INDIANA-KENTUCKY ELECTRIC CORPORATION
3932 U. S. Route 23
P. O. Box 468
Piketon, Ohio 45661
740-289-7200

WRITER'S DIRECT DIAL NO:
740-289-7267

April 17, 2017

Mr. Bruno Pigott
Commissioner
Indiana Department of Environmental Management
100 N. Senate Avenue
Mail Code 50-01
Indianapolis, IN 46204-2251

Re: Indiana-Kentucky Electric Corporation
Clifty Creek Station
Notification of CCR Rule Information Posting

Dear Mr. Pigott:

As required by 40 CFR 257.73(a)(3), the Indiana-Kentucky Electric Corporation (IKEC) is providing notification to the Commissioner (State Director) of the Indiana Department of Environmental Management that a qualified professional engineer has worked with the facility in completing the development of the Emergency Action Plan for the Clifty Creek Station. This plan has been placed in the facility's Operating Record, as well as on the company's publically accessible internet site.

This information can be viewed on OVEC's publically accessible internet site at:
http://www.ovec.com/CCRCompliance.php

If you have any questions, or require any additional information, please call me at (740) 289-7267.

Sincerely,

Gabriel S. Coriell
Environmental Services Manager

GSC:klr

bcc: J. M. Brown
C. Carnes – Clifty
P. A. de Lamerens – Clifty
J. S. Harmon – Stantech
D. L. Hunt –Clifty
R. A. Osborne
Jeffery Sewell – IDEM

Stantec Consulting Services Inc.
11687 Lebanon Road, Cincinnati, OH 45241-2012

April 17, 2017
File: 175534018
Revision 0

Indiana-Kentucky Electric Corporation
3932 U.S. Route 23
P.O. Box 468
Piketon, Ohio 45661

RE: Emergency Action Plan
West Boiler Slag Pond and Landfill Runoff Collection Pond
EPA Final Coal Combustion Residuals (CCR) Rule
Clifty Creek Station
Madison, Jefferson County, Indiana

1.0 PURPOSE

This letter documents Stantec's certification of the emergency action plans (EAPs) for the Indiana-Kentucky Electric Corporation (IKEC) Clifty Creek Station's West Boiler Slag Pond (WBSP) and Landfill Runoff Collection Pond (LRCP). The EPA Final CCR Rule requires owners or operators of CCR surface impoundments classified as high or significant hazard potential (per 40 CFR 257.73(a)(2)) to prepare and maintain a written EAP. Stantec has reviewed the existing EAPs for the Clifty Creek Station's WBSP and LRCP. Based on this assessment, the EAPs for the WBSP and LRCP are in compliance with requirements listed in 40 CFR 257.73(a)(3).

2.0 EMERGENCY ACTION PLAN - REQUIREMENTS

As described in 40 CFR 257.73(a)(3), for a high hazard or significant hazard potential CCR surface impoundment, a documented EAP is required to:

A) Define the events or circumstances involving the CCR unit that represent a safety emergency, along with a description of the procedures that will be followed to detect a safety emergency in a timely manner;
B) Define responsible persons, their respective responsibilities, and notification procedures in the event of a safety emergency involving the CCR unit;
C) Provide contact information of emergency responders;
D) Include a map which delineates the downstream area which would be affected in the event of a CCR unit failure and a physical description of the CCR unit; and
E) Include provisions for an annual face-to-face meeting or exercise between representatives of the owner or operator of the CCR unit and the local emergency responders.

Stantec reviewed the existing EAPs for the WBSP Dam and LRCP Dam (developed in September 2009, last revised in July and August 2016, respectively) to ensure the information required above was still accurate for each report.

3.0 SUMMARY OF FINDINGS

The following text presents the review of the WBSP and LRCP Dams' EAPs as described in the existing documents.

Re: **Emergency Action Plan**
West Boiler Slag Pond and Landfill Runoff Collection Pond
EPA Final Coal Combustion Residuals (CCR) Rule
Clifty Creek Station
Madison, Jefferson County, Indiana

3.1 WEST BOILER SLAG POND DAM – EMERGENCY ACTION PLAN REVIEW

Stantec personnel reviewed the WBSP Dam EAP entitled, "West Boiler Slag Pond Dam Emergency Action Plan (EAP) Clifty Creek Power Station" (July 2016). Each of the five required tasks as shown above in Section 2.0 is detailed below to evaluate compliance.

A) In Section 1.0 - "Event Detection and Event Level Determination", Table 1 - "Guidance for Determining Emergency Level" defines the events or circumstances involving the CCR unit that represent a safety emergency. Descriptions of the procedures that will be followed to detect a safety emergency in a timely manner are explained in Section 1.1 - "Event Detection". It states that routine inspections of the dam should be performed per guidance from the dam's Management and Maintenance Plan. Key features of the dam to observe during site visits and inspections are listed in Section 1.1 and are depicted in Figure 3 of Section 5 of the EAP.

B) Section 1.2.4 - "Roles, Responsibility, and Authority" define responsible persons and their respective responsibilities in the event of a safety emergency involving the CCR unit. Section 3.1 - "Emergency Remedial Actions" also describes secondary actions for responsible persons and the actions are detailed in Table 2 - "Emergency Remedial Actions". Notification procedures in the event of a safety emergency involving the CCR unit are explained both in Section 2.0 - "Notification and Communication" and in Figure 2 - "Emergency Contact Tree Notification Flow Chart".

C) Contact information of emergency responders is provided in Figure 2 - "Emergency Contact Tree Notification Flow Chart". Section 2 of Appendix D - "Updating and Posting the EAP" describes how all contacts on the notification flowcharts will be called at least once annually to verify that the phone numbers and persons in the specified positions are current.

D) Section 5.0 - "Maps, Figures and Supporting Data" includes a map that delineates the downstream area affected in the event of a CCR unit failure. Figure 3 in Appendix B - "Investigation and Analysis of Dam Breach Floods" also includes a map that delineates the downstream area that would be affected in the event of a CCR unit failure. In accordance with the Indiana Department of Natural Resources (IDNR) *General Guidelines for New Dams and Improvements to Existing Dams in Indiana*, a Probable Maximum Precipitation event was modeled for the breach analysis to develop the inundation limits. A physical description of the CCR unit is explained in Section 3.1 of Appendix B - "Development of Model Geometry". Physical characteristics of the

Re: **Emergency Action Plan**
West Boiler Slag Pond and Landfill Runoff Collection Pond
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reservoir, spillway and dam embankments are also detailed in Appendix F - "Supplementary Information."

E) The EPA Final CCR Rule has provisions for an annual face-to-face meeting or exercise between representatives of the owner or operator of the CCR unit and the local emergency responders. Section 1 of Appendix D - "Training" describes an annual meeting hosted and facilitated by the Clifty Creek Station as follows:

> "The Clifty Creek Power Station will host and facilitate a periodic training seminar and tabletop exercise for the EAP. Attendance should include staff members of IKEC Environmental Affairs, plant personnel, the responsible AEP Geotechnical Engineer and others as designated by Clifty Creek Plant Management or IKEC Environmental Affairs."

Annual dam maintenance inspections indicate that no amendment to the EAP from the July 2016 update is required. There has not been a change in the hazard potential classification for the WBSP Dam since the October 2016 significant rating. The review of the existing WBSP document shows that the criteria established in the EAP meets the requirements set forth in 40 CFR 257.73(a)(3).

3.2 LANDFILL RUNOFF COLLECTION POND DAM – EMERGENCY ACTION PLAN REVIEW

Stantec personnel reviewed the LRCP Dam EAP entitled, "Landfill Runoff Collection Pond Dam Emergency Action Plan (EAP) Clifty Creek Power Station" (August 2016). Each of the five required tasks as shown above in Section 2.0 is detailed below to evaluate compliance.

A) In Section 1.0 - "Event Detection and Event Level Determination", Table 1 - "Guidance for Determining Emergency Level" defines the events or circumstances involving the CCR unit that represent a safety emergency. Descriptions of the procedures that will be followed to detect a safety emergency in a timely manner are explained in Section 1.1 - "Event Detection". It states that routine inspections of the dam should be performed per guidance from the dam's Management and Maintenance Plan. Key features of the dam to observe during site visits and inspections are listed in Section 1.1 and are depicted in Figure 3 of Section 5 of the EAP.

