text{ ft} < h \leq 436.5 \text{ ft}$	2
	For an Event Level 1 to be declared as a result of flooding, some waves may be observed to be flowing over the tops of the perimeter dikes, and the pond water surface elevation would be as follows:  Pond A: $h > 437 \text{ ft}$ Pond A': $h > 436.5 \text{ ft}$	1
<b>Earthquake and Aftershocks</b>	This minimum event level will be declared any time an earthquake occurs within 50 miles of the station regardless of the earthquake magnitude. A field inspection of the Ash Pond System dikes shall immediately commence to determine if an Event Level 2 or 1 is warranted.	3
	This is the minimum event level to be declared in the event that the post-earthquake inspections of the Ash Pond System indicate damage has occurred to the ash pond perimeter dikes, but there is no indication of fluids escaping from the ponds. Observed damage may include, but not be limited to, sloughing, vertical or horizontal cracks, and/or bulging.	2
	This Event Level will be declared in the event that the post-earthquake inspections indicate that there are some fluids escaping from the pond through the Ash Pond System perimeter dikes. Alternatively, this Event Level will be declared if seismic activity results in significant damage to the Petersburg Generating Station facilities and emergency actions at the power block do not allow post-earthquake inspections.	1
<b>Seepage and Erosion</b>	This event level should be declared upon discovery of seepage; or, in other words, a slow escape of liquid through the earthen material of any ash pond dike. The discovery of seepage may also coincide with the discovery of surface scouring and erosion. For an Event Level 3, the seepage should be clear and clean of suspended solids and of a relatively low flow rate. This event level may also be declared upon observation of spongy feeling, soft, wet soils located near the downstream toe of a dike.	3
<b>Seepage and Erosion</b>	This event level should be declared when a significant increase in the seepage flow rate is observed or a discoloration of the flow is observed. This event level should also be declared if minor erosion is observed on the surface of the dike. Erosion can be defined as the scouring of the surface of the dike such that soil material has visibly been removed from the dike surface.	2

**TABLE 1.1 – EVENT LEVEL DETERMINATION GUIDANCE**

Event	Observation	Event Level
	This event level should be declared upon discovery of seepage flow that contains visible evidence of solids or any other indication that significant internal or external erosion is occurring. Such external erosion may be evident by the presence of a significant flow path or erosion channel on the surface of the dike.	1
<b>Cracking and Other Movements</b>	This event level should be declared upon discovery of a new crack greater than ½” but less than 1” in width or observation of movement of the dike which may include sloughing or bulging.	3
	This event level should be declared upon observation of significantly increased cracking (cracks greater than 1” in width) or increased movement areas, but there is no evidence of seepage flow from the pond.	2
	This event level should be declared upon observation of significantly increased cracking (cracks greater than 1” in width) or increased movement areas and there is evidence of seepage flow from the pond, such as the sloughed area is moist or water is visibly flowing out of the dike.	1
<b>Discharge Piping Valve Failure or Blocked Discharge Pipes</b>	This event level should be declared upon discovery of a blocked discharge pipe or a malfunctioning discharge valve. This event level should be declared even if the valve cannot be closed.	3
	This event level should be declared upon discovery of a blocked discharge pipe or a malfunctioning discharge valve and the pond water surface elevation, $h$ , is as follows: Pond A: $435.5 \text{ ft} < h \leq 437 \text{ ft}$ Pond A': $435.5 \text{ ft} < h \leq 436.5 \text{ ft}$	2
	This event level should be declared upon discovery of a blocked discharge pipe or a malfunctioning discharge valve and the pond water surface elevation, $h$ , is as follows: Pond A: $h > 437 \text{ ft}$ Pond A': $h > 436.5 \text{ ft}$	1
<b>Sabotage</b>	This event level should be declared if sabotage is ever suspected to have occurred at any location within the Petersburg Generating Station and there is no visible evidence of leakage from the Ash Pond System dikes.	3
	This event level should be declared if sabotage is ever determined to have occurred at any location within the Petersburg Generating Station and there is no visible evidence of leakage from the Ash Pond System dikes.	2
<b>Sabotage</b>	This event level should be declared if sabotage is ever determined to have occurred at any location within the Petersburg Generating Station and there is visible evidence of leakage from the Ash Pond System dikes.	1



**TABLE 1.2 – POND DIKE ELEVATIONS AND MAXIMUM SURFACE WATER ELEVATION**

<b>Pond Name</b>	<b>Existing Minimum Dike Crest Elevation<sup>1</sup> (feet)</b>	<b>Maximum Design Water Surface Elevation<sup>1</sup> (feet)</b>
Pond A	437.5 ft	435 ft
Pond A'	437 ft	435 ft
Pond C	453 ft	N/A

<sup>1</sup> Elevations are with respect to the North American Vertical Datum of 1988 (NAVD88).



## **SECTION 2.**

### **NOTIFICATION AND COMMUNICATION**

This section of the EAP describes the appropriate notifications that should be made after the EAP Coordinator has determined the event level as an Event Level 3, 2, or 1. This section also outlines the communication systems that are available for making notifications as well as a Public Affairs Plan with sample media release and a list of media contacts. Notifications should be made in accordance with the appropriate Notification Flow Chart provided in this Section (Figures 2.1, 2.2, and 2.3).

#### **2.1 COMMUNICATION SYSTEMS**

Every effort will be made to communicate the occurrence of an incident or event to the EAP Coordinator as soon as possible. Communication regarding the event details will be made by plant personnel observing the situation using systems most available at the time that the event is observed. Methods of communication available include, in order of preference; cell phones, radios, GAI-Tronics, pagers, or e-mails. The EAP Coordinator should then contact all other interested parties in accordance with the appropriate Notification Flow Chart by telephone.

#### **2.2 SUGGESTED PRESCRIPTED MESSAGES FOR EAP COORDINATOR**

The following prescribed messages may be used as a guide to communicate the status of an event. Keep in mind that clarity and brevity are the most important qualities of these messages. It is recommended that the EAP Coordinator not allow conversations to include causes or responsibility of incidents. Only facts, future actions, and future communication plans should be discussed.

##### **Event Level 3**

- This is the Emergency Action Plan Coordinator. I am making this call in accordance with the Petersburg Ash Pond System EAP.
- An incident has been detected at the Ash Pond System.
- The EAP has been activated, currently at the lowest emergency level (Level 3).
- If a problem occurs, flooding along the White River, in and around Petersburg Generating Station, and along the Indiana Southern Railroad is possible.
- The situation is being monitored to determine if any evacuation warnings are necessary.
- We will keep you apprised of the situation. The best telephone number to reach me during this event is ... (state the best number to reach you).

##### **Event Level 2**

- This is the Emergency Action Plan Coordinator. I am making this call in accordance with the Petersburg Ash Pond System EAP.
- Problems have occurred with the Ash Pond System.
- The EAP has been activated, currently at the intermediate emergency level (Level 2).
- Flooding along the White River, in and around the Petersburg Generating Station, and along the Indiana Southern Railroad is possible.

- Prepare to limit access to areas (1) along the White River adjacent to and downstream from the station, (2) to plant areas near the ash pond dikes, and (3) to areas of the Indiana Southern Railroad immediately adjacent to the station.
- We will keep you apprised of the situation. The best telephone number to reach me during this event is ... (state the best number to reach you).

### **Event Level 1**

- This is the Emergency Action Plan Coordinator. I am making this call in accordance with the Petersburg Ash Pond System EAP.
- Problems have occurred with the Ash Pond System.
- The EAP has been activated, currently at the highest emergency level (Level 1).
- Flooding on station property and along the White River will occur. It is likely that flooding will also occur along the Indiana Southern Railroad.
- Immediately establish restricted access areas along the White River between the State Highway 57 Bridge and the State Highway 61 Bridge.
- Immediately instruct security to limit access to the Ash Pond System.
- Immediately instruct plant personnel to move to higher ground within the station buildings.
- Immediately cease all rail traffic along the Indiana Southern Railroad until notified it is safe to resume rail traffic.
- We will keep you apprised of the situation. The best telephone number to reach me during this event is ... (state the best number to reach you).

## **2.3 PUBLIC AFFAIRS PLAN**

In the event of an incident or an emergency condition, the External Affairs Manager will be alerted and briefed on the situation. The External Affairs Manager will prepare and deliver a message for public release based on the existing conditions and information from the Environmental Affairs Director or designee, or other sources.

Preparation of warning messages should begin as soon as their potential need is apparent so that they can be issued promptly upon determination of a Level 2 or Level 1 event. Where time is available for its preparation, the initial message should contain all pertinent information. However, in some cases, an emergency condition may be declared with little or no advance notice. The following example messages provide a model for the first announcements in such cases for Event Levels 2 and 1. Subsequent announcements should provide additional details.

### **Announcement for Possible Dike Failure Problem (Event Level 2)**

The Indianapolis Power & Light Company announced at (time) today that an emergency condition existed around the Petersburg Generating Station Ash Pond System dikes. The Ash Pond System is located 2.7 miles upstream from the State Highway 61 Bridge over the White River, near Petersburg, Indiana.

The IPL spokesperson said that actions were underway to prevent failure of the Ash Pond System dikes and there is no immediate danger of the dikes failing. However, as a precautionary measure, those located on or along the banks of the White River downstream of the State Highway 57 Bridge and upstream of the State Highway 61 Bridge should prepare to evacuate.

Additional Information will be released as promptly as possible.

**Announcement for Possible Dike Failure Imminent or in Progress (Event Level 1)**

**URGENT, URGENT:** The Indianapolis Power & Light Company announced at (time) today that an emergency condition existed around the Petersburg Generating Station Ash Pond System. The Ash Pond System is located 2.7 miles upstream from the State Highway 61 Bridge over the White River, near Petersburg Indiana.

Attempts to save the dikes are underway but their success cannot be determined as of yet. Anyone located on or along the banks of the White River downstream of the State Highway 57 Bridge and upstream of the State Highway 61 Bridge should evacuate to higher ground **IMMEDIATELY!** If the dike fails, water will take less than 60 minutes for the flood wave to travel from the dike breach to the State Highway 61 Bridge. Areas closer to the station will be flooded sooner.

Additional information will be released as promptly as possible.

**Media Contacts**

The National Weather Service shall be the primary source through which emergency announcements are released to the news media. Radio and television stations that are likely to provide coverage to the area in danger are also included below in the case that the primary source cannot be reached.

