Dynegy Midwest Generation, LLC

HAVANA POWER STATION
CITY OF HAVANA, MASON COUNTY, ILLINOIS

Emergency Action Plan (EAP)

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

- East Ash Pond System (NID # IL50483)

Revision Date: April 13, 2017

Qualified Professional Engineer Certification; Emergency Action Plan for the Havana Power Station, East Ash Pond System.

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 4/13/2017

ADDRESS: Stantec Consulting Services Inc.
1859 Bowles Avenue Suite 250
Fenton MO 63026-1944

TELEPHONE: (636) 343-3880

HAVANA POWER STATION
EMERGENCY ACTION PLAN
CCR IMPOUNDMENT & RELATED FACILITIES

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PART I – EAP NARRATIVE AND EXHIBITS

1 STATEMENT OF PURPOSE

The Havana Power Station (Station) is located near the City of Havana in Mason 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 impoundment located at the site:

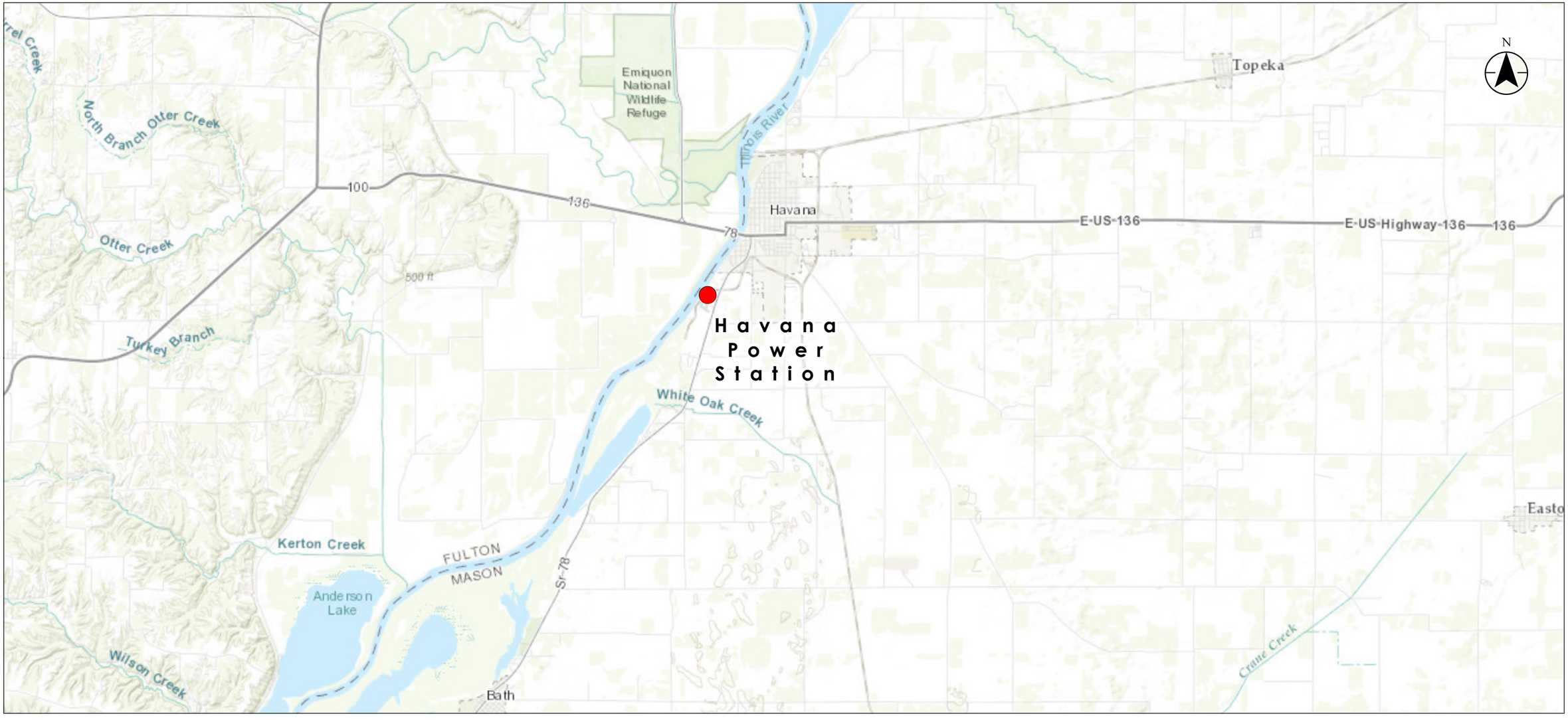
- East Ash Pond System (NID # IL50483)