B) Section 1.2.4 - "Roles, Responsibility, and Authority" define responsible persons and their respective responsibilities in the event of a safety emergency involving the CCR unit. Section 3.1 - "Emergency Remedial Actions" also describes secondary actions for responsible persons and the actions are detailed in Table 2 - "Emergency Remedial Actions". Notification procedures in the event of a safety emergency involving the

Re: **Emergency Action Plan**
West Boiler Slag Pond and Landfill Runoff Collection Pond
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Madison, Jefferson County, Indiana

CCR unit are explained both in Section 2.0 - "Notification and Communication" and in Figure 2 - "Emergency Contact Tree Notification Flowchart".

C) Contact information of emergency responders is provided in Figure 2 - "Emergency Contact Tree Notification Flowchart". Section 2 of Appendix D - "Updating and Posting the EAP" describes how all contacts on the notification flowcharts will be called at least once annually to verify that the phone numbers and persons in the specified positions are current.

D) Section 5.0 - "Maps, Figures and Supporting Data" includes a map that delineates the downstream area which would be affected in the event of a CCR unit failure. Figure 3 in Appendix B - "Investigation and Analysis of Dam Breach Floods" also includes a map that delineates the downstream area that would be affected in the event of a CCR unit failure. In accordance with the Indiana Department of Natural Resources (IDNR) *General Guidelines for New Dams and Improvements to Existing Dams in Indiana*, a Probable Maximum Precipitation event was modeled for the breach analysis to develop the inundation limits. A physical description of the CCR unit is explained in Section 3.1 of Appendix B - "Development of Model Geometry". Physical characteristics of the reservoir, spillway and dam embankments are detailed in Appendix F - "Supplementary Information" as well.

E) The EPA Final CCR Rule has provisions for an annual face-to-face meeting or exercise between representatives of the owner or operator of the CCR unit and the local emergency responders. Section 1 of Appendix D - "Training" describes an annual meeting hosted and facilitated by the Clifty Creek Plant as follows:

> "The Clifty Creek Power Station will host and facilitate a periodic training seminar and tabletop exercise for the EAP. Attendance should include staff members of IKEC Environmental Affairs, plant personnel, the responsible AEP Geotechnical Engineer and others as designated by Clifty Creek Plant Management or IKEC Environmental Affairs."

Annual dam maintenance inspections indicate that no amendment to the EAP from the August 2016 update is required. There has not been a change in the hazard potential classification for the LRCP Dam since the October 2016 significant rating. The review of the existing LRCP document shows that the criteria established in the EAP meets the requirements set forth in 40 CFR 257.73(a)(3).

Re: **Emergency Action Plan**
West Boiler Slag Pond and Landfill Runoff Collection Pond
EPA Final Coal Combustion Residuals (CCR) Rule
Clifty Creek Station
Madison, Jefferson County, Indiana

4.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION

I, Stan A. Harris, being a Professional Engineer in good standing in the State of Indiana, do hereby certify, to the best of my knowledge, information, and belief:

1. that the information contained in this certification is prepared in accordance with the accepted practice of engineering;

2. that the information contained herein is accurate as of the date of my signature below; and

3. that the emergency action plans for the IKEC Clifty Creek Station's West Boiler Slag Pond and Landfill Runoff Collection Pond meet the requirements specified in 40 CFR 257.73(a)(3).

SIGNATURE: _____ DATE 4/17/17

ADDRESS: Stantec Consulting Services Inc.
11687 Lebanon Road
Cincinnati, Ohio 45241

TELEPHONE: (513) 842-8200

ATTACHMENTS: West Boiler Slag Pond Dam Emergency Action Plan (EAP), Clifty Creek Power Station (July 2016); Landfill Runoff Collection Pond Dam Emergency Action Plan (EAP), Clifty Creek Power Station (August 2016)

