Dynegy Midwest Generation, LLC

BALDWIN POWER STATION

CITY OF BALDWIN, RANDOLPH COUNTY, ILLINOIS

Emergency Action Plan (EAP)

40 CFR § 257.73(a)(3)
Coal Combustion Residual (CCR) Impoundments
& Related Facilities

- Fly Ash Pond System (NID # IL50720)
- Bottom Ash Pond (NID # IL50721)

Revision Date: April 13, 2017

Qualified Professional Engineer Certification; Emergency Action Plan for the Baldwin Power Station Fly Ash Pond System and Bottom Ash Pond.

In accordance with 40 CFR 257.73(a)(3)(iv), the owner or operator of a CCR unit that is required to prepare a written Emergency Action Plan under 40 CFR 257.73(a)(3) must obtain a certification from a qualified professional engineer stating that the written Emergency Action Plan meets the requirements of 40 CFR 257.73(a)(3).

I, Matthew Hoy, being a Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief that:

1. the information contained in this Emergency Action Plan was prepared in accordance with the accepted practice of engineering; and

2. this Emergency Action Plan meets the requirements of 40 CFR 257.73(a)(3).

SIGNATURE _____ DATE 4/13/17

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Fenton MO 63026-1944

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BALDWIN POWER STATION
EMERGENCY ACTION PLAN
CCR IMPOUNDMENTS & RELATED FACILITIES

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BALDWIN POWER STATION
EMERGENCY ACTION PLAN
CCR IMPOUNDMENTS & RELATED FACILITIES

PART I – EAP NARRATIVE AND EXHIBITS

1 STATEMENT OF PURPOSE

The Baldwin Power Station (Station) is located east of the Kaskaskia River near the City of Baldwin in Randolph County, Illinois. The location is shown in Figure 1-1. The Station is a coal-fired electricity producing power plant owned and operated by Dynegy Midwest Generation, LLC, a subsidiary of Dynegy. This Emergency Action Plan (EAP) was prepared in accordance with 40 CFR § 257.73(a)(3) and covers the following Coal Combustion Residual (CCR) surface impoundments located at the site:

- Fly Ash Pond System (NID # IL 50720), consisting of the following:
    - Old East Fly Ash Pond
    - East Fly Ash Pond
    - West Fly Ash Pond
- Bottom Ash Pond (NID # IL50721)

The locations of these impoundments are shown in Figure 1-2. Section 6 of this EAP includes a description of each impoundment.

The purpose of this Emergency Action Plan (EAP) is to:

1. Safeguard the lives, as well as to reduce property damage, of citizens living within potential downstream flood inundation areas of CCR impoundments and related facilities at the Baldwin Power Station.
2. Define the events or circumstances involving the CCR impoundments and related facilities at the Baldwin Power Station that represent atypical operating conditions that pose a safety hazard or emergency and how to identify those conditions.
3. Define responsible persons, their responsibilities, and notification procedures in the event of a safety emergency.
4. Provide contact information of emergency responders.
5. Identify emergency actions in the event of a potential or imminent failure of the impoundments.
6. Identify the downstream area that would be affected by failure of the impoundments.
7. Provide for effective facility surveillance, prompt notification to local Emergency Management Agencies, citizen warning and notification responses, and preparation should an emergency occur.

Information provided by Dynegy was utilized and relied upon in preparation of this report.

0 1 2 3 Miles

1:126,720 (1" = 2 miles at original document size of 11x17)

Stantec DYNEGY

Project Location	175605019
Latitude: 38.204579	Prepared by EC on 2017-03-29
Longitude: -89.855052	Technical Review by TS on 2017-03-30
Randolph County, Illinois	Independent Review by MM on 2017-03-30

Client/Project
Baldwin Power Station
Emergency Action Plan

Figure No.
1-1

Title
Location Map

Notes

1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
2. Basemap Source: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Legend

CCR Surface Impoundment Boundary

0 2,000 4,000 Feet

1:24,000 (At original document size of 11x17)

Notes

1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
2. Basemap Source: USDA-FSA-APFO Aerial Photography Field Office, Illinois State Geological Survey
3. Impoundment Boundaries Provided by Client (Dated 9/9/2015)

Stantec DYNEGY

Project Location
Latitude: 38.204579
Longitude: -89.855052
Randolph County, Illinois

175605019
Prepared by EC on 2017-03-29
Technical Review by TS on 2017-03-30
Independent Review by MM on 2017-03-30

Client/Project
Baldwin Power Station
Emergency Action Plan

Figure No.
1-2

Title
CCR Impoundments

2 COMMUNICATION

To facilitate understanding among everyone involved in implementing this EAP, four response levels are used to identify the condition of an impoundment. These are:

Response Levels:

- **Level 0:** Normal conditions and routine operations, including surveillance and initial investigation of unusual conditions and effects of storm events.
- **Level 1:** Potentially hazardous condition exists, requiring investigation and possible corrective action.
- **Level 2:** Potential failure situation is developing; possible mode of failure is being assessed; corrective measures are underway.
- **Level 3:** Failure is occurring or is imminent, public protective actions are required.

The 4-Step Incident Response Process is outlined in Figure 2-1. This should be used in conjunction with the Notification Flowchart (Figure 2-2) and EAP Decision Tree (Figure 2-2). Section 4 provides guidance tables for determining Response Levels and a table providing emergency actions to be taken given various situations. Table 2-1 lists contact information for the emergency responders.