The East Ash Pond System is considered one impoundment for the purposes of this EAP, but it has 4 separate operating cells. The location of the impoundment and each of its cells is shown in Figure 1-2. Section 6-1 of this EAP includes a description of the geometry and function of each cell of the 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 the CCR impoundment and related facilities at the Havana Power Station.
2. Define the events or circumstances involving the CCR impoundment and related facilities at the Havana 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 impoundment.
6. Identify the downstream area that would be affected by failure of the impoundment.
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

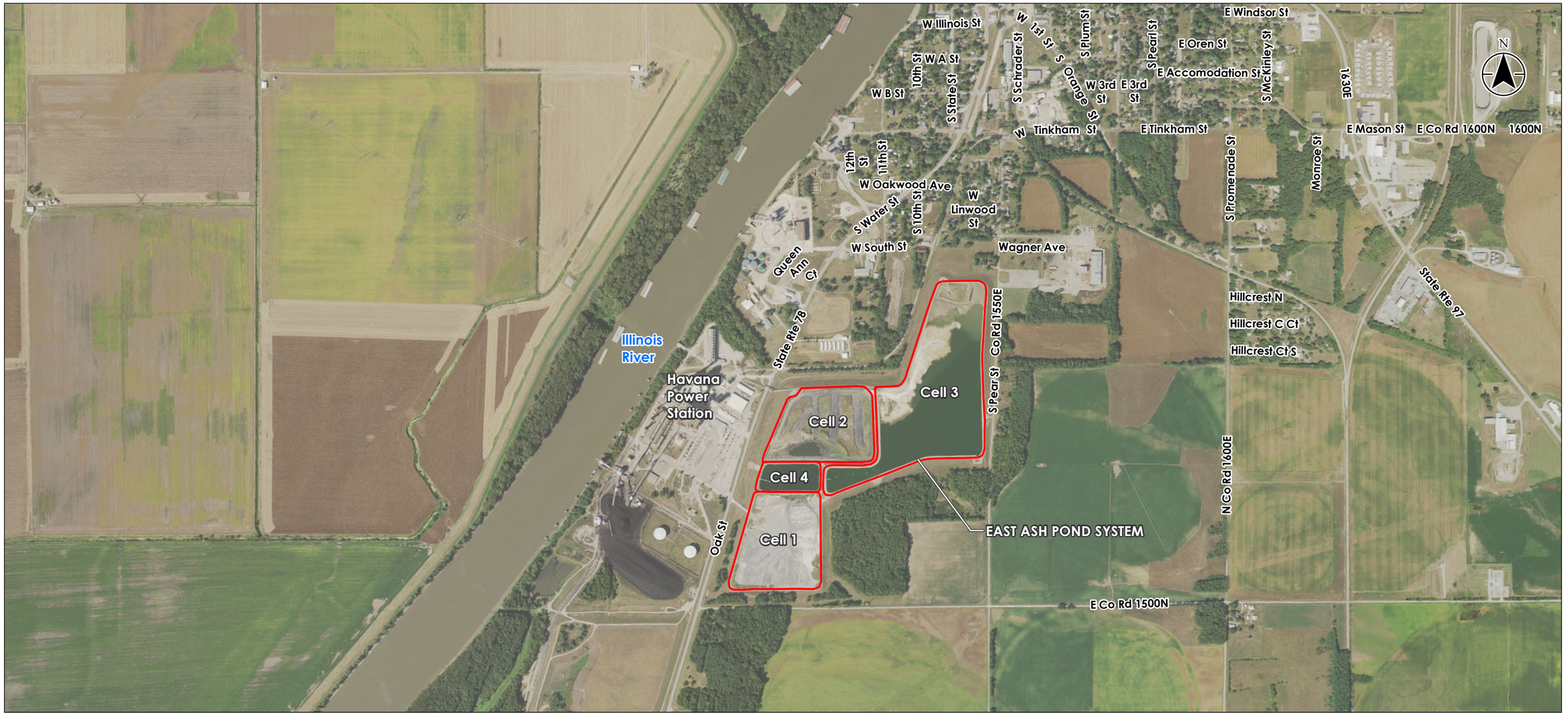
Project Location	175605019
Latitude: 40.280785	Prepared by EC on 2017-03-29
Longitude: -90.078625	Technical Review by TS on 2017-03-30
Mason County, Illinois	Independent Review by MM on 2017-03-30