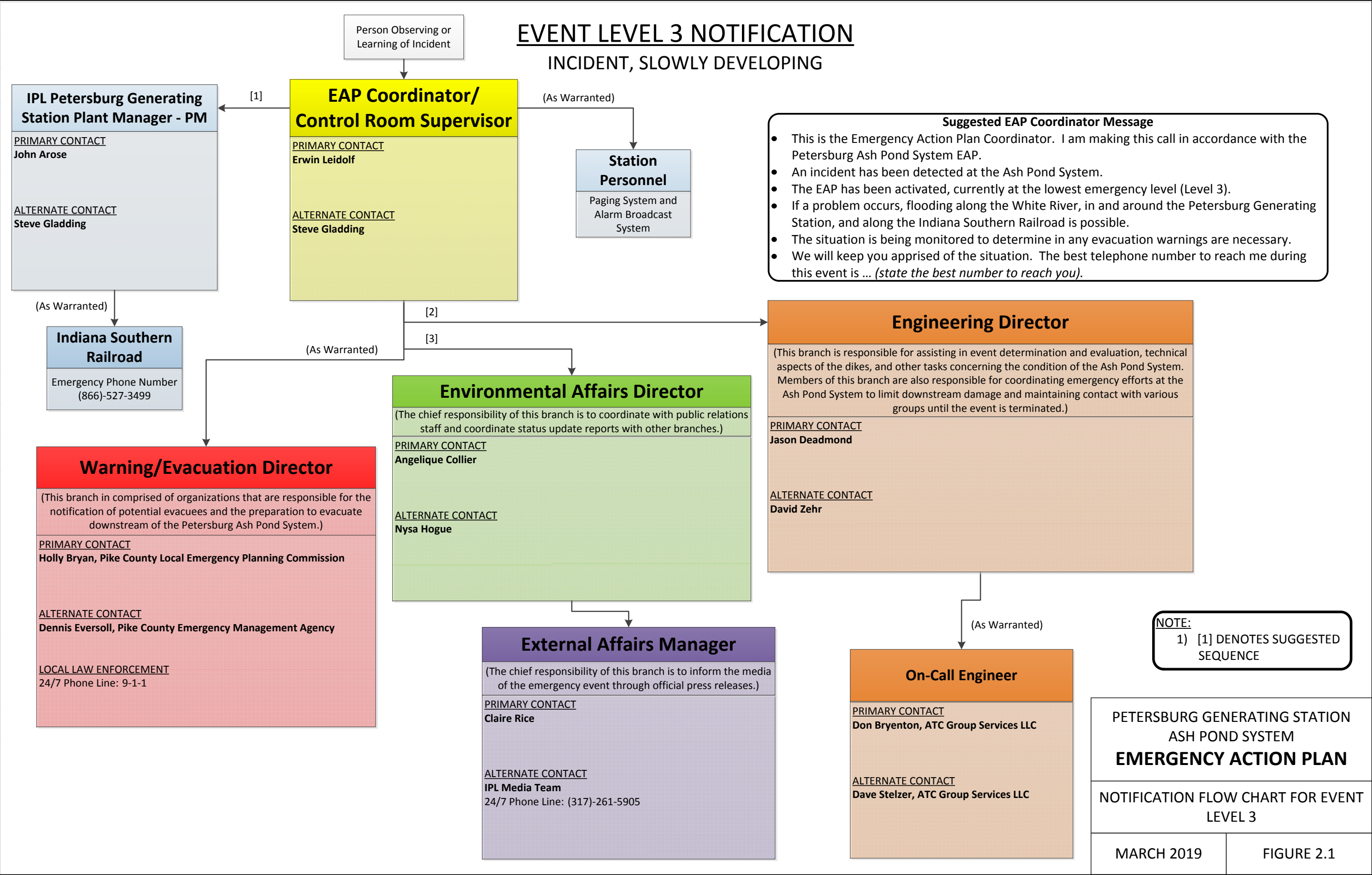
**Primary Source**

NATIONAL WEATHER SERVICE (24-hour telephone number):..... (317)-856-0367

**Secondary Sources** (Shall be contacted only if the primary source cannot be reached.)

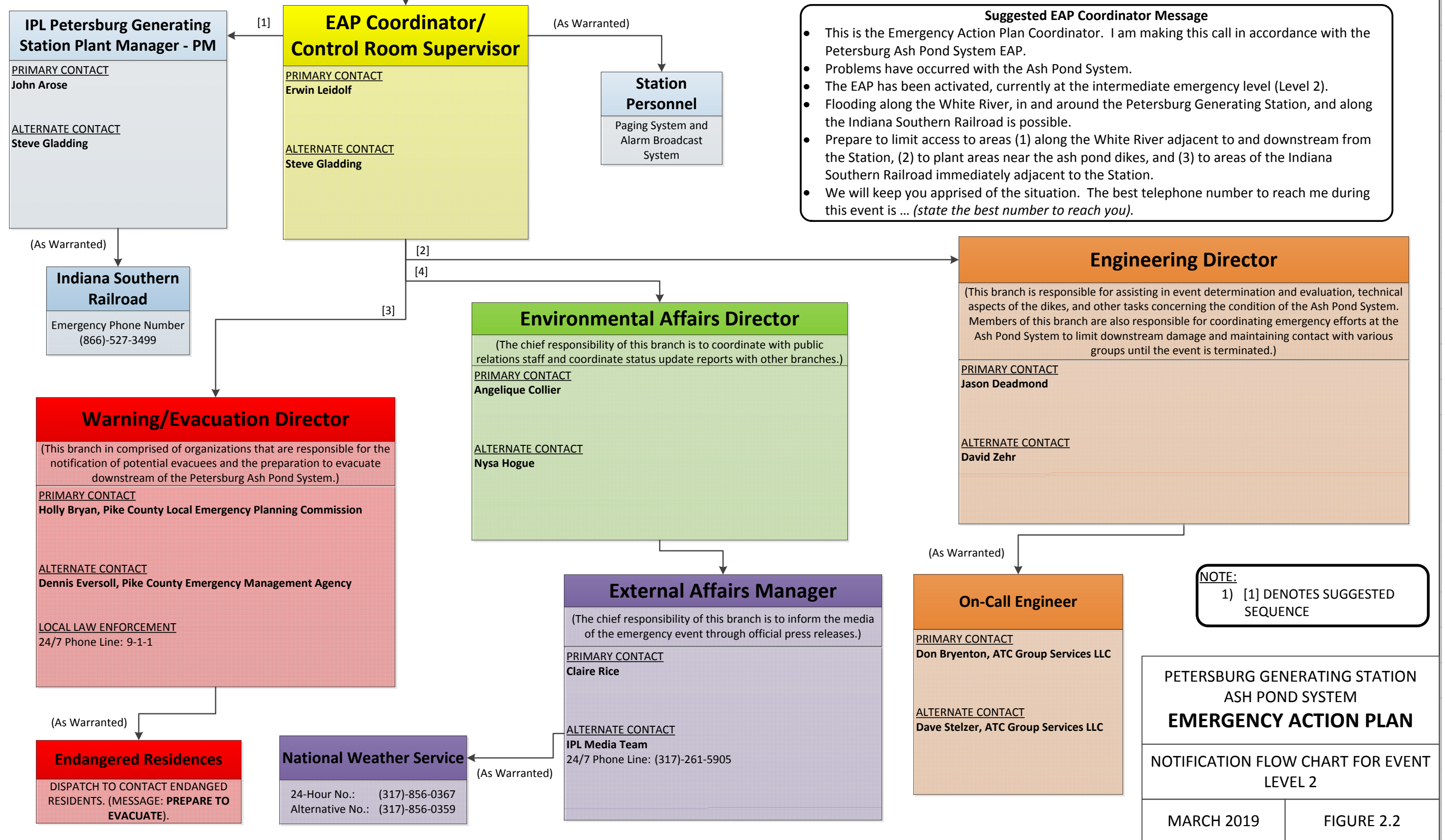
WFIE CHANNEL 14 TELEVISION STATION (24-hour telephone number): ..... (812)-426-1414

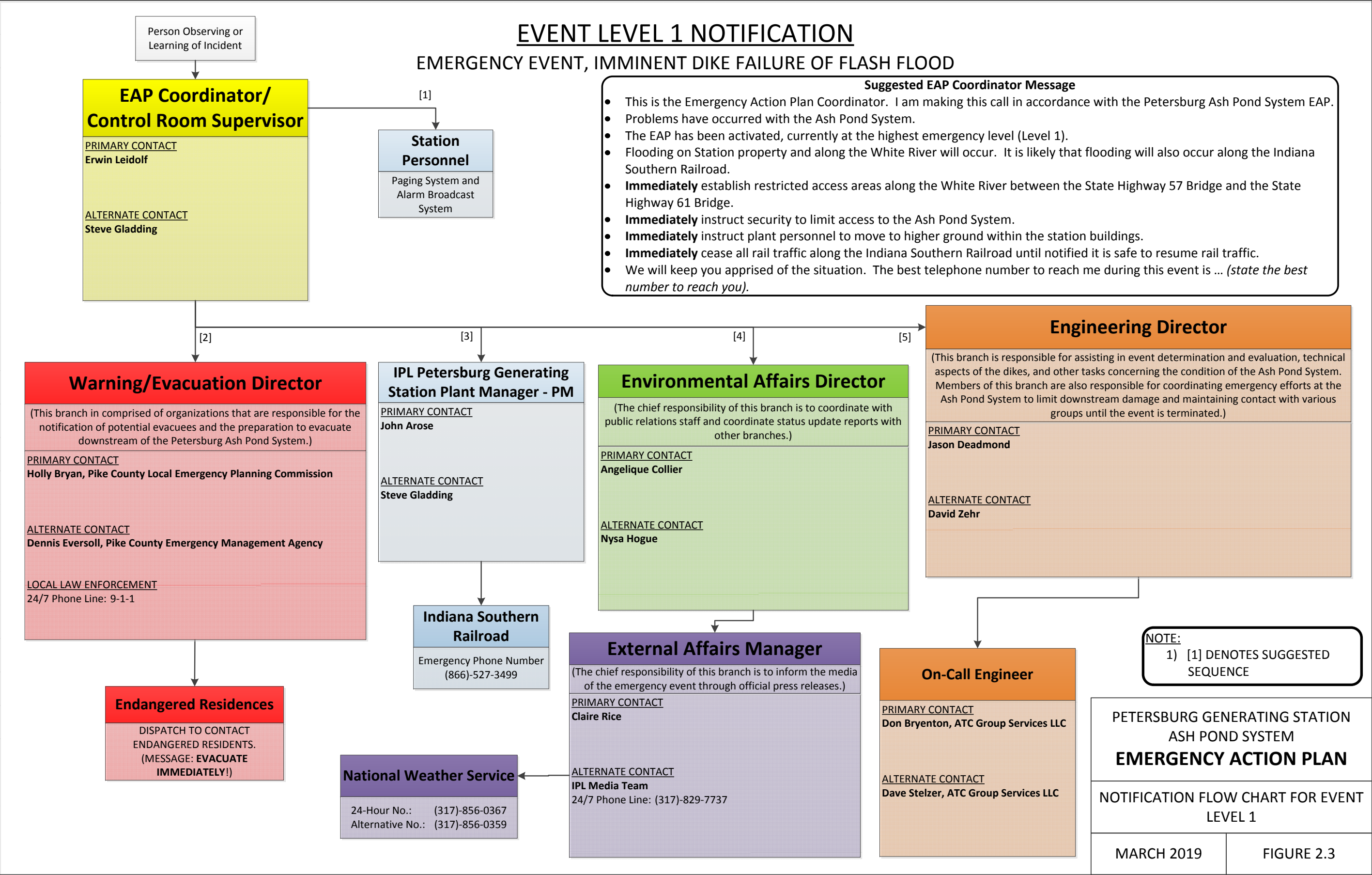
WBTO 102.3 FM RADIO STATION (24-hour telephone number): ..... (812)-882-6060





EVENT LEVEL 2 NOTIFICATION  
EMERGENCY EVENT, RAPIDLY DEVELOPING







## SECTION 3. EXPECTED ACTIONS

### 3.1 ACTION DATA SHEETS

After the EAP Coordinator (or Acting EAP Coordinator) has determined the event level and has made the appropriate notifications, the EAP Coordinator shall take action, using the general procedure outlined in the Action Data Sheets that follow as a guide. Table 3.1 is an index of the Action Data Sheets.

The Action Data Sheets should be reviewed by the Engineering Director (or designee) and/or the On-Call Engineer when possible and time permits. If an event is not adequately covered by one of the general procedures outlined in the following procedures, adapt an Action Data Sheet of a similar event and event level specific to the event that requires additional or varied actions.