Figure 2-1. Summary/Sequence of Tasks 4-Step Incident Response Process

Step 1: Detection, Evaluation, and Response Level Determination

Sequence of Tasks:

- Notify EAP Coordinator, Station Management (Director and Engineering), and Dynegy Dam Safety Manager of unusual condition detected and confer on next steps.
- Conduct technical evaluation of conditions as needed.
- Determine Response Level based on evaluation. **(Table 4-1)**
- Reset Response Level as revised evaluations warrant.

Step 2: Notification

Sequence of Tasks:

- Notify authorities, designated personnel, and external response partners of change in Response Level, using the Notification Flowchart. **(**
-
-

Step 3: Emergency Actions

Sequence of Tasks:

- Perform emergency actions with goal of saving the impoundment and minimizing impacts to life, property, and environment. **(**
- **Table** 4-3**)**
- Take continuous actions to include situation assessment, information sharing, remediation, and public safety advisories or warnings, as warranted.

Step 4: Follow-up

Sequence of Tasks:

- Document conditions and decisions in the Emergency Incident Log.
- Notify authorities, designated personnel, and external response partners that condition is stabilized; limit incident termination declarations to conditions at the site.
- Conduct and document after-action review of incident and response.

Figure 2-1. Notification Flowchart

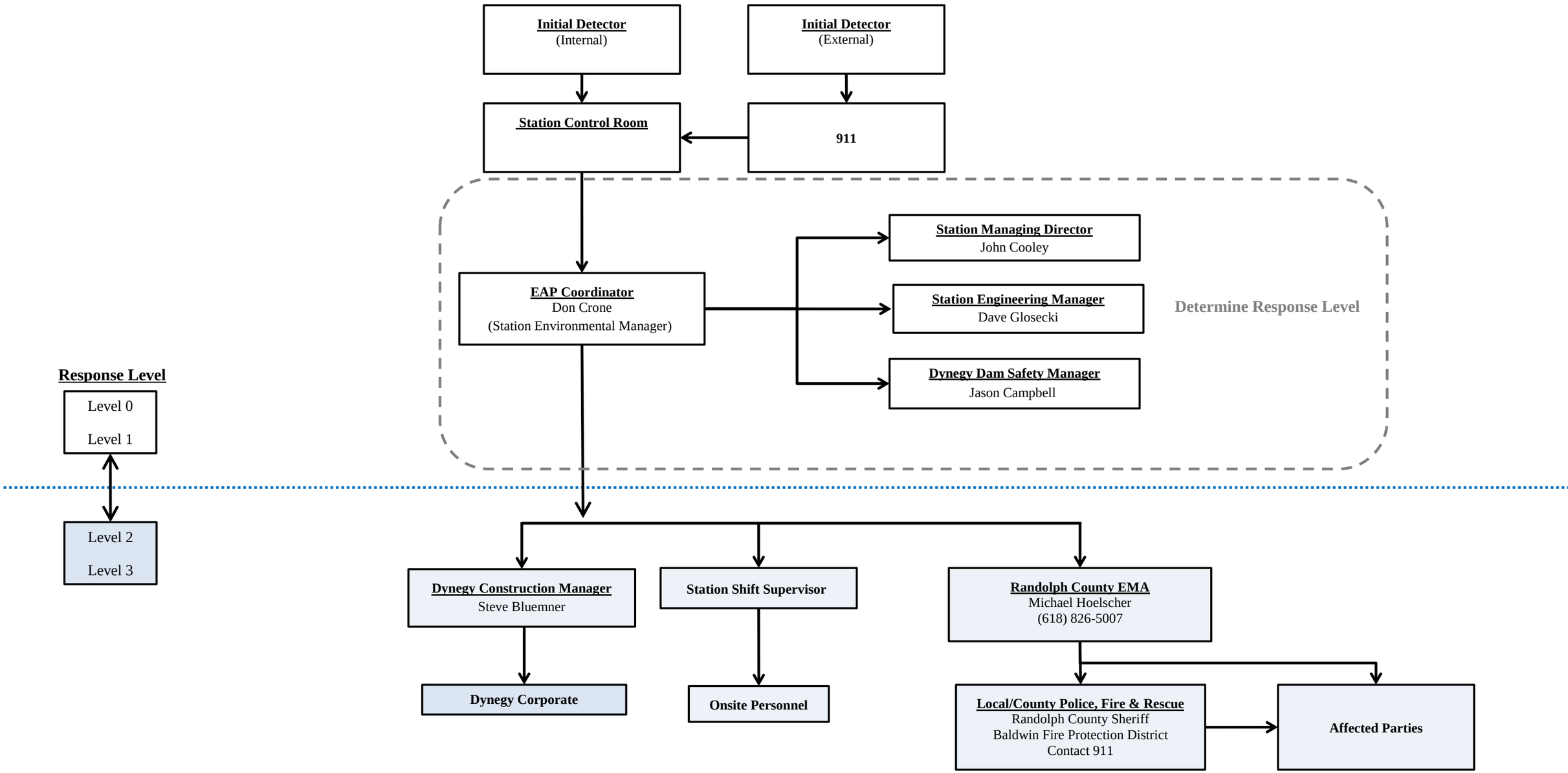


Figure 2-2. EAP Response Process Decision Tree

Note: At any given below, if failure is imminent or actively occurring **CALL 911 IMMEDIATELY** to notify emergency responders and then continue with process afterwards.