West Boiler Slag Pond Dam
Emergency Action Plan (EAP)
Clifty Creek Power Station

City of Madison
Jefferson County, Indiana

National Inventory of Dams No. Unassigned

July, 2016

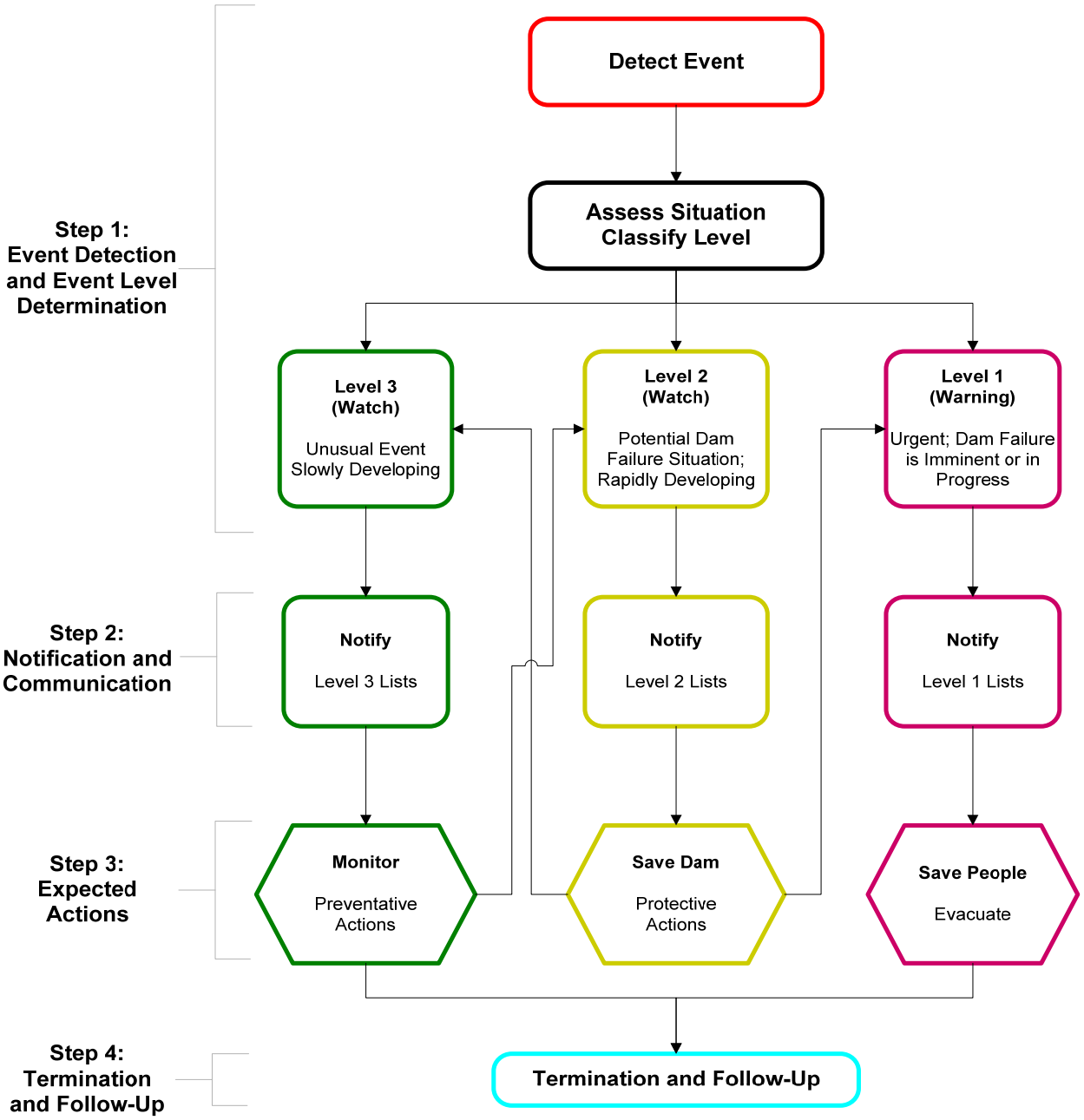
Table of Contents

Appendices

Figures

Tables

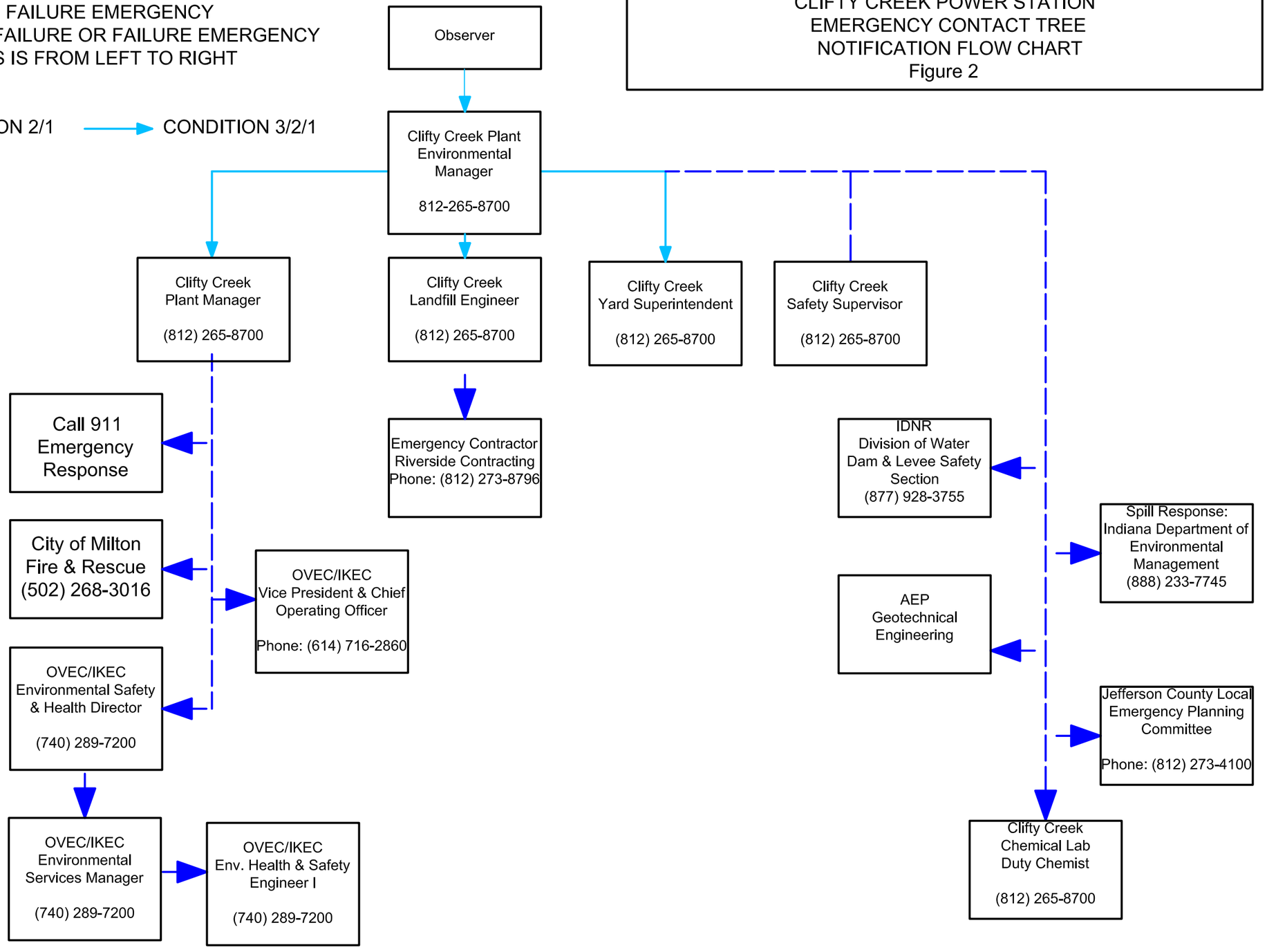
Figure 1
Emergency Action Plan Overview



NOTES:
EMERGENCY CONDITIONS 3,2, AND 1:
3: NON-FAILURE EMERGENCY
2: POTENTIAL FAILURE EMERGENCY
1: IMMINENT FAILURE OR FAILURE EMERGENCY
PRIORITY OF CALLS IS FROM LEFT TO RIGHT

LEGEND:
CONDITION 2/1 → CONDITION 3/2/1

INDIANA AND KENTUCKY ELECTRIC CORPORATION
WEST BOILER SLAG POND
CLIFTY CREEK POWER STATION
EMERGENCY CONTACT TREE
NOTIFICATION FLOW CHART
Figure 2



REV 3/2017

Summary of EAP Process

The four steps to be followed when an unusual or emergency event is detected at the West Boiler Slag Pond Dam are:

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

Unusual and emergency events are defined in Section 1.2.1 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 1) and are described in the corresponding EAP Section. A summary of each step is provided below.

Step 1 - Event Detection and Event Level Determination
During the initial step, an unusual event or emergency event is detected at the dam and classified by the EAP Coordinator into one of the following event levels:

Event Level 3: Unusual Event, slowly developing
Event Level 2: Emergency Event, rapidly developing
Event Level 1: Emergency Event, imminent dam failure or flash flooding

Information to help the EAP Coordinator 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 notification flow chart provided as Figure 2 on Page 4 of this EAP.

Step 3 - Expected Actions
After the initial notifications are made, the EAP Coordinator should refer to Table 2 and confer with the Clifty Creek Landfill Engineer 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 situations, 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.

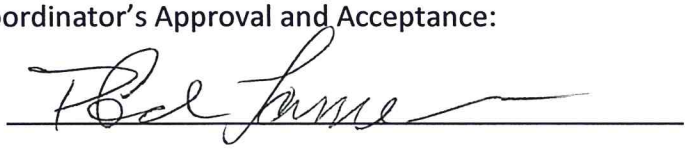
Step 4 - Termination and Follow-up
Once the event has ended or been resolved, termination and follow-up procedures should be followed as outlined in Section 4 of this EAP. EAP operations can only be terminated after completing operations under Event Level 3 or 1. If Event Level 2 is declared, the operations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

WEST BOTTOM ASH POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION

Approval and Acceptance

The undersigned states that he has read the following document and understands the contents of it, and that all the statements contained in the document are true and correct, to the best of his knowledge and belief.

EAP Coordinator's Approval and Acceptance:



(Signature)

Paul de Lamerens (Printed Name)

Clifty Creek Environmental Manager (Title)

7-26-16 (Date)

Owner/Engineering Department Director's Approval and Acceptance:

(Signature)

Clifford Carnes (Printed Name)

Clifty Creek Plant Manager (Title)

July 27, 2016 (Date)

Privacy Statement

The collection, distribution and use of the pertinent information included in this report is limited to those individuals designated by the Indiana and Kentucky Electric Corporation (IKEC) and is subject to the provision of the applicable Federal and State privacy acts and regulations.

Acknowledgements

This document was prepared by Stantec Consulting Services Inc. (Stantec) for IKEC.

Purpose

The purpose of this EAP is to reduce the risk of human life loss and injury during an unusual or emergency event at the West Boiler Slag Pond Dam. Areas of the City of Hanover along the Ohio River and areas along the Ohio River directly opposite of the power station have the potential to be flooded by an unusual or emergency event at the West Boiler Slag Pond Dam.

A secondary purpose of this EAP is to minimize the potential for property damage during an unusual or emergency event at the West Boiler Slag Pond Dam at Clifty Creek. Neighborhoods in the City of Hanover along the Ohio River have to potential to be damaged during an emergency event at the West Boiler Slag Pond Dam.

EAP Annual Review and Periodic Tests

This EAP document will require an annual review and update to stay current. A periodic test of the EAP procedures is also required every 5 years to ensure continued effectiveness. For annual review and periodic test procedures, reference Appendix D.

WEST BOTTOM ASH POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION

Revisions

For revision procedures, reference Appendix D.