Client/Project
Havana 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 1,500 3,000 Feet

1:18,000 (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: 40.280785
Longitude: -90.078625
Mason 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
Havana Power Station
Emergency Action Plan

Figure No.
1-2

Title
CCR Impoundment

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 2-3). 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. **(Figure 2-2)**
- *Re-notify authorities, designated personnel, and external response partners as Response Level is changed*.

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.
- *Revise action plan as changes in conditions warrant*.

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 2-2. Notification Flowchart

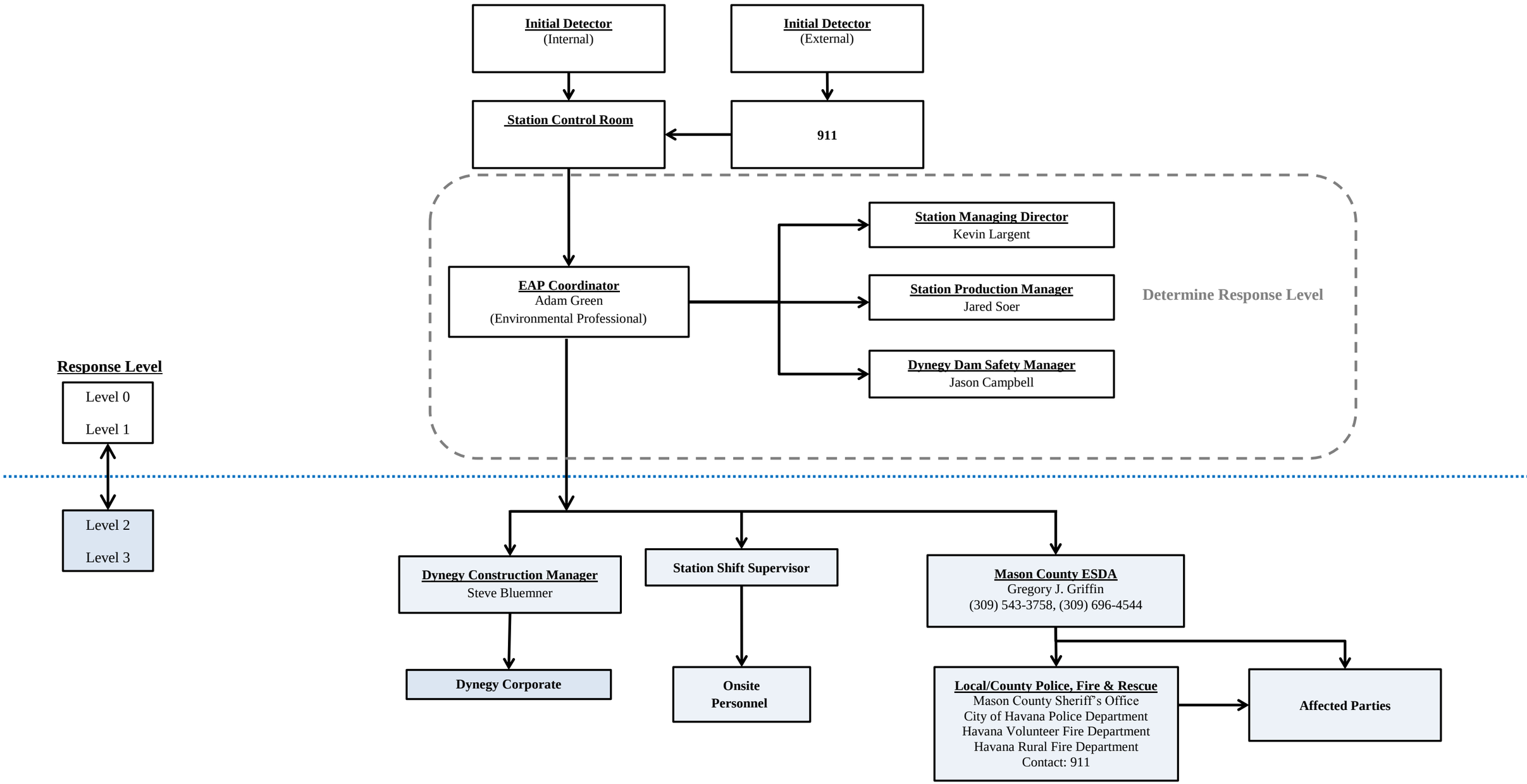


Figure 2-3. EAP Response Process Decision Tree

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.