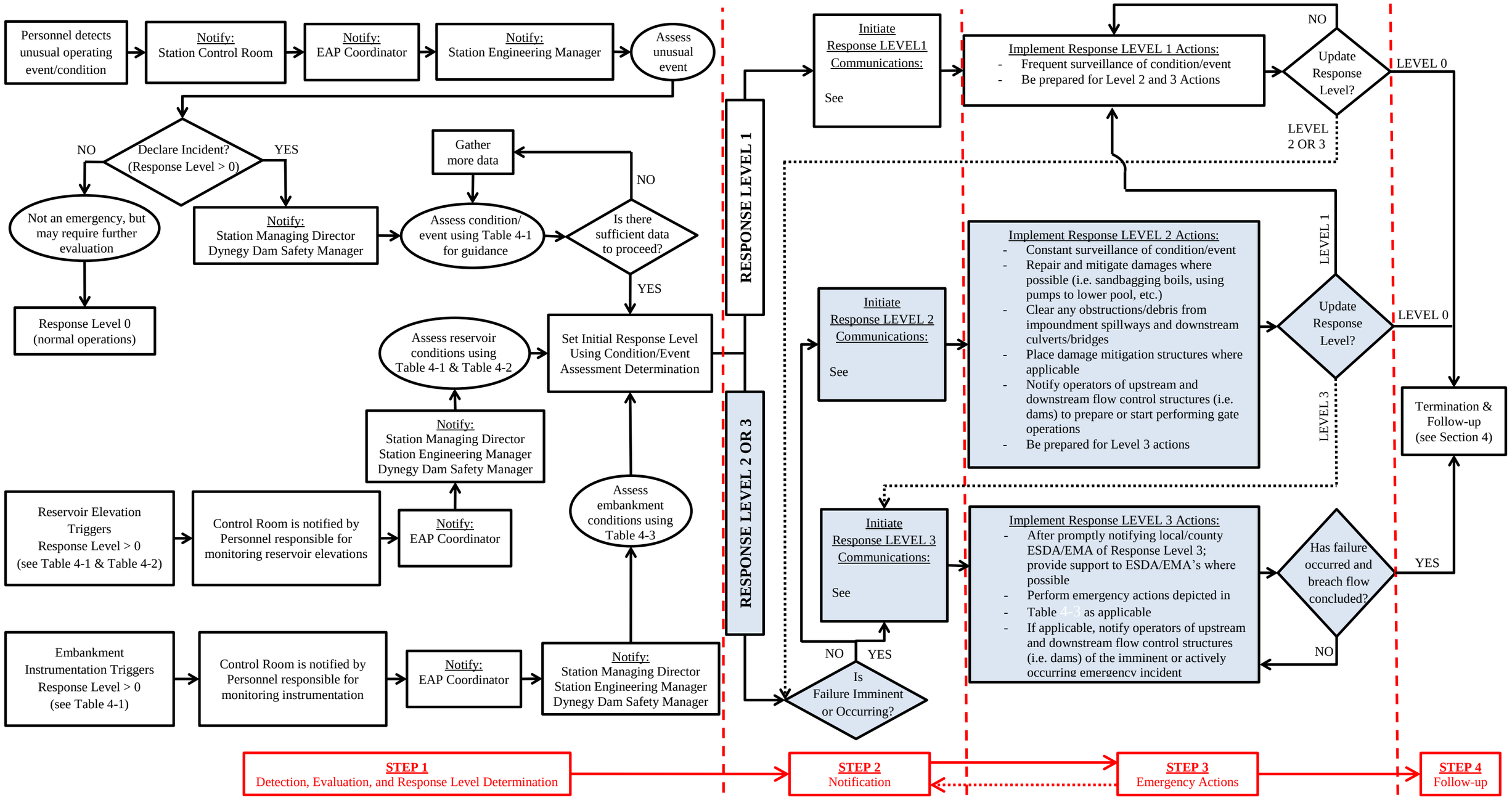


Table 2-1. EAP Emergency Responders

Position	Name	Phone #
Internal Contacts		
Baldwin Power Station		
Managing Director	John Cooley	
Environmental Manager (EAP Coordinator)	Don Crone	(618) 225-7309
Engineering Manager	Dave Glosecki	
Control Room		(618) 785-3200
Dynegy Corporate Operations		
Dam Safety Manager	Jason Campbell	(618) 792-8488
Construction Manager	Steve Bluemner	
External Contacts		
Local / County ESDA/EMA, Police, & Fire		
Randolph County EMA	Michael Hoelscher	(618) 826-5007
Randolph County Sheriff Department	Shannon Wolff	911, (618) 826-5484
Baldwin Fire Protection District		911, (618) 785-2520
State Emergency Management Agencies & Organizations		
IDNR-OWR Dam Safety Section Manager	Paul Mauer	(217) 782-4427
Kaskaskia River State Fish and Wildlife Area		(618) 785-2555
Illinois Conservation Police		(877) 236-7529
Illinois State Police		911

3 EAP ROLES AND RESPONSIBILITIES

Table 3-1 provides a summary of the EAP roles during an emergency event.