**TABLE 3.1 – ACTION DATA SHEET INDEX**

Event	Event Level	Action Data Sheet
Flooding and Overtopping	3	A3
	2	A2
	1	A1
Earthquake and Aftershocks	3	B3
	2	B2
	1	B1
Seepage and Erosion	3	C3
	2	C2
	1	C1
Cracking and other Movements	3	D3
	2	D2
	1	D1
Discharge Piping Valve Failure or Blocked Discharge Pipes	3	E3
	2	E2
	1	E1
Sabotage	3	F3
	2	F2
	1	F1

<b>EVENT: Flooding and Overtopping LEVEL: 3</b>		<b>ACTION DATA SHEET: A3</b>	
<b>RECOMMENDED ACTIONS</b>			
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2.</li> <li>B. Monitor the installed staff gauges to determine if the surface water level within the pond is rising or falling and at what rate. Additionally, a careful inspection of the perimeter dike and inlet/outlet piping for the pond which is at risk of overtopping shall be performed to determine if there are any other signs of degradation, erosion, or structural instability. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>D. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>E. Contact the Engineering Director or designee at least daily to report the latest observations and conditions. If conditions change significantly, contact the Engineering Director immediately.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate.</li> <li>B. If the Engineering Director is going to terminate EAP operations, send a qualified individual to the site to perform a follow-up inspection.</li> </ul>			<p><b><u>Time/Date Completed</u></b></p>
<b>EVALUATION / DECISION</b>			
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event can be terminated. The event may be terminated when the pond water surface elevation drops below the maximum surface water elevation for that particular pond.</li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 3 while the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>435 \text{ ft} &lt; h \leq 435.5 \text{ ft}</math></li> <li>• Pond A': <math>435 \text{ ft} &lt; h \leq 435.5 \text{ ft}</math></li> </ul> </li> <li>C. The event warrants escalation to Event Level 2. The Event Level shall be raised to Event Level 2 if the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>h &gt; 435.5 \text{ ft}</math></li> <li>• Pond A': <math>h &gt; 435.5 \text{ ft}</math></li> </ul> </li> </ul> <p>Based on this information, follow the appropriate actions below.</p>			
<b>A) TERMINATION</b>	<b>B) EVENT LEVEL 3</b>	<b>C) EVENT LEVEL 2</b>	
Go to <b>Termination and Follow-up</b> (Section 4)	Continue recommended actions on this sheet	Go to <b>Event Level 2</b> or <b>Event Level 1</b> <b>Notification Chart</b>	





<b>EVENT: Flooding and Overtopping LEVEL: 2</b>	<b>ACTION DATA SHEET: A2</b>	
<b>RECOMMENDED ACTIONS</b>		
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2.</li> <li>B. Monitor the installed staff gauges to determine if the water surface level within the pond is rising or falling and at what rate. Continue to perform careful inspections of the perimeter dike and inlet/outlet piping for the subject pond at risk of overtopping on a frequent basis to determine if there are any other signs of degradation, erosion, or structural instability. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>D. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>E. Contact the Engineering Director or designee at least daily to report the latest observations and conditions. If conditions change significantly, contact the Engineering Director immediately.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate.</li> <li>B. Prepare to send a qualified individual to the site at the direction of the Engineering Director.</li> </ul>	<p><u>Time/Date Completed</u></p>	
<b>EVALUATION / DECISION</b>		
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event warrants downgrade to Event Level 3. All contacts on Event Level 2 Notification Flow Chart shall be notified of downgrade from Event Level 2 to Event Level 3. The event level may be downgraded if the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>h \leq 435.5</math> ft</li> <li>• Pond A': <math>h \leq 435.5</math> ft</li> </ul> </li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 2 while the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>435.5 \text{ ft} &lt; h \leq 437</math> ft</li> <li>• Pond A': <math>435.5 \text{ ft} &lt; h \leq 436.5</math> ft</li> </ul> </li> <li>C. The event warrants escalation to Event Level 1. The Event Level shall be raised to Event Level 1 when the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>h &gt; 437</math> ft</li> <li>• Pond A': <math>h &gt; 436.5</math> ft</li> </ul> </li> </ul> <p>Based on this information, follow the appropriate actions below.</p>		
<b>A) EVENT LEVEL 3</b>	<b>B) EVENT LEVEL 2</b>	<b>C) EVENT LEVEL 1</b>
Go to <b>Event Level 3 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Event Level 1 Notification Chart</b>



<b>EVENT: Flooding and Overtopping LEVEL: 1</b>		<b>ACTION DATA SHEET: A1</b>	
<b>RECOMMENDED ACTIONS</b>			
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2.</li> <li>B. Continue to monitor the installed staff gauges to determine if the water surface level within the pond is rising or falling and at what rate.</li> <li>C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>D. Take all necessary actions to minimize the potential for human loss of life, injury, or property damage should the dikes overtop, erode, and fail.</li> <li>E. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>F. Establish a means to keep in frequent contact with the Engineering Director or designee until Event Level 1 is terminated.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. Contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate. Send a qualified individual to the site as soon as possible.</li> <li>B. If the Engineering Director is going to terminate EAP operations, perform a follow-up inspection of the failed area.</li> </ul>			<p><u>Time/Date Completed</u></p>
<b>EVALUATION / DECISION</b>			
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event warrants downgrade to Event Level 2. All contacts on Event Level 1 Notification Flow Chart shall be notified of downgrade from Event Level 1 to Event Level 2. The event level may be downgraded if the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>h \leq 437</math> ft</li> <li>• Pond A': <math>h \leq 436.5</math> ft</li> </ul> </li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 1 as long as the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>h &gt; 437</math> ft</li> <li>• Pond A': <math>h &gt; 436.5</math> ft</li> </ul> </li> <li>C. The event can be terminated after a failure event occurs and the pond completely drains to a point where there is no further threat to human loss of life, injury, or property damage.</li> </ul> <p>Based on this information, follow the appropriate actions below.</p>			
<b>A) EVENT LEVEL 2</b>	<b>B) EVENT LEVEL 1</b>	<b>C) TERMINATED</b>	
Go to <b>Event Level 2 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Termination and Follow-Up</b> (Section 4)	

<b>EVENT: Earthquake and Aftershocks</b> <b>LEVEL: 3</b>		<b>ACTION DATA SHEET: B3</b>	
<b>RECOMMENDED ACTIONS</b>			
<b><u>EAP Coordinator:</u></b> A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2. B. Immediately commence a careful inspection of all perimeter and interior dikes and inlet/outlet piping for the entire Ash Pond System to determine if there are any signs of damage, degradation, or structural instability. This should be done without compromising the safety of anyone performing the inspection. C. Record all information, observations, and actions on an Event Log Form (Form 3.1). D. Repeat the inspection at least once per day for three days or until the Event Level has been raised to a Level 2. E. At the completion of the initial field inspection, contact the Engineering Director or designee and report the latest observations and conditions.			<b><u>Time/Date Completed</u></b>
<b><u>Engineering Director or designee:</u></b> A. Be prepared to receive and respond to the field inspection report. B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.			
<b><u>On-Call Engineer:</u></b> A. If the Engineering Director is going to terminate EAP operations, send a qualified individual to the site to perform a follow-up inspection.			
<b>EVALUATION / DECISION</b>			
Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:			
A. The event can be terminated. The event may be terminated if there is no observable damage, degradation, or structural instability and more than three days have passed since the earthquake or once all observed damage, degradation, or structural instability has been addressed and/or repaired.			
B. The event remains at the current Event Level. The event level shall remain at Event Level 3 if there is no observable damage, degradation, or structural instability and less than three days have passed since the earthquake.			
C. The event warrants escalation to Event Level 2. The Event Level shall be raised to Event Level 2 if a field inspection following the earthquake indicates that damage has occurred to the Ash Pond perimeter dikes, but there is no indication of fluids escaping from the ponds. Observed damage may include, but not be limited to, sloughing, vertical or horizontal cracks, and/or bulging.			
Based on this information, follow the appropriate actions below.			
<b>A) TERMINATION</b>		<b>B) EVENT LEVEL 3</b>	
Go to <b>Termination and Follow-up</b> (Section 4)		Continue recommended actions on this sheet	
		<b>C) EVENT LEVEL 2</b>	
		Go to <b>Event Level 2 or Event Level 1 Notification Chart</b>	



<b>EVENT: Earthquake and Aftershocks LEVEL: 2</b>		<b>ACTION DATA SHEET: B2</b>	
<b>RECOMMENDED ACTIONS</b>			
<b><u>EAP Coordinator:</u></b> A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2. B. Continue to monitor the damaged dike of the Ash Pond System and notify the Engineering Director or designee if any significant changes are observed. This should be done without compromising the safety of anyone performing the inspection. C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken. D. Record all information, observations, and actions on an Event Log Form (Form 3.1). E. Contact the Engineering Director or designee at least daily to report the latest observations and conditions.  <b><u>Engineering Director or designee:</u></b> A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation. B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level.  <b><u>On-Call Engineer:</u></b> A. Provide decision support and technical support to the Engineering Director or designee as appropriate. B. Prepare to send a qualified individual to the site at the direction of the Engineering Director.			Time/Date Completed
<b>EVALUATION / DECISION</b>			
Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether: A. The event warrants downgrade to Event Level 3. The event level may be downgraded once the observed damage, degradation, or structural instability has been addressed and/or repaired. All contacts on Event Level 2 Notification Flow Chart shall be notified of downgrade from Event Level 2 to Event Level 3. B. The event remains at the current Event Level. The event level shall remain at Event Level 2 until the observed damage, degradation or structural instability has been addressed and/or repaired. C. The event warrants escalation to Event Level 1. The Event Level shall be raised to Event Level 1 when it is observed that there are some fluids escaping from the ponds through the Ash Pond System perimeter dikes.  Based on this information, follow the appropriate actions below.			
<b>A) EVENT LEVEL 3</b>	<b>B) EVENT LEVEL 2</b>	<b>C) EVENT LEVEL 1</b>	
Go to <b>Event Level 3 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Event Level 1 Notification Chart</b>	

<b>EVENT: Earthquake and Aftershocks LEVEL: 1</b>		<b>ACTION DATA SHEET: B1</b>	
<b>RECOMMENDED ACTIONS</b>			
<b><u>EAP Coordinator:</u></b> A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2. B. Continue to monitor the damaged dike of the Ash Pond System and notify the Engineering Director or designee if any significant changes are observed. This should be done without compromising the safety of anyone performing the inspection. C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken. D. Take all necessary actions to minimize the potential for human loss of life, injury, or property damage should the dikes fail. E. Record all information, observations, and actions on an Event Log Form (Form 3.1). F. Establish a means to keep in frequent contact with the Engineering Director or designee until Event Level 1 is terminated.  <b><u>Engineering Director or designee:</u></b> A. Review all pertinent information in order to recommend appropriate actions to the EAP coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation. B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.  <b><u>On-Call Engineer:</u></b> A. Provide decision support and technical support to the Engineering Director or designee as appropriate. Send a qualified individual to the site as soon as possible. B. If the Engineering Director is going to terminate EAP operations, perform a follow-up inspection of the failed area.			<b><u>Time/Date Completed</u></b>
<b>EVALUATION / DECISION</b>			
Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether: A. The event warrants downgrade to Event Level 2. The event level may be downgraded once the flow of fluids escaping from the ponds through the Ash Pond System perimeter dikes ceases. All contacts on Event Level 1 Notification Flow Chart shall be notified of downgrade from Event Level 1 to Event Level 2. B. The event remains at the current Event Level. The event level shall remain at Event Level 1 as long as fluids are escaping from the ponds through the Ash Pond System perimeter dikes. C. The event can be terminated after a failure event occurs and the pond completely drains to a point where there is no further threat to human loss of life, injury, or property damage.  Based on this information, follow the appropriate actions below.			
<b>A) EVENT LEVEL 2</b>	<b>B) EVENT LEVEL 1</b>	<b>C) TERMINATED</b>	
Go to <b>Event Level 2 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Termination and Follow-Up</b> (Section 4)	