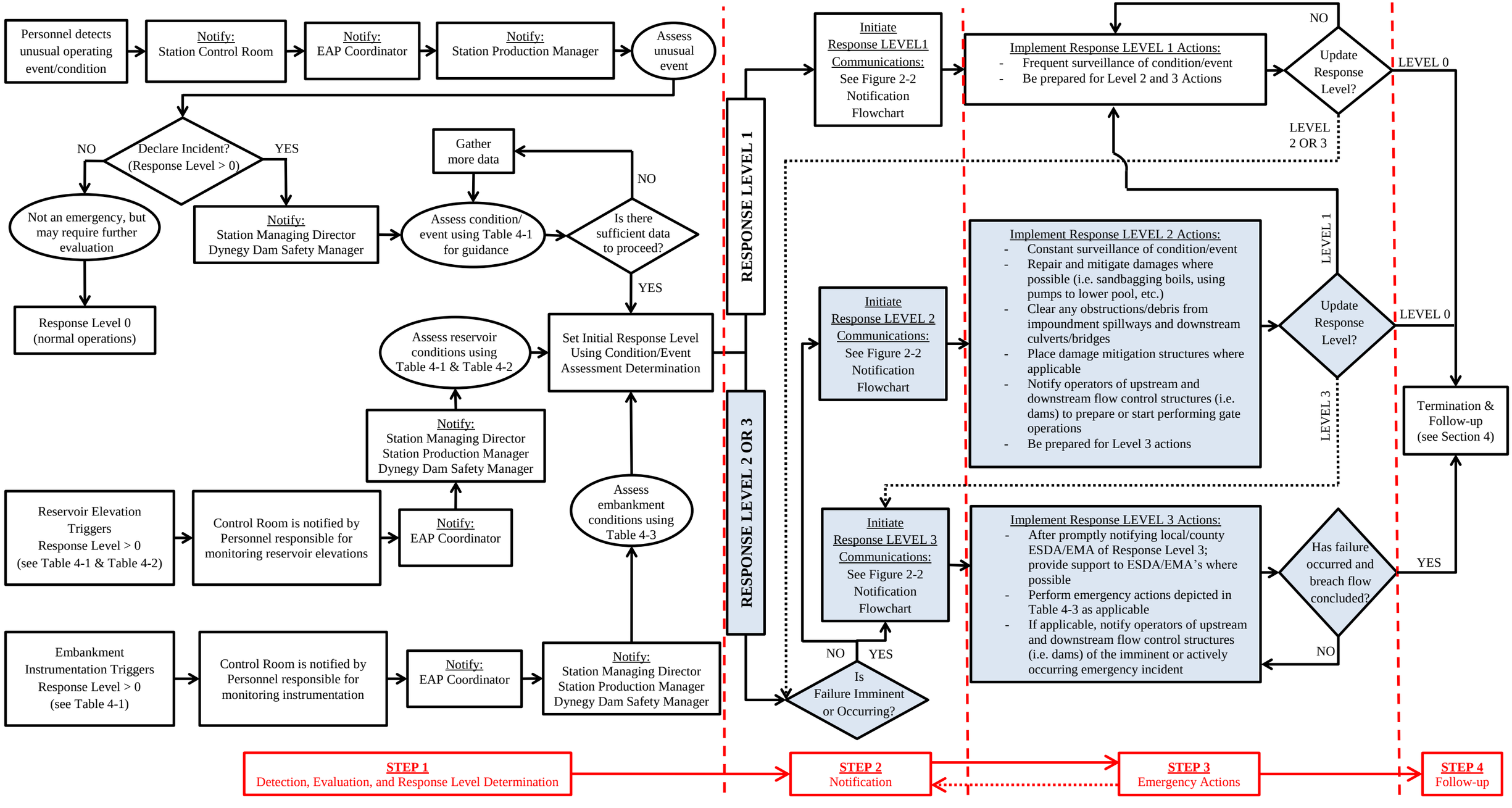


Table 2-1. EAP Emergency Responders

Position	Name	Phone #
Internal Contacts		
Havana Power Station		
Managing Director	Kevin Largent	
Environmental Professional & EAP Coordinator	Adam Green	(309) 216-9826
Production Manager	Jared Soer	
Control Room		(309) 543-8776
Dynegy Corporate Operations		
Dam Safety Manager	Jason Campbell	(618) 792-8488
Construction Manager	Steve Bluemner	
External Contacts		
Local / County ESDA/EMA, Police, & Fire		
Mason County ESDA	Gregory J. Griffin	(309) 543-3758, (309) 696-4544
Mason County Sheriff's Office	Paul Gann	911, (309) 543-2231
City of Havana Police Department	Kevin Noble	911, (309) 543-3321
Havana Volunteer Fire Department	John Kachanuk	911, (309) 543-2153
Havana Rural Fire Department	Gary Blakely	911, (309) 543-2312
State Emergency Management Agencies & Organizations		
IDNR-OWR Dam Safety Section Manager	Paul Mauer	(217) 782-4427
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:** Local entity or 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.
Mason County ESDA	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*.
City of Havana Police, Fire, and Rescue	1. Receive alert status reports from the *ERT* or the *Mason County ESDA/EMA*. 2. If necessary, notify affected parties and general public within inundation areas (see Section 7). 3. Render assistance to Mason County ESDA/EMA, as necessary. 4. Render assistance to *Dynegy Corporate* and *Station Management*, as necessary.