Table 3-1. Summary of EAP Roles

Entity	Role Description
Dynegy Emergency Response Team (ERT)	**ERT:** Dynegy personnel responsible for EAP implementation, distribution, updates/maintenance, and training activities. The *ERT* is comprised of the following roles; 1. **Dynegy Corporate:** Dynegy corporate entity, committee, team, position, or personnel with relevant responsibility for a given generating station. 2. **Station Management:** Personnel responsible for day-to-day operation and management of the Station. 3. **Dam Safety Manager:** Personnel that is most knowledgeable about the design and technical operation of facilities at a given Station. 4. **EAP Coordinator:** Personnel responsible for implementing the EAP and associated activities **Emergency Event – EAP Responsibilities** 1. Respond to emergencies at the Station. 2. Verify and assess emergency conditions. 3. Notify and coordinate as appropriate with participating emergency services disaster agencies or emergency management agencies (ESDA/EMA's), emergency responders, regulatory agencies, and all other entities involved or affected by this EAP. 4. Take corrective action at the Station. 5. Declare termination of emergencies at the Station.
Randolph County EMA	1. Receive Response Level reports from *Dynegy Corporate* through *EAP Coordinator*. 2. Coordinate emergency response activities with local authorities: police, fire and rescue, etc. 3. Coordinate notification of public as necessary through established channels, which may include door-to-door contact. 4. Coordinate notification activities to affected parties within inundation areas. 5. Evaluate risk to areas beyond the inundation areas, communicate needs to *Dynegy Corporate* and/or *EAP Coordinator*, and coordinate aid as appropriate. 6. Responsible for declaring termination of an emergency condition off-site upon receiving notification of an emergency status termination from *Dynegy Corporate*. 7. If necessary, coordinate with *State ESDA/EMA*.
Randolph County Police, Fire and Rescue, and Emergency Services	1. Receive alert status reports from the *ERT* or the *Randolph County ESDA/EMA*. 2. If necessary, notify affected parties and general public within inundation areas (see Section 7). 3. Render assistance to Randolph County ESDA/EMA, as necessary. 4. Render assistance to *Dynegy Corporate* and *Station Management*, as necessary.

4 EAP RESPONSE

The 4-Step Incident Response Process is shown in Figure 2-1. The Decision Tree shown in Figure 2-2 provides a flowchart for the various elements of the response process. Upon reaching Step 4 of the response process (termination and follow-up), the EAP Coordinator is responsible for notifying the ESDA/EMA's that the condition of the dam/impoundment has been stabilized. The purpose of this section is to provide specific information that can be used during a response. This information is provided in the following tables:

- Table 4-1 provides guidance for determining the response level.
- Table 4-2 provides impoundment pool level trigger elevations.
- Table 4-3 lists emergency actions to be taken depending on the situation.

Table 4-1. Guidance for Determining the Response Level

Event	Situation	Response Level
Spillway flow (see Table 4-2 for relevant elevations)	Primary spillway flow is not causing active erosion and impoundment water surface elevation is below auxiliary spillway crest elevation (if equipped).	Level 0
	Impoundment water surface elevation is at or above auxiliary spillway crest elevation (if equipped). No active erosion caused by spillway flow.	Level 1
	Spillway flow actively causing minor erosion that is not threatening the control section or dam/impoundment stability.	Level 2
	Spillway flow that could result in flooding of people downstream if the reservoir level continues to rise.	Level 2
	Abnormal operation of the spillway system due to blockage or damage that could lead to flooding.	Level 2
	Spillway flow actively eroding the soil around the spillway that is threatening the control section (e.g. undermining) or dam/impoundment stability.	Level 3
	Spillway flow that is flooding people downstream.	Level 3
Embankment overtopping (see Table 4-2 for relevant elevations)	Impoundment water surface elevation at or below typical normal pool fluctuation elevation.	Level 0
	Impoundment water surface elevation above typical normal pool fluctuation elevation.	Level 1
	Impoundment water surface elevation above high normal pool fluctuation elevation.	Level 2
	Impoundment water surface elevation at or above embankment crest elevation.	Level 3
Seepage	New seepage areas in or near the dam/impoundment with clear flow.	Level 1
	New seepage areas with cloudy discharge or increasing flow rate.	Level 2
	Heavy seepage with active erosion, muddy flow, and/or sand boils.	Level 3
Sinkholes	Observation of new sinkhole in impoundment area or on embankment.	Level 2
	Rapidly enlarging sinkhole and/or whirlpool in the impoundment.	Level 3
	New cracks in the embankment greater than ¼ inch wide without seepage.	Level 1

Table 4-1. Guidance for Determining the Response Level

Event	Situation	Response Level
Embankment cracking	Any crack in the embankment with seepage.	Level 2
	Enlarging cracks with muddy seepage.	Level 3
Embankment movement	Visual signs of movement/slippage of the embankment slope.	Level 1
	Detectable active movement/slippage of the embankment slope or other related effects (tension cracking, bulges/heaves, etc.) that could threaten the integrity of the embankment.	Level 2
	Sudden or rapidly proceeding slides of the embankment slopes.	Level 3
Embankment Monitoring Equipment (piezometers, inclinometers, surface displacement mounts, etc.)	Instrumentation readings beyond historic normal.	Level 1
	Instrumentation readings indicate the embankment is susceptible to failure.	Level 2
	Instrumentation readings indicate embankment is at threshold of failure or is currently failing.	Level 3
Earthquake or other event	Measurable earthquake felt or reported on or within 100 miles of the impoundment.	Level 1
	Earthquake or other event resulting in visible damage to the impoundment or appurtenances.	Level 2
	Earthquake or other event resulting in uncontrolled release of water or materials from the impoundment.	Level 3
Security threat	Verified bomb threat or other physical threat that, if carried out, could result in damage to the impoundment.	Level 2
	Detonated bomb or other physical damage that has resulted in damage to the impoundment or appurtenances.	Level 3
Sabotage/ vandalism	Damage to impoundment or appurtenance with no impact to the functioning of the impoundment.	Level 1
	Modification to the impoundment or appurtenances that could adversely impact the functioning of the impoundment. This would include unauthorized operation of spillway facilities.	Level 2
	Damage to impoundment or appurtenances that has resulted in seepage flow.	Level 2
	Damage to impoundment or appurtenances that has resulted in uncontrolled water release.	Level 3

Table 4-2. Impoundment Trigger Elevations

Impoundment	Embankment Crest Elevation	Auxiliary Spillway Crest Elevation	Normal Pool Fluctuation	
			Typical	High
Fly Ash Pond System				
Old East Fly Ash Pond	460.0 ft. (1)	Not Applicable	Dry	Dry
East Fly Ash Pond	456.5 ft. (2)	Not Applicable	Dry	Dry
West Fly Ash Pond	456.5 ft. – 445.0 ft. (2)	Not Applicable	432.5 ft.	433.7 ft. (2)
Bottom Ash Pond	420.0 ft. (1)	418.0 ft. (1)	415.8 ft.	417.6 ft.