<b>EVENT: Seepage and Erosion LEVEL: 3</b>		<b>ACTION DATA SHEET: C3</b>	
<b>RECOMMENDED ACTIONS</b>			
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2.</li> <li>B. A careful inspection of the perimeter dike and inlet/outlet piping for the dike which has observed seepage and erosion shall be performed to determine if there are any other signs of degradation, erosion, or structural instability. This should be done without compromising the safety of anyone performing the inspection. If necessary, confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>C. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>D. Contact the Engineering Director or designee at least daily to report the latest observations and conditions. If conditions change significantly, contact the Engineering Director immediately.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate.</li> <li>B. If the Engineering Director is going to terminate EAP operations, send a qualified individual to the site to perform a follow-up inspection.</li> </ul>			<p><u>Time/Date Completed</u></p>
<b>EVALUATION / DECISION</b>			
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event can be terminated. The event may be terminated once the perimeter dike has been repaired and the observed seepage of fluids has ceased.</li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 3 as long as seepage continues and the fluids are clear, clean of suspended solids and of a relatively low flow rate.</li> <li>C. The event warrants escalation to Event Level 2. The Event Level shall be raised to Event Level 2 if a significant increase in the seepage flow rate is observed or a discoloration of the flow is observed. The Event Level shall also be raised if minor erosion of the dike surface is observed.</li> </ul> <p>Based on this information, follow the appropriate actions below.</p>			
<b>A) TERMINATION</b>		<b>B) EVENT LEVEL 3</b>	
Go to <b>Termination and Follow-up</b> (Section 4)		Continue recommended actions on this sheet	
		<b>C) EVENT LEVEL 2</b>	
		Go to <b>Event Level 2 or Event Level 1</b> <b>Notification Chart</b>	

<b>EVENT: Seepage and Erosion LEVEL: 2</b>	<b>ACTION DATA SHEET: C2</b>	
<b>RECOMMENDED ACTIONS</b>		
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2.</li> <li>B. Continue to monitor the perimeter dike where the seepage and/or erosion have been observed on a daily basis and notify the Engineering Director or designee if any significant changes are observed. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>D. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>E. Contact the Engineering Director or designee at least daily to report the latest observations and conditions.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate.</li> <li>B. Prepare to send a qualified individual to the site at the direction of the Engineering Director.</li> </ul>	Time/Date Completed	
<b>EVALUATION / DECISION</b>		
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event warrants downgrade to Event Level 3. The event level may be downgraded when the observed rate of seepage decreases to a relatively low rate and the color of the seepage becomes clear, indicative of significantly less suspended solids. All contacts on Event Level 2 Notification Flow Chart shall be notified of downgrade from Event Level 2 to Event Level 3.</li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 2 until the rate of seepage decreases to a relatively low rate and the color of the seepage becomes clear, indicative of significantly less suspended solids.</li> <li>C. The event warrants escalation to Event Level 1. The Event Level shall be raised to Event Level 1 upon discovery of seepage flow that contains visible evidence of solids or any other indication that significant internal or external erosion is occurring. Such external erosion may be evident by the presence of a significant flow path or erosion channel on the surface of the dike.</li> </ul> <p>Based on this information, follow the appropriate actions below.</p>		
<b>A) EVENT LEVEL 3</b>	<b>B) EVENT LEVEL 2</b>	<b>C) EVENT LEVEL 1</b>
Go to <b>Event Level 3 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Event Level 1 Notification Chart</b>



<b>EVENT: Seepage and Erosion LEVEL: 1</b>		<b>ACTION DATA SHEET: C1</b>	
<b>RECOMMENDED ACTIONS</b>			
<b><u>EAP Coordinator:</u></b> A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2. B. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken. C. Take all necessary actions to minimize the potential for human loss of life, injury, or property damage should the dikes fail. D. Record all information, observations, and actions on an Event Log Form (Form 3.1). E. Establish a means to keep in frequent contact with the Engineering Director or designee until Event Level 1 is terminated.  <b><u>Engineering Director or designee:</u></b> A. Review all pertinent information in order to recommend appropriate actions to the EAP coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation. B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.  <b><u>On-Call Engineer:</u></b> A. Provide decision support and technical support to the Engineering Director or Designee as appropriate. Send a qualified individual to the site as soon as possible. B. If the Engineering Director is going to terminate EAP operations, perform a follow-up inspection of the failed area.			Time/Date Completed
<b>EVALUATION / DECISION</b>			
Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether: A. The event warrants downgrade to Event Level 2. The event level may be downgraded once fluids cease escaping from the ponds through the Ash Pond System perimeter dikes. All contacts on Event Level 1 Notification Flow Chart shall be notified of downgrade from Event Level 1 to Event Level 2. B. The event remains at the current Event Level. The event level shall remain at Event Level 1 as long as fluids are escaping from the ponds through the Ash Pond System perimeter dikes. C. The event can be terminated after a failure event occurs and the pond completely drains to a point where there is no further threat to human loss of life, injury, or property damage.  Based on this information, follow the appropriate actions below.			
<b>A) EVENT LEVEL 2</b>	<b>B) EVENT LEVEL 1</b>	<b>C) TERMINATED</b>	
Go to <b>Event Level 2 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Termination and Follow-Up</b> (Section 4)	



<b>EVENT: Cracking and Other Movements LEVEL: 3</b>		<b>ACTION DATA SHEET: D3</b>	
<b>RECOMMENDED ACTIONS</b>			
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2.</li> <li>B. A careful and complete inspection of the entire pond shall be performed to determine if there are any other signs of degradation, erosion, or structural instability beyond those already observed. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>D. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>E. Contact the Engineering Director or designee at least daily to report the latest observations and conditions. If conditions change significantly, contact the Engineering Director immediately.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate.</li> <li>B. If the Engineering Director is going to terminate EAP operations, send a qualified individual to the site to perform a follow-up inspection.</li> </ul>			<p><b><u>Time/Date Completed</u></b></p>
<b>EVALUATION / DECISION</b>			
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event can be terminated. The event may be terminated once the observed cracks or dike movements have been repaired.</li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 3 until the observed cracks and/or dike movements are repaired.</li> <li>C. The event warrants escalation to Event Level 2. The Event Level shall be raised to Event Level 2 if a significant increase cracking (cracks greater than 1" in width) or increased movement areas are observed but there is no evidence of seepage flow through the pond perimeter dike.</li> </ul> <p>Based on this information, follow the appropriate actions below.</p>			
<b>A) TERMINATION</b>	<b>B) EVENT LEVEL 3</b>	<b>C) EVENT LEVEL 2</b>	
Go to <b>Termination and Follow-up</b> (Section 4)	Continue recommended actions on this sheet	Go to <b>Event Level 2</b> or <b>Event Level 1</b> <b>Notification Chart</b>	

<b>EVENT: Cracking and Other Movements LEVEL: 2</b>	<b>ACTION DATA SHEET: D2</b>	
<b>RECOMMENDED ACTIONS</b>		
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2.</li> <li>B. Continue to monitor the perimeter dike on a daily basis where the cracks or movements have been observed and notify the Engineering Director or designee if any significant changes are observed. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>D. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>E. Contact the Engineering Director or designee at least daily to report the latest observations and conditions.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate.</li> <li>B. Prepare to send a qualified individual to the site at the direction of the Engineering Director.</li> </ul>	<p><u>Time/Date Completed</u></p>	
<b>EVALUATION / DECISION</b>		
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event warrants downgrade to Event Level 3. The event level may be downgraded when the observed cracks or dike movements are repaired. All contacts on Event Level 2 Notification Flow Chart shall be notified of downgrade from Event Level 2 to Event Level 3.</li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 2 until the observed cracks or dike movements are repaired.</li> <li>C. The event warrants escalation to Event Level 1. The Event Level shall be raised to Event Level 1 upon discovery of seepage flow through the pond perimeter dike. This may include the observation of visually evident flowing water or that the sloughed area is moist.</li> </ul> <p>Based on this information, follow the appropriate actions below.</p>		
<b>A) EVENT LEVEL 3</b>	<b>B) EVENT LEVEL 2</b>	<b>C) EVENT LEVEL 1</b>
Go to <b>Event Level 3 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Event Level 1 Notification Chart</b>

<b>EVENT: Cracking and Other Movements LEVEL: 1</b>		<b>ACTION DATA SHEET: D1</b>	
<b>RECOMMENDED ACTIONS</b>			
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2.</li> <li>B. Continue to monitor the perimeter dike where the cracks, seepage and/or erosion have been observed and notify the Engineering Director or designee if any significant changes are observed. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>D. Take all necessary actions to minimize the potential for human loss of life, injury, or property damage should the dike fail.</li> <li>E. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>F. Establish a means to keep in frequent contact with the Engineering Director or designee until Event Level 1 is terminated.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate. Send a qualified individual to the site as soon as possible.</li> <li>B. If the Engineering Director is going to terminate EAP operations, perform a follow-up inspection of the failed area.</li> </ul>			<p><b><u>Time/Date Completed</u></b></p>
<b>EVALUATION / DECISION</b>			
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event warrants downgrade to Event Level 2. The event level may be downgraded once the flow of fluids escaping from the ponds through the Ash Pond System perimeter dikes ceases. All contacts on Event Level 1 Notification Flow Chart shall be notified of downgrade from Event Level 1 to Event Level 2.</li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 1 as long as fluids are escaping from the ponds through the Ash Pond System perimeter dikes.</li> <li>C. The event can be terminated after a failure event occurs and the pond completely drains to a point where there is no further threat to human loss of life, injury, or property damage.</li> </ul> <p>Based on this information, follow the appropriate actions below.</p>			
<b>A) EVENT LEVEL 2</b>	<b>B) EVENT LEVEL 1</b>	<b>C) TERMINATED</b>	
Go to <b>Event Level 2 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Termination and Follow-Up</b> (Section 4)	

<b>EVENT: Discharge Piping Valve Failure or Blocked Discharge Pipes</b> <b>LEVEL: 3</b>		<b>ACTION DATA SHEET: E3</b>	
<b>RECOMMENDED ACTIONS</b>			
<b>EAP Coordinator:</b> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2.</li> <li>B. Monitor the installed staff gauges to determine if the surface water level within the pond is rising or falling and at what rate. Additionally, a careful inspection of the perimeter dike and inlet/outlet piping for the pond which is at risk of overtopping shall be performed to determine if there are any other signs of degradation, erosion, or structural instability. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>D. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>E. Contact the Engineering Director or designee at least daily to report the latest observations and conditions. If conditions change significantly, contact the Engineering Director immediately.</li> </ul>			Time/Date <u>Completed</u>
<b>Engineering Director or designee:</b> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.</li> </ul>			
<b>On-Call Engineer:</b> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate.</li> <li>B. If the Engineering Director is going to terminate EAP operations, send a qualified individual to the site to perform a follow-up inspection.</li> </ul>			
<b>EVALUATION / DECISION</b>			
Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether: <ul style="list-style-type: none"> <li>A. The event can be terminated. The event may be terminated when the discharge piping valve is repaired or the blocked discharge pipes are cleared.</li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 3 while the discharge piping valve remains unrepaired or the blocked discharge pipes remain blocked.</li> <li>C. The event warrants escalation to Event Level 2. The Event Level shall be raised to Event Level 2 if the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>h &gt; 435.5</math> ft</li> <li>• Pond A': <math>h &gt; 435.5</math> ft</li> </ul> </li> </ul> <p>Based on this information, follow the appropriate actions below.</p>			
<b>A) TERMINATION</b>		<b>B) EVENT LEVEL 3</b>	
Go to <b>Termination and Follow-up</b> (Section 4)		Continue recommended actions on this sheet	
		<b>C) EVENT LEVEL 2</b>	
		Go to <b>Event Level 2 or Event Level 1</b> <b>Notification Chart</b>	