Mason County Police, Fire and Rescue, and Emergency Services	1. Receive alert status reports from the *ERT* or the *Mason County ESDA/EMA*. 2. If necessary, notify affected parties within the inundation area. 3. Provide mutual aid to other affected areas, if requested and able.

4 EAP RESPONSE

The 4-Step Incident Response Process is shown in Figure 2-1. The Decision Tree shown in Figure 2-3 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

Table 4-1. Guidance for Determining the Response Level

Event	Situation	Response Level
Embankment cracking	New cracks in the embankment greater than ¼ inch wide without seepage.	Level 1
	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
East Ash Pond System				
Cell 1	490.0 ft. (1)	488.0 ft. (2)	< 487.0 ft. (2)	488.0 ft. (2)
Cell 2	490.0 ft. (1)	488.0 ft. (2)	< 487.0 ft. (2)	488.0 ft. (2)
Cell 3	496.0 ft. (1)	494.0 ft. (2)	< 492.7 ft. (2)	494.0 ft. (2)
Cell 4	490.0 ft. (1)	488.0 ft. (2)	< 487.0 ft. (2)	488.0 ft. (2)

Notes:

1) 2015 Aerial Survey, Weaver Consultants
2) "Havana Power Station, Havana, Illinois, East Ash Pond System, IDNR Dam Safety Program, Emergency Action Plan, IDNR Permit No. DS2011079, Dam ID No. IL50483" Dynegy Midwest Generation, L.L.C. Revised February, 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 impoundment 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 Manager; 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 deep) on the embankment that may	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. 2. Restrict traffic on embankment crest to essential emergency operations only.