Notes:
1) 2015 Aerial Topographic Survey, Weaver Consultants
2) "Dynegy Midwest Generation L.L.C., Baldwin Energy Complex, Baldwin, Illinois, Ash Pond System Dam, IDNR Dam Safety Program, Emergency Action Plan", Dynegy, April 2015.

Table 4-3. Step 3: Emergency Actions

Condition	Description of Condition	Action to be Taken
High Water Level/ Large Spillway Release	See Table 4-1 and Table 4-2 for elevations and triggering water levels associated with the impoundments and spillways covered by this EAP.	1. Assess cause of increased reservoir stage, especially during fair weather conditions. 2. Determine Response Level. 3. Make proper notifications as outlined in the Figure 2-2 Notification Flowchart. 4. Perform additional tasks as determined through consultation with the ERT. 5. Make notifications if condition worsens such that downstream flooding is imminent. **Response Level 0**: require enhanced surveillance 3 times per day **Response Level 1**: contact internal chain of command and external response partners as necessary; inspect impoundment minimum 1 time per hour **Response Level 2**: contact internal chain of command; notify ESDA/EMA's and notify external response partners. ESDA/EMA's notify affected parties. **Response Level 3**: contact internal chain of command; notify ESDA/EMA's and notify external response partners. ESDA/EMA's notify affected parties of emergency incident.
Seepage	Localized new seepage or boil(s) observed along downstream face / toe of earthen embankment with muddy discharge and increasing but controllable discharge of water.	1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos. Document location on a site plan and in inspection notes. 2. Determine Response Level. 3. Make proper notifications as outlined in the Figure 2-2 Notification Flowchart. 4. ERT (with Dam Safety Manager as lead) to determine mitigation actions. The following actions may apply: a) Place a ring of sand bags with a weir at the top towards the natural drainage path to monitor flow rate. If boil becomes too large to sand bag, place a blanket filter over the area using non-woven filter fabric and pea gravel. Attempt to contain flow in such a manner (without

Table 4-3. Step 3: Emergency Actions

Condition	Description of Condition	Action to be Taken
		performing any excavations) that flow rates can be measured. Stockpile gravel and sand fill for later use, if necessary. b) Inspect the embankment and collect piezometer, water level and seepage flow data daily unless otherwise instructed by the Dam Safety Manager. Record any changes of conditions. Carefully observe embankment for signs of depressions, seepage, sinkholes, cracking or movement. c) Maintain continuous monitoring of feature. Record measured flow rate and any changes of condition, including presence or absence of muddy discharge. 5. Make notifications as outlined in the lower portion of the Notification Flowchart (Figure 2-2) if condition worsens such that failure is imminent.
Sabotage and Miscellaneous Other Issues	Criminal action with significant damage to embankment or structures where significant repairs are required and the integrity of the facility is compromised—condition appears stable with time.	1. Contact law enforcement authorities and restrict all access (except emergency responders) to impoundment. Restrict traffic on embankment crest to essential emergency operations only. 2. Determine Response Level. 3. Make internal notifications as outlined in the upper portion of the Notification Flowchart (Figure 2-2). 4. In conjunction with the Dam Safety Manager, assess extent of damage and visually inspect entire embankment and ancillary structures for additional less obvious damage. Based on inspection results, confirm if extent of damage to various components of the impoundment warrants a revised Response Level and additional notifications. 5. Perform additional tasks as directed by the ERT. 6. Make notifications if conditions worsen.
Embankment Deformation	**Cracks:** New longitudinal (along the embankment) or transverse (across the embankment) cracks more than 6 inches deep or more than 3 inches wide or increasing with time. New concave cracks on or near the embankment crest associated with slope movement.	1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos. Document location on a site plan and in inspection notes. 2. Restrict traffic on embankment crest to essential emergency operations only. 3. Determine Response Level. 4. Make notifications as outlined in the Figure 2-2 Notification Flowchart. 5. ERT (with Dam Safety Manager as lead) to determine mitigation actions. The following actions may apply: a) Place buttress fill against base of slope immediately below surface feature. Stock pile additional fill. b) Place sand bags as necessary around crack area to divert any storm water runoff from flowing into crack(s). 6. As directed by the Dam Safety Manager, additional inspection and monitoring of the dam may be required. Items may include; inspect the dam on a schedule determined by the Dam Safety Managers; collect piezometer and water level data; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement. 7. Make notifications as outlined in the Figure 2-2 Notification Flowchart if conditions worsen such that failure is imminent.
Embankment Deformation (cont.)	**Slides / Erosion:** Deep slide / erosion (greater than 2 feet	1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos. Document location on a site plan and in inspection report.