Revision No.	Date	Revisions Made
001	2/2015	Updated Emergency Contact Tree Notification Flow Chart
002	2/2015	Updated Page 7 (Approval & Acceptance)
003	2/2015	Updated Page 14 (Public Affairs Plan)
004	7/2015	Updated Emergency Contact Tree Notification Flow Chart
005	7/2016	Added 2016 Form D.1 and 2016 Tabletop Exercise Notes

Revised pages inserted in this EAP by:

Daniel Hunt (Signature)

Daniel Hunt (Printed Name)

7-28-16 (Date)

1.0 Event Detection and Event Level Determination

This section of the Emergency Action Plan (EAP) describes the first step that must be followed whenever an unusual or emergency event is detected at the West Boiler Slag Pond Dam. This section also describes event detection and information to assist the EAP Coordinator in determining the appropriate level for the event.

1.1 EVENT DETECTION

Unusual or emergency events, defined in Section 1.2.1, may be detected by IKEC personnel or any visitors to the dam. Routine inspections of the dam should be performed per guidance from the dam's Management and Maintenance Plan. Key features of the dam to observe on site visits and inspections are listed below and can also be viewed in Figure 3 in Section 5:

- Embankment Crest
- Embankment Slopes
- Embankment-Abutment Contacts
- Downstream Toe Area
- Inlet and Outlet Structures
- Abutments

After any unusual or emergency event is detected and reported to the EAP Coordinator, the EAP Coordinator is responsible for determining the level of the event. If a local emergency services agency receives a 911 call regarding observations of an unusual or emergency event at the dam, the dispatcher shall contact Clifty Creek Power Station which will notify the EAP Coordinator. The EAP Coordinator shall determine the appropriate event level (as defined in Section 1.2.2) and advise the dispatcher according to the event level.

1.2 EVENT LEVEL DETERMINATION

1.2.1 Unusual Events and Emergency Events

An unusual event is defined as an event, which takes place, or a condition, which develops, that is not normally encountered in the routine operation of the dam and reservoir, or necessitates a variation from Standard Operating Procedures. An unusual event 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 dam, or endanger persons or property, and

demands immediate attention. An emergency event requires immediate operations in accordance with Event Level 3, 2 or 1 of this EAP.

1.2.2 Level Determination

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

Event Level 3 - This is an unusual event that is defined as a slowly developing situation that may endanger the structural integrity of the dam. The EAP Coordinator is responsible for monitoring the progression of the event. Note any special cases that would cause or require deviation from the standard notification protocol.

Event Level 2 - This is an emergency event that is defined as rapidly developing and could quickly lead to dam failure and flash flooding downstream of the dam. Emergency response units will prepare the area downstream of the West Boiler Slag Pond Dam for evacuation.

Event Level 1 - This is an emergency event that is defined as imminent dam failure or flash flooding downstream of the dam. Emergency response units will immediately evacuate potentially inundated areas downstream of the West Boiler Slag Pond Dam.

1.2.3 Level Determination Guidance

Table 1 shall be used as a guide for determining the appropriate event level. This table attempts to include the most common dam threatening situations; however, an event or condition may arise that is not covered in this table. In the circumstance of multiple events occurring at the dam with conflicting event levels, always designate the more severe event level as the governing event level.

1.2.4 Roles, Responsibility and Authority

EAP Coordinator – The Clifty Creek Plant Environmental Superintendent, or acting Environmental Superintendent, shall function as the EAP Coordinator and/or Incident Manager during any of the three event levels of operation described in this EAP. The EAP Coordinator has the authority to take the necessary actions described in this EAP.

The EAP Coordinator is responsible for providing initial, timely, and accurate notifications to the Clifty Creek Plant Manager 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 Clifty Creek Plant Manager to assist in making timely and accurate decisions regarding warning and evacuation responsibilities. Once an Event Level is terminated, the EAP Coordinator is responsible to submit to IKEC Management and the American Electric Power (AEP) Geotechnical Engineering Department, as soon as possible, an accurate summary document of the field observation and activities of the event.

The Clifty Creek Plant Manager is responsible for contacting emergency response units during Level 2 and 1 emergency events.

The Clifty Creek Landfill Engineer and Yard Supervisor are responsible for coordinating any remedial measures in the field.

Table 1. Guidance for Determining Emergency Level

Event	Situation	Emergency Level
Toe Erosion by Ohio River	Limited erosion of dike toe / No additional impacts to dam	3
	Limited erosion of dike toe / Minimal embankment movement	2
	Erosion of dike toe with rapid embankment movement	1
Flood Event on Ohio River	Flooding of Ohio River reverses flow through the principal spillway	3
	Flooding of Ohio River causes gradual movement in embankment slopes	2
	Flooding of Ohio River causes rapid movement in embankment slopes	1
Blocked Spillway Inlet	Spillway inlet blocked resulting in a raised pool level not overtopping the dam; Spillway inlet still accessible	3
	Spillway inlet blocked resulting in a raised pool level not overtopping the dam; Spillway inlet not accessible	2
	Spillway inlet blocked resulting in overtopping of the dam	1
Seepage	New seepage areas in or near the dam	3
	New seepage areas with cloudy discharge or increasing flow rate	2
	Seepage with discharge greater than 10 gallons per minute	1
Embankment Cracking	New cracks in the embankment greater than ¼-inch wide without seepage	3
	Cracks in the embankment with seepage	2
Embankment Movement	Visual movement/slippage of the embankment slope	3
	Sudden or rapidly proceeding slides of the embankment slope	1
Sinkholes	Observation of new sinkhole in reservoir area or on embankment	3
	Rapidly enlarging sinkhole	2
Embankment Overtopping	Overtopping flow not eroding the embankment slope; reservoir level expected to lower	2
	Overtopping flow not eroding the embankment slope; reservoir level expected to rise	1
	Overtopping flow eroding the embankment slope	1
Earthquake	Measurable earthquake felt or reported on or within 50 miles of the dam	3
	Earthquake resulting in visible damage to the dam or appurtenances	2
	Earthquake resulting in uncontrolled release of water from the dam	1
Sabotage/ Vandalism	Damage to dam or appurtenances with no impacts to the functioning of the dam	3
	Modification to the dam or appurtenances that could adversely impact the function of the dam	3
	Damage to dam or appurtenances that has resulted in seepage flow	2
	Verified bomb threat that, if carried out, could result in damage to the dam	2
	Damage to dam or appurtenances that has resulted in uncontrolled water release	1

2.0 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 and a list of media contacts. Notifications should be made in accordance with the Notification Flow Chart (Figure 2) provided on Page 4.

2.1 EMERGENCY RESPONSE NOTIFICATION

During Event Levels 2 and 1, the City of Madison, City of Hanover and Jefferson County emergency services can be reached through 911. City of Milton /Trimble County Emergency Services are to also be notified in a Level 2 or 1 event so potential areas of flooding in Kentucky may be evacuated.

2.2 COMMUNICATION SYSTEMS

Communication will take place primarily through telephones and radios.

2.3 PRESCRIPTED MESSAGES

The following prescripted messages may be used as a guide to communicate the status of an event:

Event Level 3

- This is *(Identify yourself; name, position, etc)*. I am making this call in accordance with the West Boiler Slag Pond Dam EAP.
- An unusual event has been detected at the West Boiler Slag Pond Dam at the Clifty Creek Power Station.
- The EAP has been activated, currently at Level 3.
- If a problem occurs, flooding of portions of the Ohio River across from and directly downstream of the power station is possible.
- The situation is being monitored to determine if any evacuation warnings are necessary.
- We will keep you informed 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 *(Identify yourself; name, position, etc)*. I am making this call in accordance with the West Boiler Slag Pond Dam EAP.
- Problems have occurred with the West Boiler Slag Pond Dam at the Clifty Creek Power Station.
- The EAP has been activated, currently at Level 2.
- Flooding along portions of the Ohio River across from and directly downstream of the power station is possible.
- **Prepare to evacuate** areas of the City of Hanover along the Ohio River and areas along the Ohio River directly opposite of the power station.
- We will keep you informed 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 *(Identify yourself; name, position, etc)*. I am making this call in accordance with the West Boiler Slag Pond EAP.
- Failure of the West Boiler Slag Pond at the Clifty Creek Power Station is imminent.
- The EAP has been activated, currently at Level 1.
- Flooding along portions of the Ohio River across from and directly downstream of the power station will occur.
- **Immediately evacuate** areas of the City of Hanover along the Ohio River and areas along the Ohio River directly opposite of the power station.
- We will keep you informed of the situation. The best telephone number to reach me during this event is … (*state the best number to reach you*).