Table 4-3. Step 3: Emergency Actions

Condition	Description of Condition	Action to be Taken
	also extend beyond the embankment toe but does not encroach onto the embankment crest and appears stable with time.	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	Portable emergency lights onsite.
Backhoe	Yes	Contact Shift Supervisor(s) for location and availability.
Dozer	Yes	Caterpillar D9R + D9N
Large Equipment (Rental – including excavating equipment, pumps, lighting)		Contact Shift Supervisor(s) for location and availability.
Front End Loaders	Yes	914 Caterpillar, 410 John Deere, 275B Caterpillar
Dump Truck	Yes	Contact Shift Supervisor(s) for location and availability.
Pump and Hoses	Yes	5000 GPM Pump onsite
Sandbags and Sand	Yes	Contact Shift Supervisor(s) for location and availability.
Fill (Stone, aggregate, sand)	No	
Concrete/grout	Yes	Contact Shift Supervisor(s) for location and availability.
Geotextile Filter Fabric	No	Contact Shift Supervisor(s) for location and availability.
Plastic Sheeting	No	Contact Shift Supervisor(s) for location and availability.
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.	146	1416 North Broadway, St. Louis, MO. 63102 800-331-2445 800-524-1052 (emergency)
	Midwest Sandbags	215	Carpentersville, Illinois (847) 366-6555
Gravel, Sand, & Riprap	Otter Creek Sand & Gravel	10	4125 N. Bottom Rd., Havana, IL 62644 (309) 759-4293
	Hanson Material Services	34	25142 Quarry Rd., Athens, IL 62613 (217) 636-8518
	Valley Quarry	52	772 175th St., St. Augustine, IL 61474 (309) 462-3003
Concrete, Cement, Sand, Grout	Curry Ready Mix of Mason City	24	210 E. Elm St., Mason City, IL 62664 (217) 482-5530
Portable Pumps, Rental Equipment	Altofer CAT	46	601 Richland St., East Peoria, IL 61611
	Sunbelt Rentals	50	1601 N. Main St., East Peoria, IL 61611
	Sunbelt Rentals	59	3040 E. Ash St., Springfield, IL 62703
	Martin Equipment of Illinois	48	2384 J David Jones Pkwy., Springfield, IL 62707
Large Capacity Portable Pumps	Xylem / Godwin Pumps Mine Supply Co.	197	1703 Shawnee St., Mt. Vernon, IL 62864 (618) 242-2087
	Water Movers Equipment Rental	148	1800 S. 3rd Street, St. Louis, MO 63104 (636) 717-2220
General Hardware & Supply	Ace Hardware	2	207 W. Main St., Havana, IL 62644 (309) 543-2638
	La Crosse Lumber Co.	2	1009 IL-97, Havana, IL 62644 (309) 543-2251
	Metal Culverts Inc.	3	15732 IL-97, Havana, IL 62644 (309) 543-2271

6 FACILITY / IMPOUNDMENT DESCRIPTION

The Havana Power Station is located on the East Bank of the Illinois River near river mile 118.5. The generating station is south of the City of Havana along Illinois State Route 78 (SR 78) on the west side of the highway, while the East Ash Pond System is located on the opposite (east) side of SR 78. For the purposes of this EAP, the East Ash Pond System is considered one impoundment, but it is operated as 4 separate cells as described herein. The impoundment and each of the cells included in this EAP is illustrated in Figure 1-2.

The East Ash Pond System was generally constructed as an elevated impoundment that covers a footprint of about 170 acres. The embankment ranges from about 25 to 40-feet in height and at its full volume would contain approximately 2600 acre-feet of CCR materials.