<b>EVENT: Discharge Piping Valve Failure or Blocked Discharge Pipes</b> <b>LEVEL: 2</b>	<b>ACTION DATA SHEET: E2</b>	
<b>RECOMMENDED ACTIONS</b>		
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2.</li> <li>B. Monitor the installed staff gauges to determine if the water surface level within the pond is rising or falling and at what rate. Perform regular inspections of all perimeter dikes and inlet/outlet piping for the subject pond at risk of overtopping to determine if there are any other signs of degradation, erosion, or structural instability. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>D. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>E. Contact the Engineering Director or designee at least daily to report the latest observations and conditions. If conditions change significantly, contact the Engineering Director immediately.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate.</li> <li>B. Prepare to send a qualified individual to the site at the direction of the Engineering Director.</li> </ul>	<div style="text-align: right; padding-right: 10px;"> Time/Date  <u>Completed</u> </div>	
<b>EVALUATION / DECISION</b>		
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event warrants downgrade to Event Level 3. All contacts on Event Level 2 Notification Flow Chart shall be notified of downgrade from Event Level 2 to Event Level 3. The event level may be downgraded if the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>h \leq 435.5</math> ft</li> <li>• Pond A': <math>h \leq 435.5</math> ft</li> </ul> </li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 2 while the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>435.5 \text{ ft} &lt; h \leq 437</math> ft</li> <li>• Pond A': <math>435.5 \text{ ft} &lt; h \leq 436.5</math> ft</li> </ul> </li> <li>C. The event warrants escalation to Event Level 1. The Event Level shall be raised to Event Level 1 when the pond water surface elevation, <math>h</math>, is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>h &gt; 437</math> ft</li> <li>• Pond A': <math>h &gt; 436.5</math> ft</li> </ul> </li> </ul> <p>Based on this information, follow the appropriate actions below.</p>		
<b>A) EVENT LEVEL 3</b>	<b>B) EVENT LEVEL 2</b>	<b>C) EVENT LEVEL 1</b>
Go to <b>Event Level 3 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Event Level 1 Notification Chart</b>



<b>EVENT: Discharge Piping Valve Failure or Blocked Discharge Pipes</b> <b>LEVEL: 1</b>	<b>ACTION DATA SHEET: E1</b>	
<b>RECOMMENDED ACTIONS</b>		
<b><u>EAP Coordinator:</u></b> A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2. B. Continue to monitor the installed staff gauges to determine if the water surface level within the pond is rising or falling and at what rate. C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken. D. Take all necessary actions to minimize the potential for human loss of life, injury, or property damage should the dikes overtop, erode, and fail. E. Record all information, observations, and actions on an Event Log Form (Form 3.1). F. Establish a means to keep in frequent contact with the Engineering Director or designee until Event Level 1 is terminated.	<div style="text-align: right; padding-right: 10px;"> <b>Time/Date</b>  <b><u>Completed</u></b> </div>	
<b><u>Engineering Director or designee:</u></b> A. Review all pertinent information in order to recommend appropriate actions to the EAP Coordinator. Contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation. B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.		
<b><u>On-Call Engineer:</u></b> A. Provide decision support and technical support to the Engineering Director or designee as appropriate. Send a qualified individual to the site as soon as possible. B. If the Engineering Director is going to terminate EAP operations, perform a follow-up inspection of the failed area.		
<b>EVALUATION / DECISION</b>		
Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:		
A. The event warrants downgrade to Event Level 2. All contacts on Event Level 1 Notification Flow Chart shall be notified of downgrade from Event Level 1 to Event Level 2. The event level may be downgraded if the pond water surface elevation, $h$ , is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>h \leq 437</math> ft</li> <li>• Pond A': <math>h \leq 436.5</math> ft</li> </ul>		
B. The event remains at the current Event Level. The event level shall remain at Event Level 1 as long as the pond water surface elevation, $h$ , is as follows: <ul style="list-style-type: none"> <li>• Pond A: <math>h &gt; 437</math> ft</li> <li>• Pond A': <math>h &gt; 436.5</math> ft</li> </ul>		
C. The event can be terminated after a failure event occurs and the pond completely drains to a point where there is no further threat to human loss of life, injury, or property damage.		
Based on this information, follow the appropriate actions below.		
<b>A) EVENT LEVEL 2</b>	<b>B) EVENT LEVEL 1</b>	<b>C) TERMINATED</b>
Go to <b>Event Level 2 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Termination and Follow-Up</b> (Section 4)



<b>EVENT: Sabotage</b>		<b>ACTION DATA SHEET: F3</b>	
<b>LEVEL: 3</b>		<b>RECOMMENDED ACTIONS</b>	
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2. When notifying the Warning/Evacuation Director or designee, request additional security as appropriate.</li> <li>B. Immediately commence a careful inspection of all perimeter and interior dikes and inlet/outlet piping for the entire Ash Pond System to determine if there are any signs of damage, degradation, or structural instability. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>D. At the completion of the field inspection, contact the Engineering Director or designee by telephone and report the latest observations and dike conditions.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Be prepared to receive and respond to the field inspection report.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. If the Engineering Director is going to terminate EAP operations, send a qualified individual to the site to perform a follow-up inspection.</li> </ul>			<p><u>Time/Date Completed</u></p>
<b>EVALUATION / DECISION</b>			
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event can be terminated. The event may be terminated if there is no observable damage, degradation, or structural instability, or once all observed damage, degradation, or structural instability is repaired.</li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 3 until any damage, degradation, or structural instability observed during the field investigation is appropriately repaired.</li> <li>C. The event warrants escalation to Event Level 1. The Event Level shall be raised to Event Level 1 if the field inspection following the suspected Sabotage indicates that damage has occurred to the Ash Pond perimeter dikes and that there is visible evidence of fluid escaping through the pond perimeter dikes.</li> </ul> <p>Based on this information, follow the appropriate actions below.</p>			
<b>A) TERMINATION</b>	<b>B) EVENT LEVEL 3</b>	<b>C) EVENT LEVEL 1</b>	
Go to <b>Termination and Follow-up</b> (Section 4)	Continue recommended actions on this sheet	Go to <b>Event Level 1 Notification Chart</b>	



<b>EVENT: Sabotage</b>		<b>ACTION DATA SHEET: F2</b>	
<b>LEVEL: 2</b>		<b>RECOMMENDED ACTIONS</b>	
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2. When notifying the Warning/Evacuation Director or designee, request additional security as appropriate.</li> <li>B. Immediately commence a careful inspection of all perimeter and interior dikes and inlet/outlet piping for the entire Ash Pond System to determine if there are any signs of damage, degradation, or structural instability. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>D. At the completion of the field inspection, contact the Engineering Director or designee by telephone and report the observations and dike conditions.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Be prepared to receive and respond to the field inspection report.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Prepare to send a qualified individual to the site at the direction of the Engineering Director.</li> </ul>			<p><u>Time/Date Completed</u></p>
<b>EVALUATION / DECISION</b>			
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event warrants downgrade to Event Level 3. The event level may be downgraded if there is no observable damage, degradation, or structural instability, or once all observed damage, degradation, or structural instability is repaired. All contacts on Event Level 2 Notification Flow Chart shall be notified of downgrade from Event Level 2 to Event Level 3.</li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 2 until the observed damage, degradation or structural instability has been addressed and/or repaired.</li> <li>C. The event warrants escalation to Event Level 1. The Event Level shall be raised to Event Level 1 if the field inspection following the confirmed Sabotage indicates that damage has occurred to the Ash Pond perimeter dikes and that there is visible evidence of fluid escaping through the pond perimeter dikes.</li> </ul> <p>Based on this information, follow the appropriate actions below.</p>			
<b>A) EVENT LEVEL 3</b>	<b>B) EVENT LEVEL 2</b>	<b>C) EVENT LEVEL 1</b>	
Go to <b>Event Level 3 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Event Level 1 Notification Chart</b>	





<b>EVENT: Sabotage LEVEL: 1</b>		<b>ACTION DATA SHEET: F1</b>	
<b>RECOMMENDED ACTIONS</b>			
<p><b><u>EAP Coordinator:</u></b></p> <ul style="list-style-type: none"> <li>A. Make sure notifications to all parties are completed in accordance with the outline included in Section 2.2. When notifying the Warning/Evacuation Director or designee, request additional security as appropriate.</li> <li>B. Continue to monitor the damaged dike of the Ash Pond System and notify the Engineering Director or designee if any significant changes are observed. This should be done without compromising the safety of anyone performing the inspection.</li> <li>C. Confer with the Engineering Director or designee and/or the On-Call Engineer to determine any corrective/preventative actions that must be taken.</li> <li>D. Take all necessary actions to minimize the potential for human loss of life, injury, or property damage should the dikes fail.</li> <li>E. Record all information, observations, and actions on an Event Log Form (Form 3.1).</li> <li>F. Establish a means to keep in frequent contact with the Engineering Director or designee until Event Level 1 is terminated.</li> </ul> <p><b><u>Engineering Director or designee:</u></b></p> <ul style="list-style-type: none"> <li>A. Review all pertinent information in order to recommend appropriate actions to the EAP coordinator. If necessary, contact local emergency contractors and/or other individuals that may be able to assist in monitoring or repairing the situation.</li> <li>B. Evaluate conditions per the Evaluation/Decision table below and, if appropriate, adjust the event level or terminate EAP operations.</li> </ul> <p><b><u>On-Call Engineer:</u></b></p> <ul style="list-style-type: none"> <li>A. Provide decision support and technical support to the Engineering Director or designee as appropriate. Send a qualified individual to the site as soon as possible.</li> <li>B. If the Engineering Director is going to terminate EAP operations, perform a follow-up inspection of the failed area.</li> </ul>			<p><u>Time/Date Completed</u></p>
<b>EVALUATION / DECISION</b>			
<p>Evaluate conditions at least daily, or whenever conditions change significantly. Using Table 1.1 and/or Table 3.1, determine whether:</p> <ul style="list-style-type: none"> <li>A. The event warrants downgrade to Event Level 2. The event level may be downgraded once the flow of fluids escaping from the ponds through the perimeter dike ceases. All contacts on Event Level 1 Notification Flow Chart shall be notified of downgrade from Event Level 1 to Event Level 2.</li> <li>B. The event remains at the current Event Level. The event level shall remain at Event Level 1 as long as fluids are escaping from the ponds through the perimeter dike.</li> <li>C. The event can be terminated after a failure event occurs and the pond completely drains to a point where there is no further threat to human loss of life, injury, or property damage.</li> </ul> <p>Based on this information, follow the appropriate actions below.</p>			
<b>A) EVENT LEVEL 2</b>	<b>B) EVENT LEVEL 1</b>	<b>C) TERMINATED</b>	
Go to <b>Event Level 2 Notification Chart</b>	Continue recommended actions on this sheet	Go to <b>Termination and Follow-Up</b> (Section 4)	

### **3.2 LOCALLY AVAILABLE EQUIPMENT, LABOR, AND MATERIALS**

The following is a list of on-site equipment that may be needed and are available to IPL employees in the case of an emergency event:

- (1)-Cat® D8L dozer,
- (3)-Cat® 854G dozers,
- (1)-Cat® D6 dozer,
- (2)-Cat® 988G loaders,
- (1)-Cat® 988H loader,
- (1)-Cat® 970 loader,
- (4)-40 ton Euclid® trucks,
- (1)-5 ton dump truck, and
- (1)-Cat® 320 excavator.

### **3.3 INCIDENT OR EMERGENCY EVENT LOG**

Use the Incident or Emergency Event Log (Form 3.1) on the next page to record actions and events during an Incident or Emergency Event and the time that the action or event occurred.