2.4 PUBLIC AFFAIRS PLAN

In the event of an unusual or an emergency condition, the Clifty Creek Plant Manager will be alerted and briefed on the situation. The Clifty Creek Plant Manager will prepare and deliver a message for public release based on the existing conditions and information from the Clifty Creek Plant Environmental Superintendent 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.

Media Contacts

National Weather Service (24-hour telephone number):	(317) 856-0367
Public Access Channel 15 (Executive Director Dennis Crank):	(812) 265-8300
WORX/WXGO Radio	(800) 660-9679
WIKI FM 95.3	(800) 953-9454

3.0 Expected Actions

3.1 EMERGENCY REMEDIAL ACTIONS

After the acting EAP Coordinator has determined the event level and has made the appropriate notifications, the EAP Coordinator shall take action using Table 2, Emergency Remedial Actions. If an event is not covered in Table 2 adapt a remedial action of a similar event and event level.

3.2 LOCALLY AVAILABLE EQUIPMENT, LABOR, AND MATERIALS

Earthwork equipment and personnel are available onsite through contact with the Landfill Engineer and Yard Supervisor. Additional labor and equipment are available through an onsite contractor to be identified by the Clifty Creek Landfill Engineer. Procurement of bentonite, soil or rock fill, light plants for night work, sand bags, plastic sheeting and riprap will be coordinated by the Clifty Creek Landfill Engineer.

3.3 UNUSUAL OR EMERGENCY EVENT LOG

Use the Unusual or Emergency Event Log (Form 1) on Page 16 to record actions and events during an Unusual or Emergency Event and the time that the action or event occurred. A copy of this form is also provided in the inside pocket of the front cover of the binder for use during an active event.

Table 2. Emergency Remedial Actions

Event	Remedial Action
Toe Erosion by Ohio River	Verify that the dam toe can be safely accessed.
	Avoid placing any vehicles on the crest or embankments of the dam.
	Stabilize toe by placing rock fill or sandbags at site of erosion.
Flood Event on Ohio River	Perform continuous monitoring of the dam, as is safety possible.
Seepage / Sinkholes	Using stop logs or pumps, decrease reservoir to a level that stops or decreases the seepage to a nonerosive velocity.

	If entrance to the seepage origination point is observed in the reservoir (possibly whirlpool) and is accessible, attempt to reduce the flow by plugging the entrance with readily available materials, such as hay bales, bentonite, soil or rock fill, or plastic sheeting.
	Cover seepage exit area(s) with inverted filter. Remove organic material from area. First, place 2-3 feet of concrete sand, then 1-2 feet of No. 57 stone, and finally 1-2 feet of No.1 or No. 2 stone. Compact each layer with vibratory roller, if available, before placing next layer.
	Prevent vehicles and equipment from driving between the seepage exit points and the embankment to avoid potential loss from the collapse of an underground void.
Embankment Movement	Using stop logs or pumps, decrease reservoir to a safe level.
	Repair settlement of the crest by placing sandbags or earth and rock fill materials in the damaged area to restore freeboard.
	Stabilize slides on the downstream slope by placing a soil or rock fill buttress against the toe area of the slide.
Embankment Overtopping	Place sandbags along the low areas of the top of the dam to reduce the likelihood of overtopping.
	Cover the weak areas of the top of the dam and downstream slope with riprap, sandbags, plastic sheets, or other materials to provide erosion resistant protection.
Earthquake	Immediately conduct a general overall visual inspection of dam.
	Perform field survey to determine if there has been any settlement and movement of dam embankment, spillway and low level outlet works.
	Drain reservoir if required.

Form 1
Unusual or Emergency Event Log
(to be completed during the emergency)

Dam Name: West Boiler Slag Pond Dam County: Jefferson County

When and how was the event detected?

Weather conditions:

General description of the emergency situation:

Emergency level determination: Made by:

ACTIONS AND EVENT PROGRESSION

Date	Time	Action/event progression	Taken by

Report prepared by: Date:

4.0 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 1, 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.

4.1 TERMINATION RESPONSIBILITIES

The EAP Coordinator shall be responsible for the termination of EAP operations. Prior to the termination of EAP operations, the EAP Coordinator will confirm with the Clifty Creek Landfill Engineer and the Yard Supervisor that an unusual or emergency situation no longer exists at the dam site. Termination notification for a dam emergency will follow the notification flow chart the same as during the beginning of the emergency, starting with the Clifty Creek Plant Manager and proceeding down until all parties are notified. Local emergency response personnel are responsible for the termination of any evacuation or disaster activities downstream of the dam.

4.2 FOLLOW-UP

Event Level 3 – Immediately after termination of EAP actions, the Unusual or Emergency Event Log should be completed.

Event Level 2 or 1 – Immediately after termination of EAP actions, a complete documentation of the emergency event including the Unusual or Emergency Event Log, a list of possible causes of the event, and any relevant field observations concerning the event shall be compiled. Within two weeks of the emergency incident a complete review of the effectiveness of the EAP and the emergency event shall be conducted by IKEC and AEP and shall include the Clifty Creek Plant Environmental Superintendent, Clifty Creek Plant Manager, Clifty Creek Landfill Engineer, and OVEC / IKEC Environmental Affairs personnel. During the review, any EAP procedures that were followed effectively, as well as any ways that the EAP could be improved, will be documented and inserted into Appendix C of the EAP. Note any revisions of the EAP in the Revisions section located on Page 8.

5.0 Maps, Figures and Supporting Data

This section will be a tab in the EAP Binder.

Stantec Consulting Services Inc.
11687 Lebanon Rd.
Cincinnati, Ohio
45241-2012
513-842-3030
www.stantec.com

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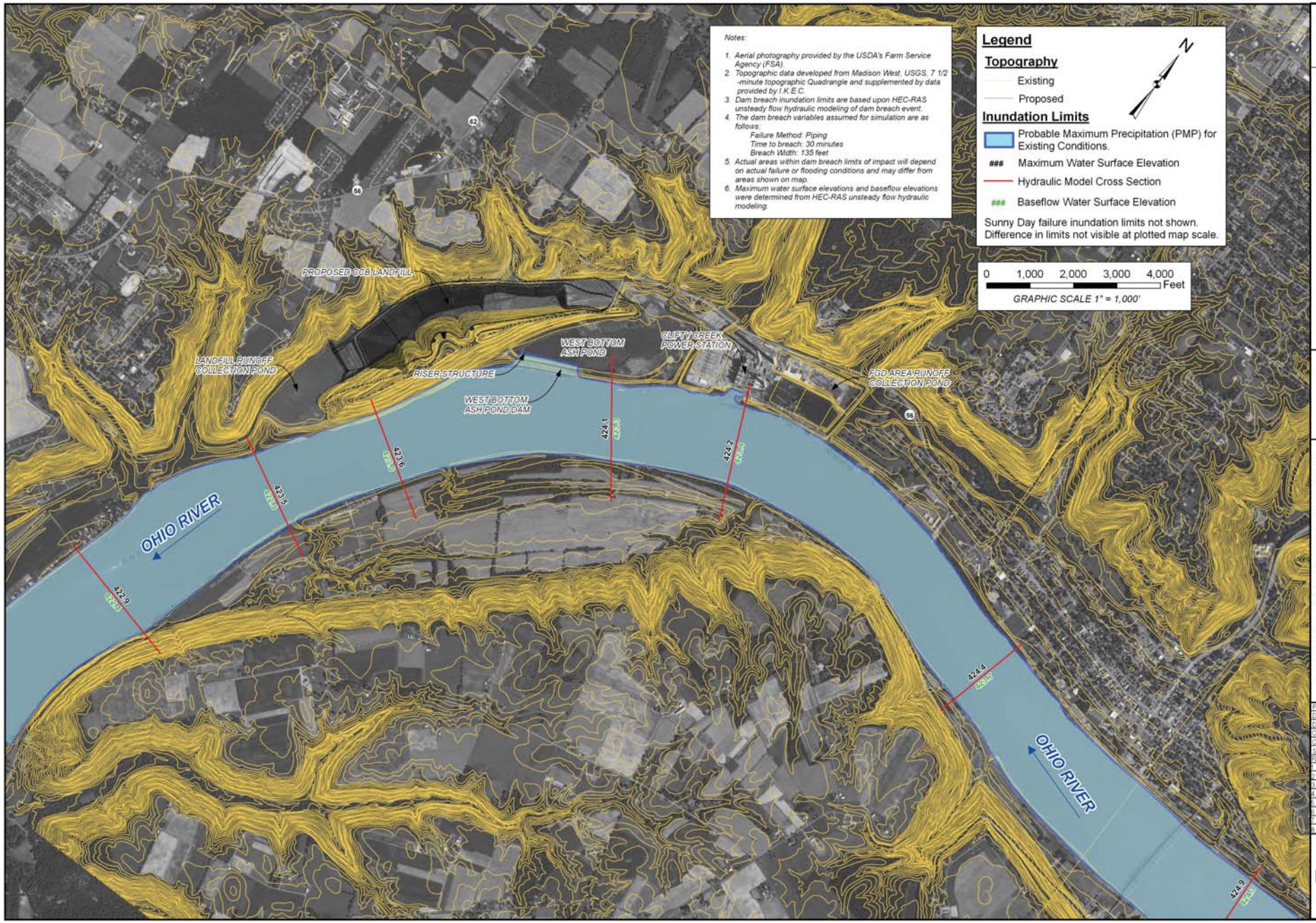
DAM FEATURES