Table 4-3. Step 3: Emergency Actions

Condition	Description of Condition	Action to be Taken
	deep) on the embankment that may also extend beyond the embankment toe but does not encroach onto the embankment crest and appears stable with time.	2. Restrict traffic on embankment crest to essential emergency operations only. 3. Determine the Response Level. 4. Make notifications as outlined in the Figure 2-2 Notification Flowchart. 5. ERT (with Dam Safety Manager as lead) to determine mitigation actions. Additional actions may include the following items. a) Place sand bags as necessary around slide area to divert any storm water runoff from flowing into slide(s). b) Increase inspections of the dam; collect piezometer and water level data; and record any changes of condition. During inspections, carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement. 6. Make notifications as outlined in the Figure 2-2 Notification Flowchart if conditions worsen such that failure is imminent.
	Sinkholes: Small depression observed on the embankment or within 50 feet of the embankment toe that is less than 5 feet deep and 30 feet wide or which is increasing with time.	1. Slowly open drain gates to lower pool elevation. 2. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos. Document location on a site plan and in inspection notes. 3. Restrict traffic on embankment crest to essential emergency operations only. 4. Determine Response Level. 5. Make notifications as outlined in the Figure 2-2 Notification Flowchart. 6. ERT (with Dam Safety Manager as lead) to determine mitigation actions. Additional actions may include the following items: a) Backfill the depression with relatively clean earth fill (free of organic materials) generally even with surrounding grade and slightly mounded (6 to 12 inches higher) in the center in order to shed storm water away from the depression. Stock pile additional fill. b) Increase inspections of the dam; collect piezometer and water level data daily unless otherwise instructed by Dam Safety Manager; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement. 7. Make notifications as outlined in the Figure 2-2 Notification Flowchart if conditions worsen such that failure is imminent.
Gate Malfunction or Failure	Sluice gate damaged structurally (sabotage, debris, etc.) with uncontrolled release of water at a constant volume. Condition appears stable.	1. Close any other gates, if open. 2. Determine Response Level. 3. Make notifications as outlined in the Figure 2-2 Notification Flowchart. 4. Obtain instructions from the Dam Safety Manager to determine if there are other methods to stop or slow down the flow of water. 5. If conditions worsen such that failure is imminent, make notifications as outlined in the lower portion of the Figure 2-2 Notification Flowchart.

5 PREPAREDNESS

The intent of this section is to provide information that will be utilized during a response. Established emergency supplies and locations, suppliers, and equipment are provided in Table 5-1.

Table 5-2 is a partial list of area suppliers for many of the items typically needed during an emergency response.

A coordination meeting shall be conducted annually between representatives of Dynegy Midwest Generation, LLC, and local emergency responders. This meeting may be in the form of a face-to-face meeting, tabletop exercise, or additional training regarding the EAP.

Table 5-1. Emergency Supplies and Equipment

Item	On-site (Yes/No/Occasionally)	Remarks
Flashlights	Yes	Contact Shift Supervisor(s) for location and availability.
Generator	Yes	Contact Shift Supervisor(s) for location and availability.
Extension Cords	Yes	Contact Shift Supervisor(s) for location and availability.
Fire extinguishers	Yes	Contact Shift Supervisor(s) for location and availability.
Floodlights	Yes	3 Sets of Portable Emergency Lights
Backhoe	Yes	Contact Shift Supervisor(s) for location and availability.
Dozer	Yes	1 – D9, 2 – D10's, and 1- D5
Large Equipment (Rental – including excavating equipment, pumps, lighting)		Contact Shift Supervisor(s) for location and availability.
Grader	Yes	Contact Shift Supervisor(s) for location and availability.
Scraper	Yes	1 – 637's and 2 – 657
End Loader	Yes	1 large 980G and 1 small ITE 18B
Dump Truck	Yes	Contact Shift Supervisor(s) for location and availability.
Pump and Hoses	Yes	Small 2" Trash Pumps
Sandbags and Sand	No	Contact Shift Supervisor(s) for location and availability.
Fill (Stone, aggregate, sand)	Yes	Gravel is available onsite.
Concrete/grout	No	
Geotextile Filter Fabric	No	
Plastic Sheeting	No	
Rope	Yes	Contact Shift Supervisor(s) for location and availability.
Personal Flotation Devices	Yes	Contact Shift Supervisor(s) for location and availability.

Table 5-2. Supplier Addresses

Supply / Rental Item(s)	Supplier Contact Information	Distance from Site (miles)	Address
Sandbags	NYP Corp.	41	1416 North Broadway, St. Louis, MO. 63102 800-331-2445 800-524-1052 (emergency)
Gravel, Sand, & Riprap	Columbia Quarry Co.	19	5440 Quarry Dr., Waterloo, IL 62298 (618) 939-8833
	Martin Marietta Aggregates	20	7849 Bluff Rd., Prairie Du Rocher, IL 62277 (919) 781-4550
Concrete, Cement, Sand, Grout	Roger's Redi Mix Inc	12	826 W. 2nd St., Sparta, IL 62286 (618) 443-4100
Portable Pumps, Rental Equipment	Sunbelt Rentals	45	13084 Gravois Rd., St. Louis, MO 63127 (636) 651-3757
	United Rentals	43	2629 Chouteau Ave., St. Louis, MO 63103 (314) 389-4030
	Rain for Rent	48	3711 Horseshoe Lake Rd., Pontoon Beach, IL 62040 (618) 931-0901
	Water Movers Equipment Rental	42	1800 S. 3rd Street, St. Louis, MO 63104 (636) 717-2220
General Hardware & Supply	Cotton's Ace Hardware of Red Bud	9	1350 S. Main St., Red Bud, IL 62278 (618) 282-6800
	R.P. Lumber Company	21	942 S. Market St., Waterloo, IL 62298 (618) 939-3436

6 FACILITY / IMPOUNDMENT DESCRIPTION

The entirety of the Ash Pond System is located on a tract of land southeast of the Baldwin Power Station. It is bounded on the west by Conservation Road and the Kaskaskia River; the north by the Cooling Lake, which forms the Kaskaskia River State Fish and Wildlife Area; the south by a rail line and Illinois Highway 154 (W. Myrtle Street); and the east by the rail line to the plant. Four separate impoundments are discussed herein. The impoundments are described as follows and illustrated in Figure 1-2. Note all dimensions are approximate. Table 6-1 contains additional geometric details for each impoundment along with citations for the sources of information.