Internally, the East Ash Pond System has a series of divider dikes that separate the impoundment into four hydraulically separate cells.

Cells 1 & 2 receive CCR materials with total storage capacities at the top of embankment of approximately 488- and 615-acre feet, respectively. These cells are currently mostly dry with relatively small ponding areas. Each of these two cells discharges independently to Cell 4.

Cell 4 is a smaller cell at 90-acre feet capacity, and it is currently being operated as a stilling pond prior to discharging toward the west to the Illinois River. The water surface elevation in Cell 4 during a 2015 topographic survey was at 483.6 feet. Cells 1, 2, and 4 all have an embankment crest elevation of about 490.0 feet.

Cell 3 has been vertically expanded to an elevation of about 496.0 feet. It has a relatively large pool and total capacity of about 1410-acre feet. It too discharges to Cell 4, but the pool is independently controlled via a stoplog riser structure. During the 2015 topographic survey it had an elevation of 489.9 feet.

Table 6-1 contains additional geometric details for each cell.

Table 6-1. Station Impoundment (East Ash Pond System) Characteristics

Feature/Parameter	Cell 1	Cell 2	Cell 3	Cell 4
Maximum Embankment Height	25 ft. (3)	40 ft. (3)	38 ft. (3)	40 ft. (3)
Length of Dam	3240 ft. (2)	1800 ft. (2)	7574 ft. (2)	350 ft. (2)
Crest Width	15 ft. (2)	15 ft. (2)	15 ft. (2)	15 ft. (2)
Crest Elevation	490.0 ft. (1)	490.0 ft. (1)	496.0 ft. (1)	490.0 ft. (1)
Reservoir Area at Top of Dam	39.7 acres (1)	36.5 acres (1)	82.6 acres (1)	9.4 acres (1)
Storage Capacity at Top of Dam	488 acre-ft. (2)	615 acre-ft. (2)	1410 acre-ft. (2)	89.9 acre-ft. (2)
Primary Spillway Type	30-Inch CMP Standpipe (2)	36-Inch Ductile Iron Standpipe (2)	Standpipe	Concrete Riser Stoplog Structure (2)
Primary Spillway Crest Elevation	486.0 ft. (2)	486.0 ft. (2)	490.5 ft. (2)	484.5 ft. (2)
Storage Capacity at Primary Spillway Elevation	395 acre-ft. (2)	531 acre-ft. (2)	1176 acre-ft. (2)	63.9 acre-ft.
Reservoir Area at Normal Water Surface Elevation	0.3 acres (1)	1.1 acres (1)	30.9 acres (1)	4.5 acres (1)
Auxiliary Spillway Type	Two Steel Pipes (2)	Concrete Lined Spillway (2)	Concrete Lined Spillway (2)	Concrete Lined Spillway (2)
Auxiliary Spillway Crest Elevation	488.0 ft. (2)	488.0 ft. (2)	494.0 ft. (2)	488.0 ft. (2)

Notes:

1) 2015 Aerial Survey, Weaver Consultants
2) "Havana Power Station, Havana, Illinois, East Ash Pond System, IDNR Dam Safety Program, Emergency Action Plan, IDNR Permit No. DS2011079, Dam ID No. IL50483" Dynegy Midwest Generation , L.L.C. Revised February, 2015.
3) "Coal Combustion Waste Impoundment Dam Assessment Report, Site 18 Havana Power Plant, Dynegy Midwest Generation Inc. Havana, Illinois", Dewberry & Davis L.L.C., September 11, 2009.