WEST BOTTOM ASH POND
CLIFTY CREEK POWER STATION
MADISON, INDIANA

PROJECT NO.	175600212
DATE	SEPT. 2009
DRAWN BY	KAS
CHECKED BY	JRM
CHECKED BY	DNB
SCALE	1" = 400'
REVISED	
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

FIGURE 3



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Cincinnati, Ohio 45241-2012
(513) 842-8200

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DAM BREACH INUNDATION LIMITS

WEST BOTTOM ASH POND
CLIFTY CREEK POWER STATION
MADISON, INDIANA

PROJECT NO	175606013
DATE	SEPT. 2009
DRAWN BY	KAS
CHECKED BY	JRM
CHECKED BY	
SCALE	1" = 1000'
REVISED	

FIGURE 4

FIGURE 5

Composite Rating Curve

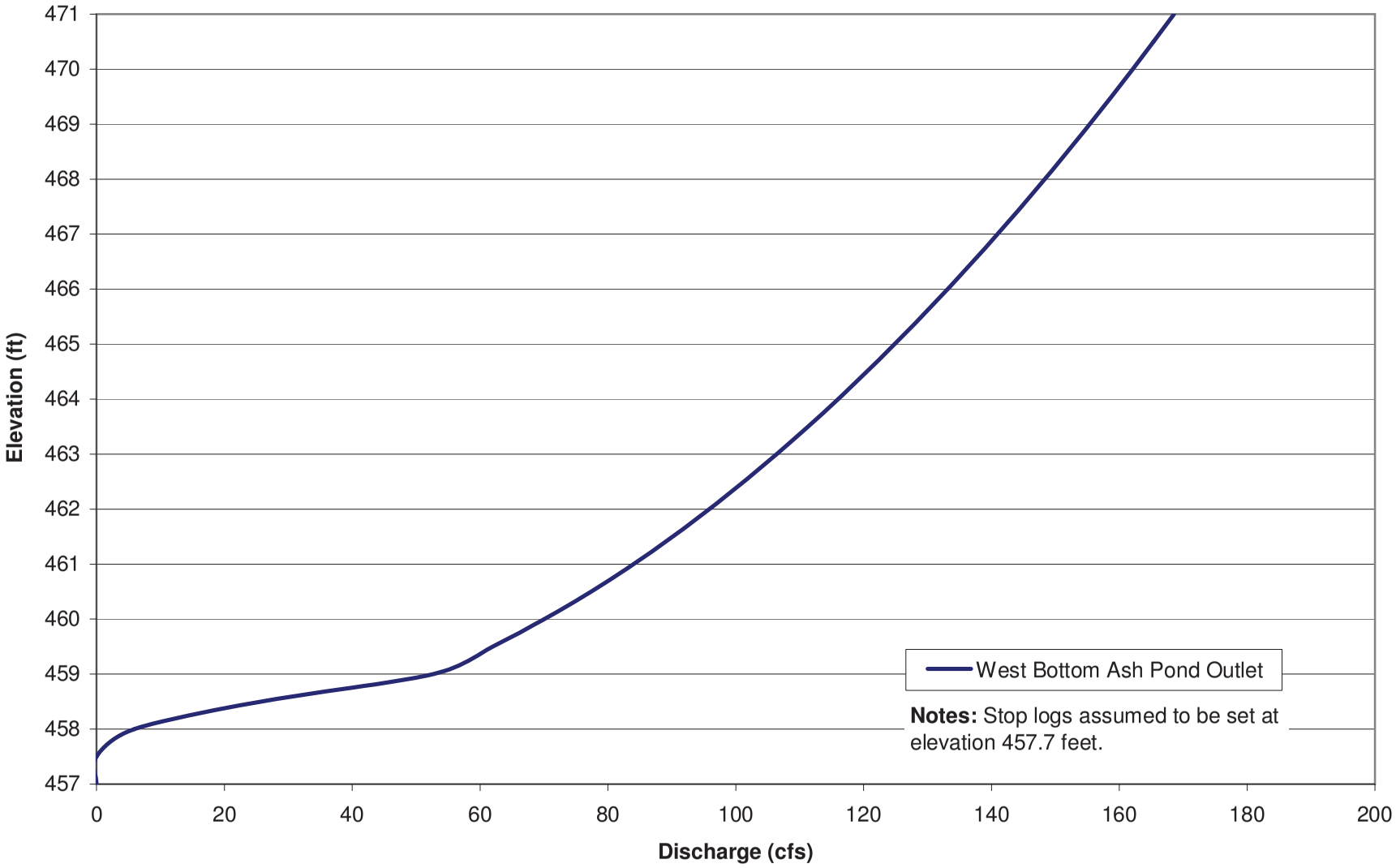
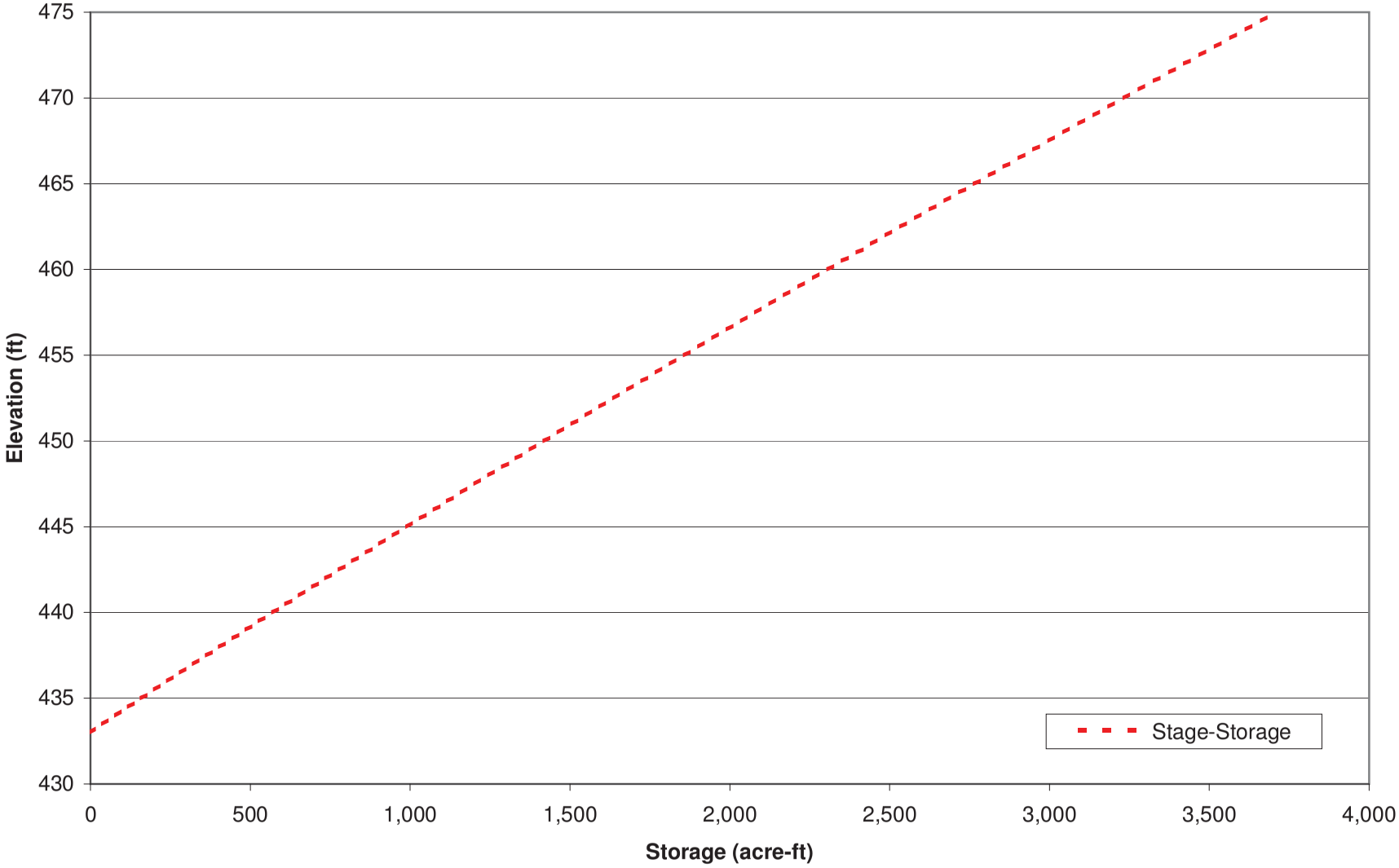