## FORM 3.1 Incident or Emergency Event Log

### Petersburg Generating Station – Ash Pond System

**You are (Circle One):** EAP Coordinator / Designated Staff / On-Call Engineer /  
Engineering Director / or Warning/Evacuation Director

#### Detection

What date and time did you detect/get notified of the event? \_\_\_\_\_ am/pm  
How did you detect/get notified of the event? \_\_\_\_\_

#### Level of Determination

What initial level has the EAP Coordinator (or designee) assigned to the event? \_\_\_\_\_

#### Actions and Event Progression

Date	Time	Action / Event Description / Site Conditions	Taken By



Date	Time	Action / Event Description / Site Conditions	Taken By



Date	Time	Action / Event Description / Site Conditions	Taken By

## **SECTION 4.**

### **TERMINATION AND FOLLOW-UP**

Once EAP operations have begun under Event Level 3, 2, or 1, the EAP operations must eventually be terminated and follow-up procedures completed. As shown on Figure i, EAP operations can only be terminated after completing operations under Event Level 3 or 1. If an Event Level 2 is declared, the operations must be designated Event Level 3 or 1 before terminating the EAP operations.

#### **4.1 TERMINATION RESPONSIBILITIES**

EAP operations will be terminated by the Engineering Director (or designee) after it is agreed that the operations for an Event Level 1 or 3 have been completed. Termination must include written approval of the On-Call Engineer. Additionally, a report must be prepared to document the analysis of the problem causing the need for the implementation of the EAP and the details of all actions taken to remediate the situation that resulted in the implementation of the EAP.

In the case of Event Level 1, termination can be accomplished by the Engineering Director and must include the specific actions taken to ensure the safety of people and property downstream. Do not terminate the EAP unless it is certain that there is no further threat.

#### **4.2 FOLLOW-UP**

Follow-up activities will be implemented to achieve the following general objectives:

##### **Event Level 3**

Describe the EAP review process following the termination of a Level 3 event. Ensure that all parties that participated in the EAP activities are involved in the review process. This review is to be completed within 90 days of termination. During the review, document any EAP procedures that were followed effectively, as well as any ways that the EAP could be improved. Insert this document into Appendix B of the EAP.

##### **Event Level 2 or 1**

Describe the EAP review process following the termination of a Level 2 or 1 event. Ensure that all parties that participated in the EAP activities are involved in the review process. This review is to be completed within 180 days of completion of termination unless special circumstances require additional time for analysis and review. During the review, document any EAP procedures that were followed effectively, as well as any ways that the EAP could be improved. Insert this document into Appendix B of the EAP. In addition, note any extra measures that were taken due to the increased severity of the event.

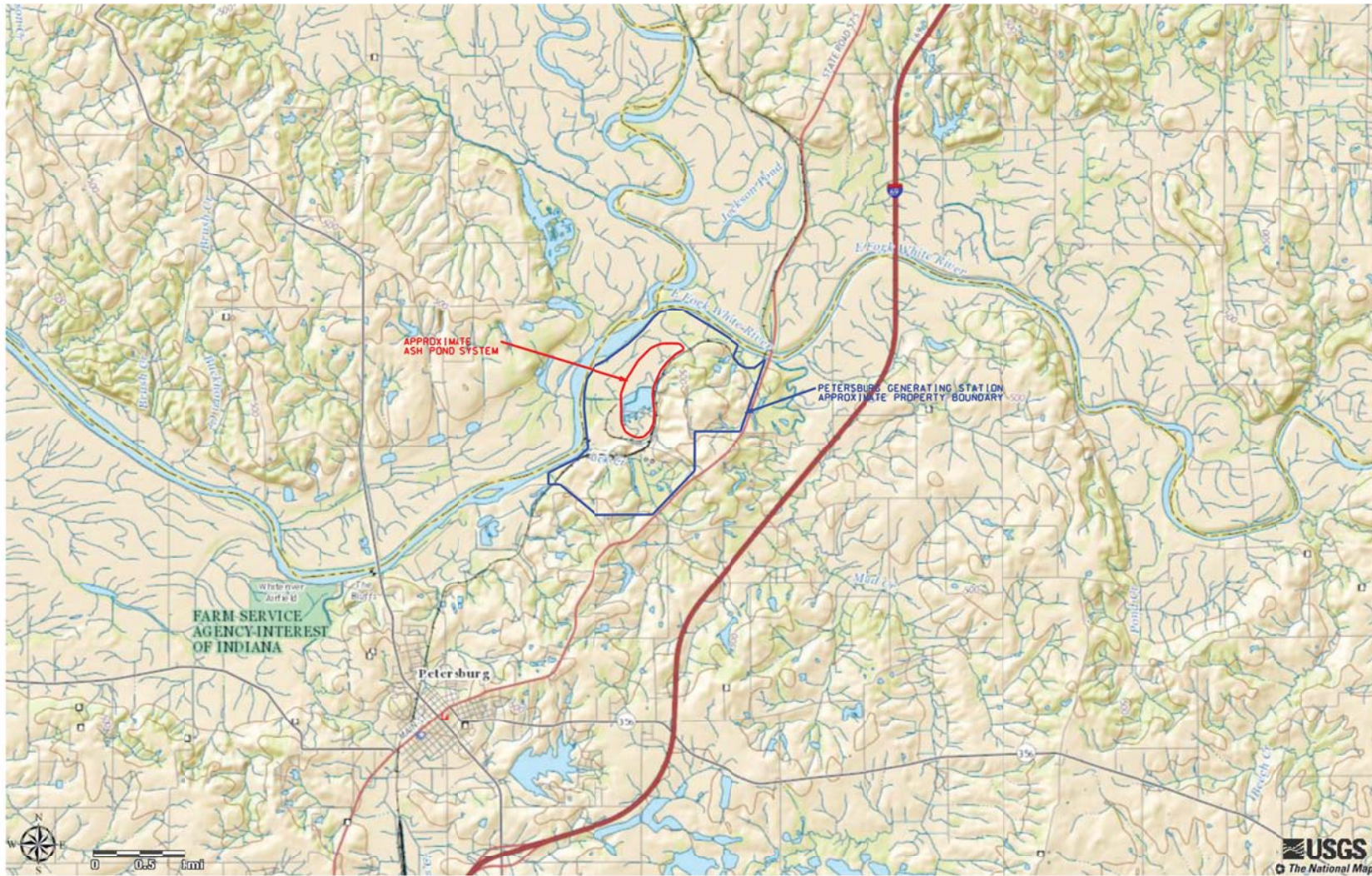
## **SECTION 5.**



### **MAPS, FIGURES, AND SUPPORTING DATA**

Copies of the following maps and figures are provided in this EAP for use in training personnel and during EAP operations.

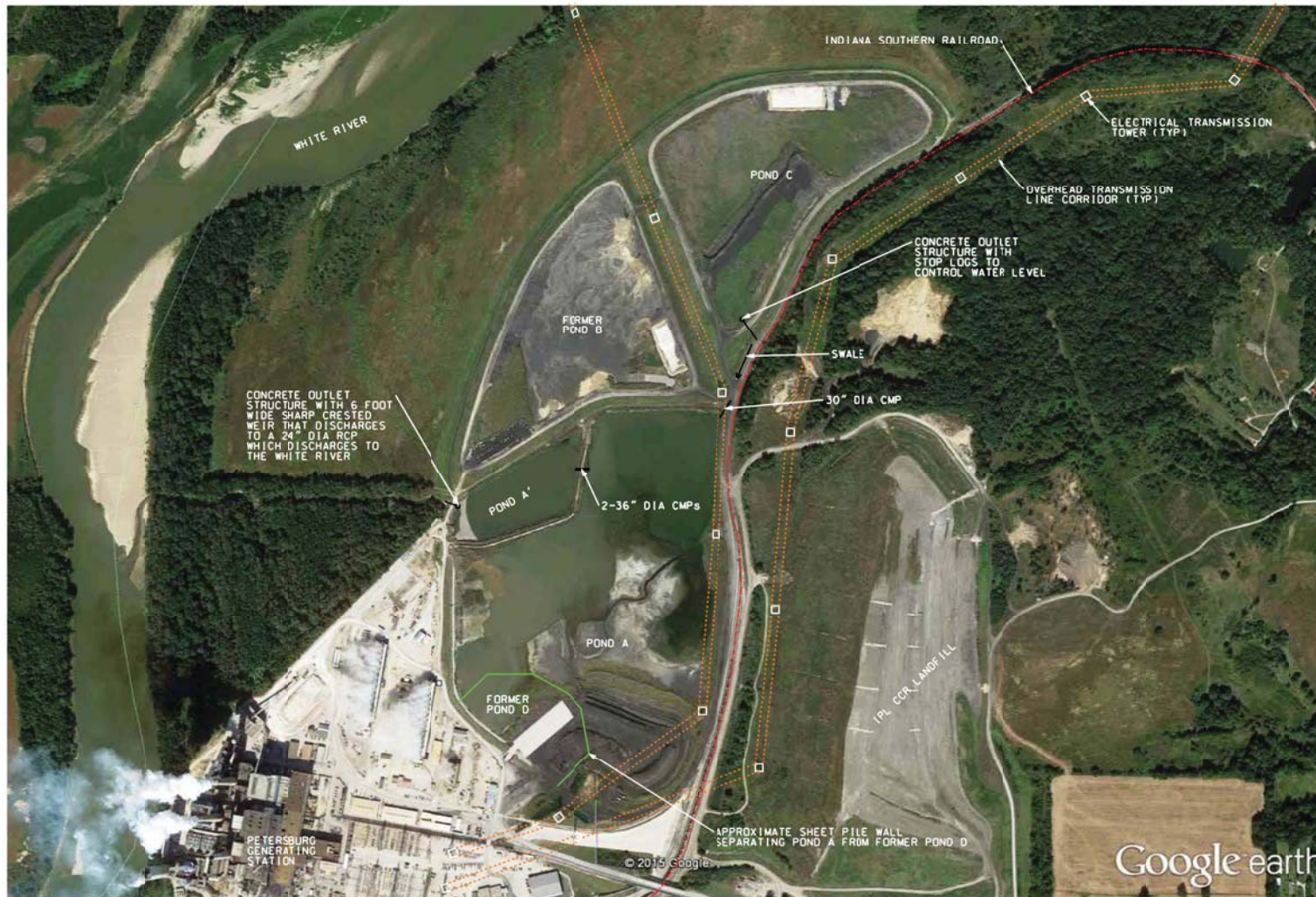
- Figure 5.1 - Location and Vicinity Map
- Figure 5.2 - Ash Pond System Layout Annotated Aerial Photograph
- Figure 5.3 - Emergency Site Access Route Map
- Figure 5.4 - Estimated Dike Breach Inundation Map
- Figure 5.5 - Ash Pond System Area and Capacity Curves





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RELEASE INFORMATION		
REV.	DATE	DESCRIPTION
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ISSUE PURPOSE: USE		
SPECIFICATION:		
PROJECT NO.: 10572-088		
CAD FILE NAME: PETE EAP - FIGURE 5.1.DGN		
PREPARED BY: JF		
REVIEWED BY: DK		
APPROVED BY: DN		
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY AN ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.		
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PROJECT		
PETERSBURG GENERATING STATION EMERGENCY ACTION PLAN		
DRAWING TITLE		
LOCATION AND VICINITY MAP		
DRAWING NUMBER		REVISION
FIGURE 5.1		0
SHEET	OF	1







NOT TO SCALE



NOTES	
1.	AERIAL IMAGE, DATED 09-22-2013, SHOWN ON THIS DRAWING WAS OBTAINED USING GOOGLE EARTH PRO V6.2.