The Old East, East, and West Fly Ash Ponds are formed by an elevated embankment that circles the three impoundments. The embankment is fairly consistent at an elevation of about 455.0-feet, though the eastern portion (Old East Fly Ash Pond area) has been built up to about 460.0-feet and one portion of the West Fly Ash Pond has been intentionally lowered as discussed below.

- **Old East Fly Ash Pond:** This impoundment is about 166 acres in footprint and today is almost entirely dry. The surface is mostly covered with vegetation, but it still has the continuous perimeter embankment integral with the East Fly Ash Pond. This was apparently the first cell of the Fly Ash Pond when it was initially constructed and the East and later West Fly Ash Ponds were created as horizontal and vertical expansions to this cell. The surface elevation of the interior of the cell is about 460.0’ and slopes down toward the perimeter embankment, which ranges from about 10- to 40-feet in height. The remaining portion of the perimeter dike is about 15-20 feet in width. The Old East Fly Ash Pond drains via surface flow to the East Fly Ash Pond and Bottom Ash Pond.
- **East Fly Ash Pond:** This impoundment or cell is immediately adjacent to the Old East Fly Ash Pond and similarly is mostly dry today. Though there is no longer a distinct divider dike between the East and Old East Fly Ash Ponds, based on the estimated location of the divider provided by Dynegy the East Fly Ash Pond covers an area of about 127 acres. The perimeter embankment for this portion of the Fly Ash Pond is more consistent with an elevation of about 456.5 feet, a width of about 15 feet, and a maximum height of about 40 feet from the adjacent topography. Though a great deal of the East Fly Ash Pond appears to have surface vegetation, there is an open waste area near the northwest corner and approximately 1 acre of ponding can occur before runoff discharges through decant pipes westward to the West Fly Ash Pond.
- **West Fly Ash Pond:** This impoundment or cell has been the most recently active of the three Fly Ash Ponds and has a large portion of its approximate 88 acres as open waste area. It has about 10.5 acres of open water near the northwest corner, where the primary pipe culvert discharge structure is located. The West Fly Ash Pond discharges to the northwest to the Secondary Pond. The perimeter embankment is generally at an elevation of about 456.5 feet with a width of 15-feet; however, a portion along the southern embankment has experienced slope instability in the past and has been lowered to an elevation of about 433.0 feet as a stabilization measure.
- **Bottom Ash Pond:** This impoundment is formed in a natural low area bounded to the north by the cooling pond, the east by the Old East Fly Ash Pond, and the south by East Fly Ash Pond. An embankment along its west side with an elevation of about 420.0-feet encloses an area about 288 acres in size. There are some portions of the pond still actively receiving waste, but it is mostly a vegetated area. The Bottom Ash Pond has a pool area of about 12.7 acres, but these areas have inconsistent elevations due to internal divider dikes. The Bottom Ash Pond discharges to the southwest to the Secondary Pond.

Table 6-1. Station Impoundment Characteristics

Feature/Parameter	Fly Ash Pond System			Bottom Ash Pond
	Old East Fly Ash Pond	East Fly Ash Pond	West Fly Ash Pond	
Maximum Embankment Height	55 ft. (2)	55 ft. (2)	55 ft. (2)	~20 ft. (1)
Length of Dam	~4300 ft. (1)	~3200 ft. (1)	~2600 ft. (1)	~450 ft. (1)
Crest Width	15 ft. (2)	15 ft. (2)	15 ft. (2)	15 ft. (2)
Crest Elevation	456.5 ft. (2)(3)	456.5 ft. (2)(3)	456.5 ft. (2)(3)	420.0 ft. (1)
Reservoir Area at Top of Dam	166.0 acres (4)	127.1 acres (4)	87.6 acres (4)	287.9 acres (4)
Storage Capacity at Top of Dam	3450 acre-ft.	2667 acre-ft.	1650 acre-ft. (5)	5900 acre-ft.
Primary Spillway Type	Surface Drainage to East Fly Ash Pond or Bottom Ash Pond	Decant Pipes to West Fly Ash Pond	36-inch ductile iron culvert w/ headwall (6)	30-Inch HDPE Drop Inlet
Primary Spillway Crest Elevation	N/A	Varies	432.5 ft. (6)	415.8 ft.
Storage Capacity at Primary Spillway Elevation	No ponding areas.	Varies	886 acre-ft.	~1700 acre-ft.
Reservoir Area at Normal Water Surface Elevation	N/A - Dry	~0.9 acres (1)	~10.5 acres (1)	~12.7 acres (1)
Auxiliary Spillway Type	N/A	N/A	N/A	Riprap Flume Overflow
Auxiliary Spillway Crest Elevation	N/A	N/A	N/A	417.6 ft.