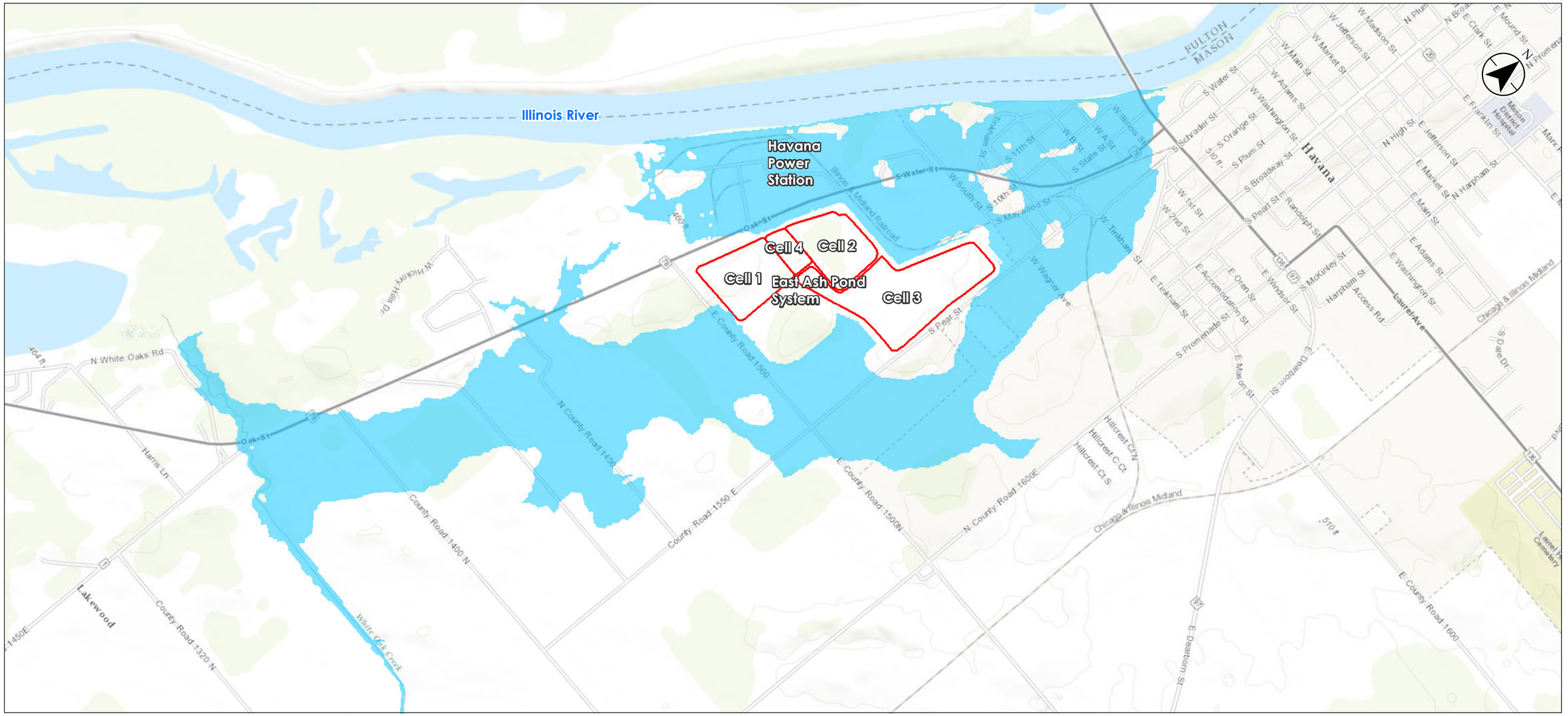
7 BREACH INUNDATION MAP AND POTENTIAL IMPACTS

An inundation map for potential breach scenarios of the East Ash Pond System is provided in Figure 7-1. It is the Mason County ESDA'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 maps.

The methodology used to identify probable inundation extents for potential breach scenarios varied as a function of the impoundment size, location, surrounding topography, and surrounding structures/facilities/waterbodies.

Stantec developed inundation mapping for the East Ash Pond System as a part of the "Initial Hazard Classification Assessment" dated October 2016. The methodology used to identify potential inundation extents and risk areas due to a potential breach 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 digital elevation models developed by the USGS 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: 40.280785
Longitude: -90.078625
Mason 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
Havana Power Station
Emergency Action Plan

Figure No.
7-1

Title
Inundation Map
East Ash Pond System