Figure 6

Reservoir Storage



Appendix A

Warning and Evacuation Plans

This Appendix is a tab for any warning and evacuation plans developed by local emergency response agencies.

Appendix B: Investigation and Analysis of Dam Breach Floods

West Bottom Ash Pond
Clifty Creek Dams

City of Madison
Jefferson County, Indiana

Table of Contents

Figures

Tables

1.0 Introduction and Summary

Dam breach analyses were performed for the West Bottom Ash Pond (WBAP) to determine possible inundation limits for use in an Emergency Action Plan. The Sunny Day and Probable Maximum Precipitation (PMP) events were modeled. The breach analyses included stormwater runoff calculations, reservoir pool routing and breach failure and finally hydraulic routing of the floodwave along the Ohio River.

Model results indicate a maximum of 0.8 foot rise in water surface elevation on the Ohio River. Figure 1 provides the results of flow routing through the WBAP and Figure 2 provides the approximate limits of inundation for the modeled scenarios.

2.0 Stormwater Runoff Calculations

Stormwater runoff calculations were performed using a model previously developed by Stantec Consulting Services Inc. (formerly FMSM) for the 2007 *West Bottom Ash Pond Hydrologic and Hydraulic Report* (Reference 1). The previous project used software developed by the U.S. Army Corps of Engineers (USACE), Hydrologic Engineering Center (HEC), HEC-HMS (Reference 2). The methodology used to determine the watershed response, or runoff from a rainfall event, was the Soil Conservation Service (SCS) or Curve Number (CN) Method (Reference 3).

In accordance with the Indiana Department of Natural Resources (IDNR) *General Guidelines for New Dams and Improvements to Existing Dams in Indiana* (Reference 4), rainfall data input into the model for the PMP storm event was obtained from the National Weather Service Hydrometeorological Report No. 51 (Reference 5), using a precipitation event duration of 6-hours and a rainfall depth of 27.6 inches. A 6-hour SCS Type II distribution was used based on IDNR's recommendations in *General Guidelines for New Dams and Improvements to Existing Dams in Indiana* (Reference 4). The hydrologic properties of each sub-watershed such as curve number, time of concentration and lag time were determined using the methodology outlined in TR-55 Urban Hydrology for Small Watersheds (Reference 6). Hydrologic properties of the watershed are listed in Table 1. The resultant watershed runoff hydrograph is presented in Figure 1.

Table 1. Hydrologic Model Parameters

Sub-Watershed No.	Area (miles ^{2})	Curve Number	Time of Concentration (minutes)	Lag Time (minutes)
SB4	0.155	76	28.7	17.2
SB5	0.290	77	62.7	37.6
SB12	0.015	86	25.7	15.4
SB13	0.005	86	6.6	4.0
SB14	0.013	86	7.4	4.4
SB15	0.005	86	12.6	7.6
SB23	0.061	86	26.8	16.1
SB24	0.043	73	28.4	17.0
SB25	0.010	86	6.0	3.6
SB26	0.010	86	6.0	3.6
Side Hill	0.032	73	14.8	8.9
Pond	0.158	-	-	-

3.0 Breach Analysis

The PMP runoff hydrograph was routed through the reservoir and the dam breach simulated in HEC-HMS. In addition to the PMP, the Sunny Day breach scenario was evaluated. Dam breach parameters input into the HEC-HMS model were based on IDNR's *General Guidelines for New Dams and Improvements to Existing Dams in Indiana* (Reference 4).

3.1 DEVELOPMENT OF MODEL GEOMETRY

The HEC-HMS models include physical characteristics of the reservoir, spillway and dam embankment. The stage-storage information input into the model is used in the calculation of the reservoir water levels, as well as the volume of material released following dam failure. For this analysis, it is assumed the volume of material will include the impounded water and the historic sluiced bottom ash. The stage-storage data was calculated from 2005 topographic maps and the original WBAP construction drawings (Reference 7 and 8). Table 2 provides the cumulative volume for a given elevation.

Table 2. WBAP Stage-Storage

Elevation (feet)	Storage (acre-feet)
433	0.0
435	161.4
437	324.4
439	488.9
441	654.9
443	822.5
445	991.6
447	1162.2
449	1334.4
451	1508.1
453	1683.4
455	1860.2
457	2038.6
459	2218.5
461	2399.9
463	2582.9
465	2767.4
467	2953.4
469	3141.0
471	3330.1
473	3520.8
475	3713.0

The WBAP spillway is a reinforced concrete box riser structure. One side of the structure has a three foot wide opening which acts as a weir and allows for adjustment of the water level using stop logs. The riser structure outlets to the Ohio River at elevation 426.8 feet through a 36-inch diameter, 450-foot long reinforced concrete pipe. The existing elevation of the weir provided by Indiana Kentucky Electric Corporation (IKEC) was 442 feet. In order to account for the full range of possible water surface elevations, the principal spillway was modeled assuming the maximum stop log position of 457.7 feet. An outlet structure in HEC-HMS was developed to replicate the hydraulic behavior of the spillway. The WBAP does not have an emergency spillway, therefore none was modeled.

Information regarding the physical dam characteristics was obtained from the original construction drawings and was verified with a 2005 topographic survey. The dam crest was set at elevation 475 and the downstream dam toe at elevation 430.

3.2 BREACH PARAMETERS

For the PMP breach analysis a peak water surface elevation of 468.4 feet, determined from routing of the PMP runoff hydrograph, was used as the initiating water surface elevation of the breach. The elevation of the top of the riser structure, 457.7 feet, was used as the peak water surface elevation for the Sunny Day analysis.

In addition to breach pool elevations, three key parameters are selected for a breach analysis: 1) failure mode, 2) time to breach, and 3) breach width.