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ISSUE PURPOSE: USE		
SPECIFICATION**		
PROJECT NO.: 10572-088		
CAD FILE NAME: PETE EAP - FIGURE 5.2.DGN		
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<div><p>SARGENT &amp; LUNDY<sup>LLC</sup> 55 EAST MONROE STREET CHICAGO, ILLINOIS 60603-5780</p></div>		
<div><p>PROJECT</p></div>		
PETERSBURG GENERATING STATION EMERGENCY ACTION PLAN		
DRAWING TITLE		
ASH POND SYSTEM LAYOUT ANNOTATED AERIAL PHOTOGRAPH		
DRAWING NUMBER		REVISION
FIGURE 5.2		0
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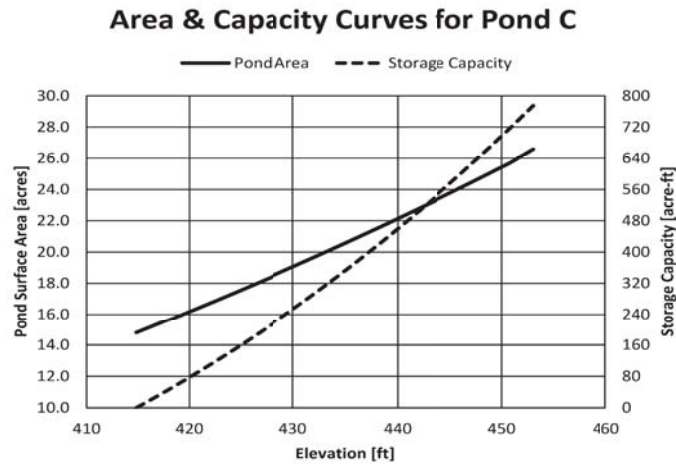
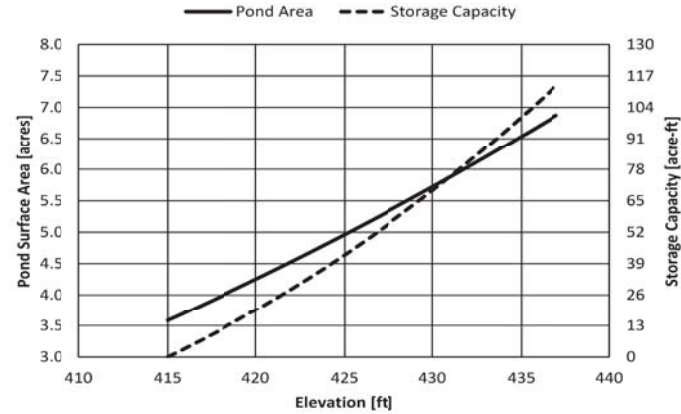
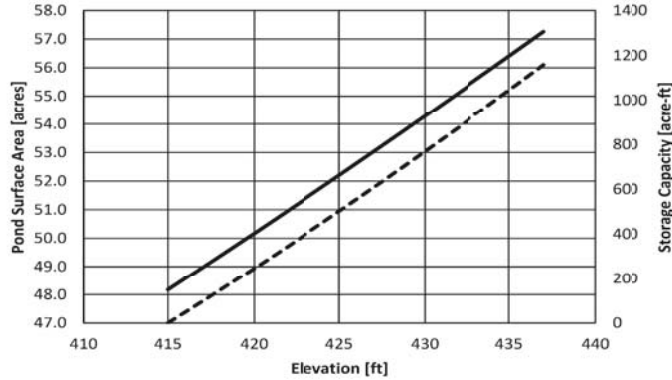
NOTES	
1.	AERIAL IMAGE, DATED 08-22-2013, SHOWN ON THIS DRAWING WAS OBTAINED FROM GOOGLE EARTH VERSION 5.3.509

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REV.	DATE	DESCRIPTION
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SPECIFICATION**		
PROJECT NO.: 10572-088		
CAD FILE NAME: FIGURE 5.3		
PREPARED BY: JF		
REVIEWED BY: DK		
APPROVED BY: DN		
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<div><p>PROJECT</p></div>		
PETERSBURG GENERATING STATION EMERGENCY ACTION PLAN		
DRAWING TITLE		
0	EMERGENCY SITE ACCESS ROUTE MAP	
DRAWING NUMBER		REVISION
FIGURE 5.3		0
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Z08911/015083/445n12  
Form 000-0401-01-08 - ANSI (Imperial) MicroStation Border - Size E - 34 x 44  
Revision --, Revision Date: XX-XX-XXXX



NOTES	
1.	ALL ELEVATIONS ARE WITH RESPECT TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).

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RELEASE INFORMATION				
REV.	DATE	DESCRIPTION		
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ISSUE PURPOSE: USE				
SPECIFICATION:				
PROJECT NO.: 10572-088				
CAD FILE NAME: PETE EAP - FIGURE 5.5.DGN				
PREPARED BY: JF				
REVIEWED BY: DK				
APPROVED BY: DN				
ANY MODIFICATION OR ADDITION TO THIS DRAWING BY AN ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.				
 SARGENT & LUNDY 55 EAST MONROE STREET CHICAGO, ILLINOIS 60603-5780				
				
PROJECT				
PETERSBURG GENERATING STATION EMERGENCY ACTION PLAN				
DRAWING TITLE				
ASH POND SYSTEM AREA AND CAPACITY CURVES				
DRAWING NUMBER		REVISION		
FIGURE 5.5		0		
SHEET	OF	1		

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## SECTION 6.

# EMERGENCY PREPAREDNESS

This section of the EAP describes the activities and actions taken by Petersburg Generating Station and EAP personnel that prepares them to appropriately execute the actions described herein during an emergency event. This section also outlines this EAP's training and exercise provisions, which will ensure that EAP personnel remain familiar with the EAP and that the EAP will be effective should an emergency event arise.

### 6.1 SURVEILLANCE AND MONITORING

Specifications and provisions for the active surveillance and monitoring procedures for the Petersburg Generating Station's Ash Pond System are contained within the facility's Operation and Maintenance Plan (O&M Plan). The following surveillance and monitoring activities are prescribed by the O&M Plan:

- *Staff Gauge Monitoring* – Two staff gauges around the Ash Pond System are used to monitor the level of the water in each of the ash ponds, which, when compared to the appropriate surface water elevation in Table 1.2, is used to determine the potential of a flooding or overtopping event. The water level in each ash pond is recorded bimonthly.
- *Piezometer Monitoring* – Two piezometers around the Ash Pond System are used to monitor the elevation of the water inside the ash ponds' dikes so as to detect any changes in the operation of each ash pond that might lead to an emergency event. The water level in the piezometers is recorded bimonthly.
- *Weekly and Informal Inspections* – Weekly inspections are performed at least once every seven days by facility personnel familiar with the Ash Pond System and who can make accurate assessments of the ash ponds' conditions. Additional informal inspections are performed after a significant rain event/weather condition. These inspections evaluate the conditions of the ash ponds and their discharge structures.
- *Annual Inspections* – Annual inspections are performed at least once a year by an independent, qualified professional engineer licensed in the State of Indiana. This inspection ensures that the facility's ash ponds are operated and maintained in accordance with recognized and generally accepted engineering standards.

### 6.2 ACCESS TO THE SITE

The primary route for accessing Petersburg Generating Station during an emergency event is via Indiana State Road 57. Figure 6.3 shows the routes to the Ash Pond System from the facility's entrance upon the arrival of EAP personnel and emergency responders.

### 6.3 RESPONSE DURING PERIODS OF DARKNESS

Should an emergency event be detected during periods of darkness, the Plant Manager or his/her designee will ensure that the area(s) where the emergency event was detected is illuminated using available on-site equipment (e.g., portable lights). Adequate illumination should also be provided in facility areas ancillary



to monitoring, remediating, and responding to the emergency event. If necessary, other EAP personnel should provide equipment capable of illuminating the previously-mentioned areas.

## **6.4 RESPONSE DURING WEEKENDS AND HOLIDAYS**

The emergency response and notification procedures described herein will be as unaltered as is practical during an emergency event that is detected during a weekend or on a holiday. Therefore, it is important that the contact information for the EAP personnel listed in Figures 2.1, 2.2, and 2.3 be current, accurate, and include a means of contacting each person or agency, or designated alternates for each, during these times. Accuracy of such information will be verified during the Annual EAP Participation Meeting (see Section 6.6.3).

## **6.5 RESPONSE DURING ADVERSE WEATHER**

If an emergency event is detected during adverse weather conditions, the Plant Manager or his/her designee will ensure clear and safe access is provided for EAP personnel to implement emergency response actions. This could include the use of on-site equipment such as snow plows, salt, and sand. The Plant Manager or his/her designee will routinely contact the National Weather Service so as to adequately update EAP personnel about the progression or regression of the adverse weather. Section 6.6.4 lists adverse weather conditions for which EAP personnel will develop, if necessary, special provisions for implementing emergency response actions in such conditions.

## **6.6 EAP REVIEW, TRAINING, AND EXERCISE**

The following subsections provide provisions for ensuring the effectiveness of the EAP in responding to and remedying an emergency event through periodic reviews, training, meetings, and exercises.

### **6.6.1 EAP Review and Revision**

The annual review of the EAP for evaluation of consistency with plant operations and available resources will be conducted by the EAP Coordinator and reviewed by the Engineering Director. All changes noted will be made to the EAP as required and any needed training will be provided. Note that an EAP Annual Review Verification Statement shall be completed upon conclusion of the review.

The EAP Coordinator will be responsible for ensuring that the EAP documents are revised. After changes are made, a new EAP with updated information will be sent to all holders with clear and prominent instructions to destroy the outdated copy in their files. The new EAP will be certified by a professional engineer registered in the State of Indiana in accordance with 40 CFR 257.73(a)(3)(iv). At least once annually, the EAP Coordinator will perform an audit of the EAP copies to ensure that all principal members of the organization have the correct copies in their possession.

### **6.6.2 EAP Training**

All EAP personnel and, as necessary, other local emergency responders will be trained in the provisions of this plan such that they are familiar with all aspects of the plan. The purpose of this training is to ensure that each person involved in the implementation of the EAP is thoroughly familiar with his/her responsibilities and duties under the plan.

The Internal EAP organization will meet once annually to refresh themselves on the content of the EAP and to review the conduct of all EAP events that may have occurred. In the event that an Event Level 1

occurs, the internal EAP organization will meet immediately after the termination of the event to assess important aspects of this event and make all changes necessary to prevent this from future occurrence.

### **6.6.3 Annual EAP Participation Meeting**

At least once every 12 months, EAP personnel and local emergency responders involved in the implementation of the EAP will meet at the Petersburg Generating Station. This meeting will be conducted by the EAP Coordinator, or his/her designee, and will cover the following topics at a minimum:

- Summary of EAP process,
- Potential emergency events at the Ash Pond System,
- Notification flowcharts and emergency response actions,
- Training and exercises, and
- Updates to EAP personnel contact information.

Form D.2 in Appendix D may be used to document the occurrence of the annual meeting between EAP personnel and local emergency responders.

### **6.6.4 EAP Exercises**

In order to promote prevention, preparedness, and response to an emergency event at the Ash Pond System, EAP personnel and local emergency responders will participate in exercises of the EAP. These exercises will further familiarize EAP participants with the plans, policies, and procedures for an emergency event, as well as validate them.

At least once every 12 months, EAP personnel and local emergency responders will participate in a discussion-based exercise of the EAP at the Petersburg Generating Station. This exercise may occur during the Annual EAP Participation Meeting and will primarily feature discussions on the EAP's provisions and simulated scenarios to assess the established plans, policies, and procedures. Parts of these discussions should focus on special provisions that are necessary for responding to emergency events in adverse weather conditions such as flooding, wind, ice, snow, severe thunderstorms, and tornados.

## APPENDIX A

### Warning and Evacuation

This appendix is available for inserting local warning and evacuation plans developed by the Warning/Evacuation Director or designee.