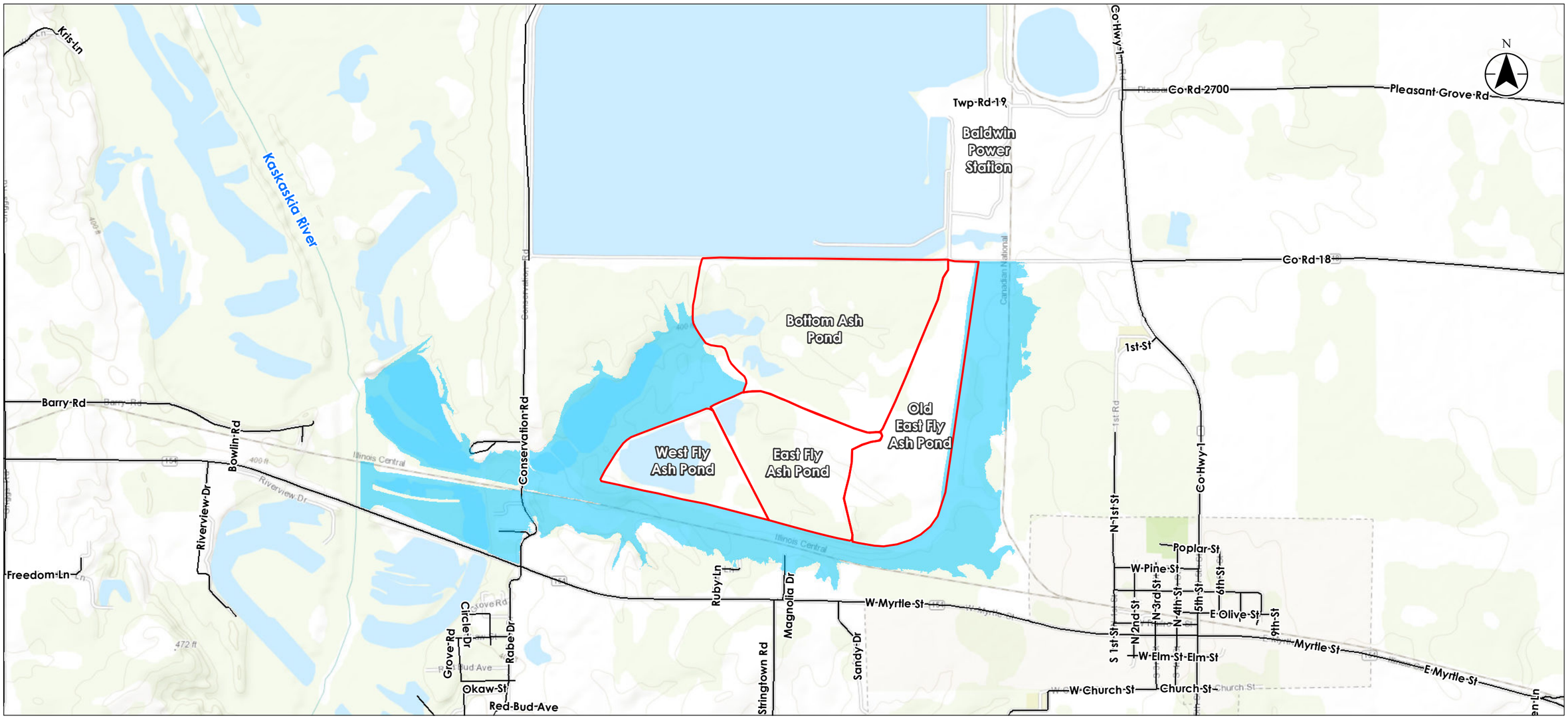
Notes:
1) 2015 Aerial Topographic Survey, Weaver Consultants
2) Baldwin Ash Pond System Emergency Action Plan, April 2015
3) Actual elevations may vary between sources 1 and 2.
4) Based on shapes provided by Dynegy.
5) Stantec Hazard Classification Report – values estimated based on assumed breach scenario(s).
6) Dynegy drawings E-BAL1-C127, E-BAL1-B37

7 BREACH INUNDATION MAP AND POTENTIAL IMPACTS

An inundation map for potential breach scenarios for the Fly Ash Pond System and Bottom Ash Pond is provided in Figure 7-1. It is the Randolph County EMA's responsibility to keep a current list of affected parties/properties to contact in the case of emergencies that result in Response Level 2 or 3. This list should encompass all properties within and adjacent to the probable inundation extents shown in the provided map.

Stantec developed inundation mapping for the Ash Pond System as a part of the "Initial Hazard Classification Assessments" for the Bottom Ash Pond, Fly Ash Pond System (East and Old East), and West Ash Pond dated October 2016. The methodology used to identify potential inundation extents due to a potential breach of the various ponds in the Ash Pond System consisted of hydrologic and hydraulic modeling of several possible breach scenarios. Inundation limits were plotted using the best available topographic mapping for the site, which consisted of LiDAR topographic data obtained from the Illinois Height Modernization Program supplemented with topographic survey data of the ash pond facilities.

Approximate inundation area is illustrated in Figure 7-1.



Legend

- CCR Surface Impoundment Boundary
- Expected Breach Inundation Area

0 2,000 4,000 Feet

1:24,000 (At original document size of 11x17)

Notes

1. Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere
2. Basemap Source: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
3. Impoundment Boundaries Provided by Client (Dated 9/9/2015)

Stantec DYNEGY

Project Location
Latitude: 38.204579
Longitude: -89.855052
Randolph County, Illinois

175605019
Prepared by EC on 2017-03-29
Technical Review by TS on 2017-03-30
Independent Review by MM on 2017-03-30

Client/Project
Baldwin Power Station
Emergency Action Plan

Figure No.
7-1

Title
Inundation Map
Old East Fly Ash Pond, East Fly Ash Pond, West Fly Ash Pond, Bottom Ash Pond