## **APPENDIX B**

### **Inundation Map Documentation**

## APPENDIX B

### Inundation Map Documentation

The estimated flood inundation extent that could occur as a result of a dike breach at the Petersburg Generating Station Ash Pond System is presented on the Estimate Dike Breach Inundation Map – Figure 5.4. The Inundation Map includes flood wave traveling information including peak arrival time, maximum water elevation, incremental rise, peak dam breach flow, time to peak, and inundation duration, for various locations on the map. The transparent orange and blue colored areas shown on Figure 5.4 represent the estimated maximum flood inundation extent. The areas of the map highlighted in transparent orange color represent an Immediate Impact Area and include the generating station, floodplain and adjacent railroad. The Immediate Impact Area has a very short flood wave arrival time (< 5 minutes); therefore, it is imperative that this area receive, if at all possible, preemptive warning of a potential dike breach should an incident or emergency event ever occur at the Ash Pond System. Also, the peak incremental water level rise can be significant within the Immediate Impact Area. The peak incremental water level rise for Dike Breach Inundation Areas represented by the transparent blue color is expected to be less significant because they are located further downstream from the Ash Pond System. The flood wave arrival time is expected to be less than 25 minutes at a location 1 mile downstream of the Ash Pond System.

As a result of this inundation study, the maximum flood extent that could occur as a result of a dike breach at the Ash Pond System was determined to be always within the USGS flood inundation map boundary as determined from the USGS Scientific Investigation Report 2015-5017. In other words, flooding that may be caused by a dike breach is expected to remain within the river's flood plain. This study also determined that no residential areas and critical infrastructure are located within the inundation area between the Ash Pond System and the State Highway 61 Bridge.

Detailed back-up calculations that were used to develop the inundation map, including all assumptions, references, and supporting documents, can be reviewed upon request at the Petersburg Generating Station EAP office.

#### Basis and Assumptions

- 1) A two-dimensional hydrodynamic model (ADCIRC) was used to compute the maximum dike breach flood extent.
- 2) Dike breach scenarios were developed using pond geometry information and dike slope stability analysis, and soil boring data.
- 3) Since Former Pond B and Pond D were regraded in the fall of 2015 such that they no longer impound water, they are not included in the dike breach scenarios.
- 4) Cascading failure scenarios were developed based on engineering judgment, considering a combination of physically possible and realistic dike failure modes (i.e., hydrologic and non-hydrologic) of each active pond. Conservatively, a scenario considering simultaneous failure of all active ponds was also evaluated.
- 5) Wet ash inside the pond is conservatively considered as an equivalent volume of water.
- 6) Final inundation map was developed enveloping the flooding extents from the hydraulic analyses for the dike breach scenarios.

## **APPENDIX C**

### **Past EAP Activity**

This appendix is the placeholder for copies of past EAP activity reports, Annual Review Verification Statements that must be completed after the annual review is performed, and Periodic Test Memos to be included after periodic tests have been performed.

## APPENDIX D

### EAP Forms



## FORM D.1

### Ash Pond System – EAP Annual Review Verification Statement

Name of Dike: Petersburg Generating Station - Ash Pond System

Date of Drill: \_\_\_\_\_

- A. The current EAP is on hand and all revisions have been inserted.
- B. The readiness evaluated in the drill was acceptable.
- C. The communications network is correct and was verified.
- D. The training of personnel is sufficient and acceptable.
- E. The EAP Annual Review procedures were followed.

Additional Comments: \_\_\_\_\_

\_\_\_\_\_  
(individual responsible for conducting  
EAP Annual Review)

\_\_\_\_\_  
Date

\_\_\_\_\_  
(printed name)

\_\_\_\_\_  
(EAP Coordinator)

\_\_\_\_\_  
Date

\_\_\_\_\_  
(printed name)





## FORM D.2

### Ash Pond System – Annual EAP Participant Meeting Log (Page 2 of 2)

Name of Dike: Petersburg Generating Station - Ash Pond System

Date of Meeting: \_\_\_\_\_

In accordance with 40 CFR 257.73(a)(i)(3)(E), the annual meeting between IPL's internal EAP organization and local emergency responders took place at the Petersburg Generating Station on the preceding date. The following topics were discussed:

#### ANNUAL EAP PARTICIPANT MEETING NOTES



## **APPENDIX E**

### **EAP Distribution**





## APPENDIX E

### EAP Distribution

Name	Title	Contact Information	EAP Copy No.
Erv Leidolf	EAP Coordinator	<i>Contact information for emergency action personnel are on file with the appropriate station personnel.</i>	1
Steve Gladding	Alternate EAP Coordinator		2
Jason Deadmond	EAP Engineering Director		3
David Zehr	Alternate EAP Engineering Director		4
Claire Rice	EAP External Affairs Manager		5
Holly Bryan	EAP Warning/Evacuation Director		6
Dennis Eversoll	Alternate EAP Warning/Evacuation Director		7
Don Bryenton	EAP On-Call Engineer		8
Dave Stelzer	Alternate EAP On-Call Engineer		9
John Arose	IPL Petersburg Generating Station Plant Manager		10
Angelique Collier	EAP Environmental Affairs Director		11
Nysa Hogue	Alternate EAP Environmental Affairs Director		12
			13
			14

## **APPENDIX F**

### **Location of Supplementary Information**

This appendix contains background information and pertinent data, and is also the place holder for any other key supplementary information such as emergency materials, service contracts, and any other relevant material for Petersburg Ash Pond System and other similar information that may be placed in this appendix by individual plan holders for quick reference during an event.

## **APPENDIX G**

### Glossary

## APPENDIX G

### Glossary

Abutment: The undisturbed natural material of the valley side against which a dike is constructed. The left and right abutments are defined as being on the right and left side of an observer looking downstream.

Appurtenant structure: A structure necessary for the operation of a dike, such as outlets, trash racks, valves, spillways, power plants, tunnels, etc.

Breach: An eroded opening through a dike that drains the reservoir. A controlled breach is a constructed opening. An uncontrolled breach is an unintentional opening that allows uncontrolled discharge from the reservoir.

Channel: A general term for any natural or artificial watercourse.

Conduit: A closed channel to convey water through, around, or under a dike.

Crest of Dike: Top of dike.

Cross section: A sectional view of a dike formed by passing a plane through the dike perpendicular to the axis.

Dike: A structure constructed of earth or coal combustion residual (CCR) materials intended to retain fluid and solid materials as part of CCR processing operations for the Petersburg Generating Station.

Dike failure: The uncontrolled release of reservoir contents.

Drain, toe: A system of pipes and/or pervious material along the downstream toe of a dike used to collect seepage from the foundation and embankment and convey it to a free outlet.

Drainage area: The area that drains to a particular point of a river or stream.

Drawdown: The difference between a water level and a lower water level in a reservoir within a particular time. Used as a verb, it is the lowering of the water surface due to release of water from the reservoir.

EAP Operations: All actions taken by Petersburg Generating Station and other involved parties to address an incident or emergency event.

Earthquake: A sudden motion or trembling in the earth caused by the abrupt release of accumulated stress along a fault.

Emergency Action Plan (EAP): A comprehensive, single-source document providing accurate and current instructions intended to help Petersburg Generating Station and IPL save lives, minimize property damage, and minimize environmental impacts caused by large releases from a dike failure at the Petersburg Ash Pond System, or other events that present hazardous conditions.

Emergency Event: An event which takes place or a condition which develops that is of a serious nature that may endanger the dike, or endanger persons or property, and demands immediate attention.

Flood: A temporary rise in water levels resulting in inundation of areas not normally covered by water; may be expressed in terms of probability of exceedance per year such as one percent chance flood or expressed as a fraction of the probable maximum flood of other reference flood.

Some related terms are:

- a. Flood, Inflow Design (IDF): That flood used in the design of a safe dike and its appurtenant works particularly for sizing the spillway and outlet works, and for determining maximum temporary storage and height of dike requirements.
- b. Flood, Probable Maximum (PMF): The largest flood reasonably expected at a point on a stream because of a probable maximum storm and favorable runoff conditions.

Freeboard: Vertical distance between a stated water level and the top of dike.

Height, maximum hydraulic: The vertical distance between the maximum design water level and the lowest point in the original streambed.

Height, structural: The vertical distance between the lowest point on the dike crest and the lowest point of the excavated foundation.

Hydrograph, breach or dike failure: A flood hydrograph resulting from a dike breach.

Hydrograph, flood: A graphical representation of the flood discharge with respect to time for a particular point on a stream or river.

Hydrograph, unit: A hydrograph with a volume of one inch of runoff resulting from a storm of a specified duration and aerial distribution. Hydrographs from other storms of the same duration and distribution are assumed to have the same time base but with ordinates of flow in proportion to the runoff volumes.

Incident: An unusual event which takes place, or a condition which is slowly developing, that is not normally encountered in the routine operation of the Ash Pond System, or necessitates a variation from the operating procedures. Such events are more common than emergency conditions and often offer time to conduct preplanned responses to the slowly developing situation. If addressed in a timely manner, such events can often be prevented from progressing into a much worse event.

Incident Command System (ICS): A management system designed to control personnel, equipment, supplies, and communications at the scene of an unusual or emergency event. An Incident Command System is typically deployed at the beginning of an event until the management of the on-scene operations are no longer needed. The structure of the Incident Command System can be expanded or

contracted depending on the changing needs of the event. The Incident Command System allows all involved parties to effectively communicate using common terminology.

Instrumentation: An arrangement of devices installed into or near dikes (piezometer and staff gauge at the Petersburg Ash Pond System) that provide measurements that can be used to evaluate performance parameters of a structure.

Inundation map: A map delineating the area that would be submerged by a particular flood event.

Length of dike: The length along the top of the dike between contact abutments. This also includes the spillway, power plants, navigation lock, fish pass, etc., where these form part of the length of the dike. If detached from the dike, these structures should not be included.

Outlet: An opening through which water can be discharged.

Phreatic surface: The free surface of water seeping at atmospheric pressure through soil or rock.

Piezometer: An instrument for measuring water or pressure head.

Piping: The progressive development of internal erosion by seepage appearing downstream as a hole or seam discharging water containing soil particles.

Probability: The likelihood of an event occurring within a given period of time.

Probable Maximum Precipitation (PMP): Theoretically, the greatest depth of precipitation for a given duration that is physically possible over a given size storm area at a particular geographical location.

Reservoir: A body of water impounded by a dike in which water can be stored.

Reservoir surface area: The area covered by a reservoir when filled to a specified level.

Riprap: A layer of stone, precast blocks, bags of cement or other suitable material, generally placed on the upstream slopes of an embankment or along a watercourse as protection against wave action, erosion, or scour. It consists of pieces of relatively large size as distinguished from a gravel blanket.

Seepage: Flow or movement of water through a dike, its foundation, or its abutments.

Slope: Inclination from the horizontal, measured as the ratio of horizontal units to corresponding vertical units.

Spillway: A structure over or through which flow is discharged from a reservoir. If the rate of flow is controlled by mechanical means such as gates, it is considered a controlled spillway. If the elevation of the spillway crest is the only control, it is considered an uncontrolled spillway.

Spillway channel: An open channel or closed conduit conveying water from the spillway inlet downstream.

Spillway crest: The lowest level at which water can flow over or through the spillway.

Spillway, chute: An inclined channel, usually separate from the dike, to convey reservoir overflow into the natural channel below the dike or into an adjacent natural drainage channel.

Storage: The retention of water or delay of runoff either by planned operation, as in a reservoir, or by temporary filling of overflow areas, as in the progression of a flood wave through a natural stream channel. Definitions of specific types of storage in reservoirs are:

- a. Dead Storage: The reservoir volume between the invert of the lowest discharge and the reservoir bottom.
- b. Active Storage: The reservoir volume between the normal reservoir water surface elevation and the invert of the lowest discharge.
- c. Flood Storage: The reservoir volume between the crest of the dike and the normal reservoir water surface elevation.