HEC-HMS provides the option of selecting either overtopping or piping as the failure mode for the breach event. Since flows from the PMP event do not overtop the structure, piping was selected as the most likely cause of failure.

HEC-HMS defines the time to breach as the time between when the dam first begins to breach until the time when the breach is fully formed. According to IDNR's *General Guidelines for New Dams and Improvements to Existing Dams in Indiana* (Reference 4), the complete breach time for earthen "engineered" dams usually ranges from 30 minutes to 1 hour. Thirty minutes was selected for these analyses to provide a more conservative flood inundation map.

A breach width of 135 feet was used for each of the analyses following IDNR guidelines which suggest a trapezoidal breach with a width of 0.5 to 5 times the height of the dam (45 feet). A median breach width ratio of 3 times the dam height was assumed in the dam breach analyses. IDNR guidelines also indicate that the side slopes of the trapezoidal reach should range from 0.5:1 to 1:1 feet per feet. One to one side slopes were selected for all breach analyses.

3.3 DAM BREACH

Following the input of the breach parameters, HEC-HMS was run for each of the scenarios. Breach outflow hydrographs were exported for use in routing the floodwave downstream. Figure 1 shows the outflow hydrographs for each event.

4.0 Downstream Routing

A HEC-RAS (Reference 9) hydraulic model of the Ohio River McAlpine Pool was obtained from the USACE Louisville District. Each of the outflow breach hydrographs were input into the model and the floodwaves routed using the Unsteady Flow function of HEC-RAS.

The baseflow of the Ohio River (132,400 cfs) was determined from the average annual flow at USGS Gage 03277200, Ohio River at Markland Dam near Warsaw, KY. The downstream starting water surface elevation was set at normal depth.

4.1 FLOOD PROFILES AND FLOODPLAIN DELINEATION

Following each model analysis, the maximum water surface elevations were determined along the Ohio River. Model results indicate a maximum of 0.8 foot rise in water surface elevation on the Ohio River. Figure 2 shows the approximate limits of inundation for the modeled scenarios. The inundation mapping based on the analyses described show no structures or roadways within the impact limits of the dam breach scenarios.

9.0 BIBLIOGRAPHY AND REFERENCES

1. Fuller, Mossbarger, Scott, and May Engineers, Inc. (FMSM),"Hydrologic and Hydraulic Report, West Bottom Ash Pond Anaysis" July 25, 2007

2. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-HMS Hydrology Modeling System, Version 3.1.0 Davis, California, May 2003.

3. Soil Conservation Service, National Engineering Handbook (NEH) Section 4: Hydrology, August 1972.

4. Indiana Department of Natural Resources, General Guidelines for New Dams and Improvements to Existing Dams in Indiana, 2001.

5. U.S. Army Corps of Engineers, Hydrometeorological Report No. 51, Probable Maximum Precipitation Estimates, United States East of the 105th Meridian,

6. U.S. Department of Agriculture, Soil Conservation Service, Technical Release No. 55, Urban Hydrology for Small Watersheds, January 1975.

7. Henderson Aerial Surveys Inc., Clifty Creek East Pond NAVD 27/NAVD88 in South, (2 foot contours), aerial photography exposed on 4/16/2005.

8. Indiana Kentucky Electric Corp, Clifty Creek Plant, Plot Plan. Drawings: Dwg. 16-3002A-3, 16-3002-5, Sheets 2 and 3 of 5, August 19, 1953.

9. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-RAS River Analysis System, Versions 4.0 Beta, Davis, California, November 2006.

9.0 BIBLIOGRAPHY AND REFERENCES

1. Fuller, Mossbarger, Scott, and May Engineers, Inc. (FMSM),"Hydrologic and Hydraulic Report, West Bottom Ash Pond Anaysis" July 25, 2007

2. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-HMS Hydrology Modeling System, Version 3.1.0 Davis, California, May 2003.

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5. U.S. Army Corps of Engineers, Hydrometeorological Report No. 51, Probable Maximum Precipitation Estimates, United States East of the 105th Meridian,

6. U.S. Department of Agriculture, Soil Conservation Service, Technical Release No. 55, Urban Hydrology for Small Watersheds, January 1975.

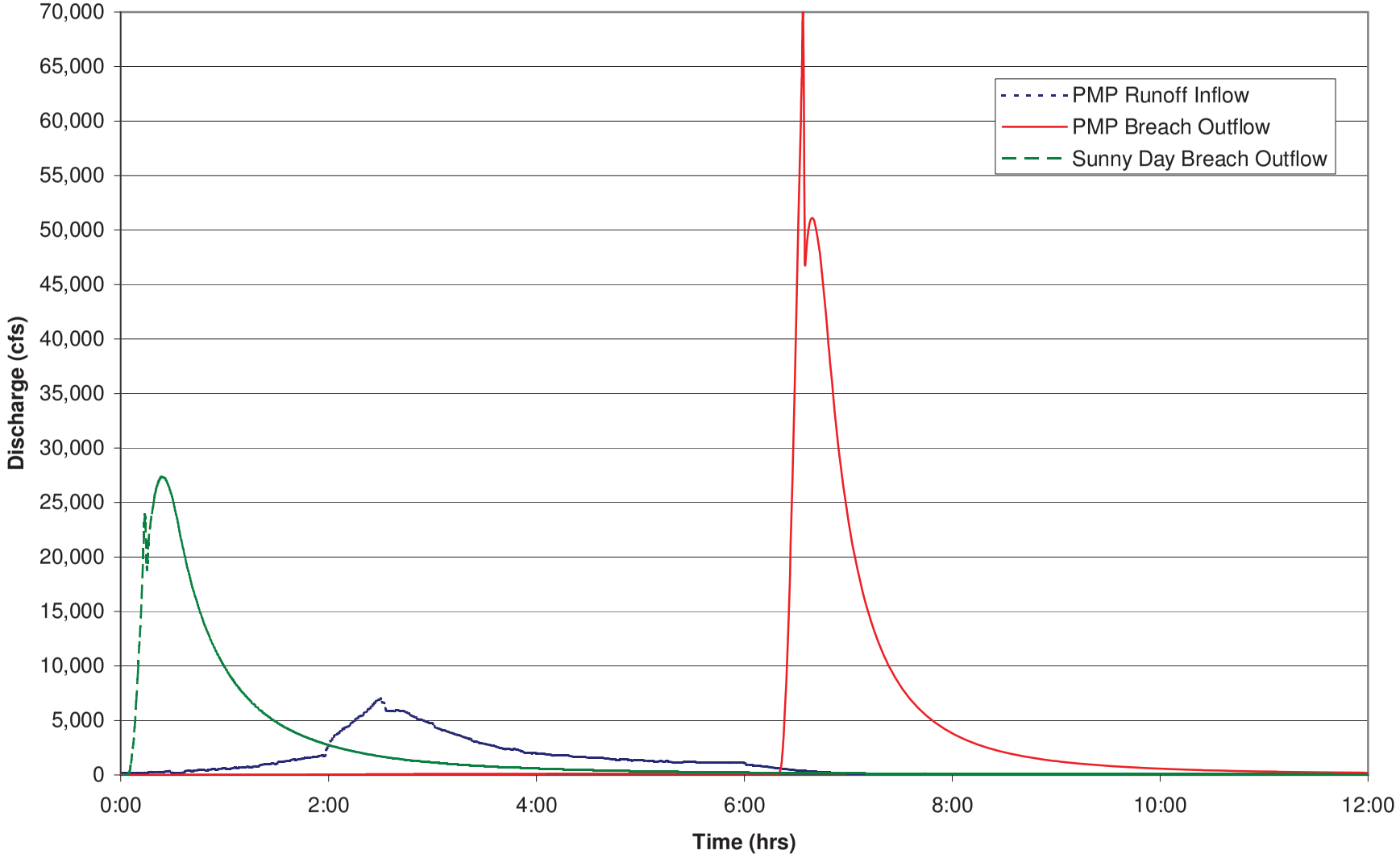
7. Henderson Aerial Surveys Inc., Clifty Creek East Pond NAVD 27/NAVD88 in South, (2 foot contours), aerial photography exposed on 4/16/2005.

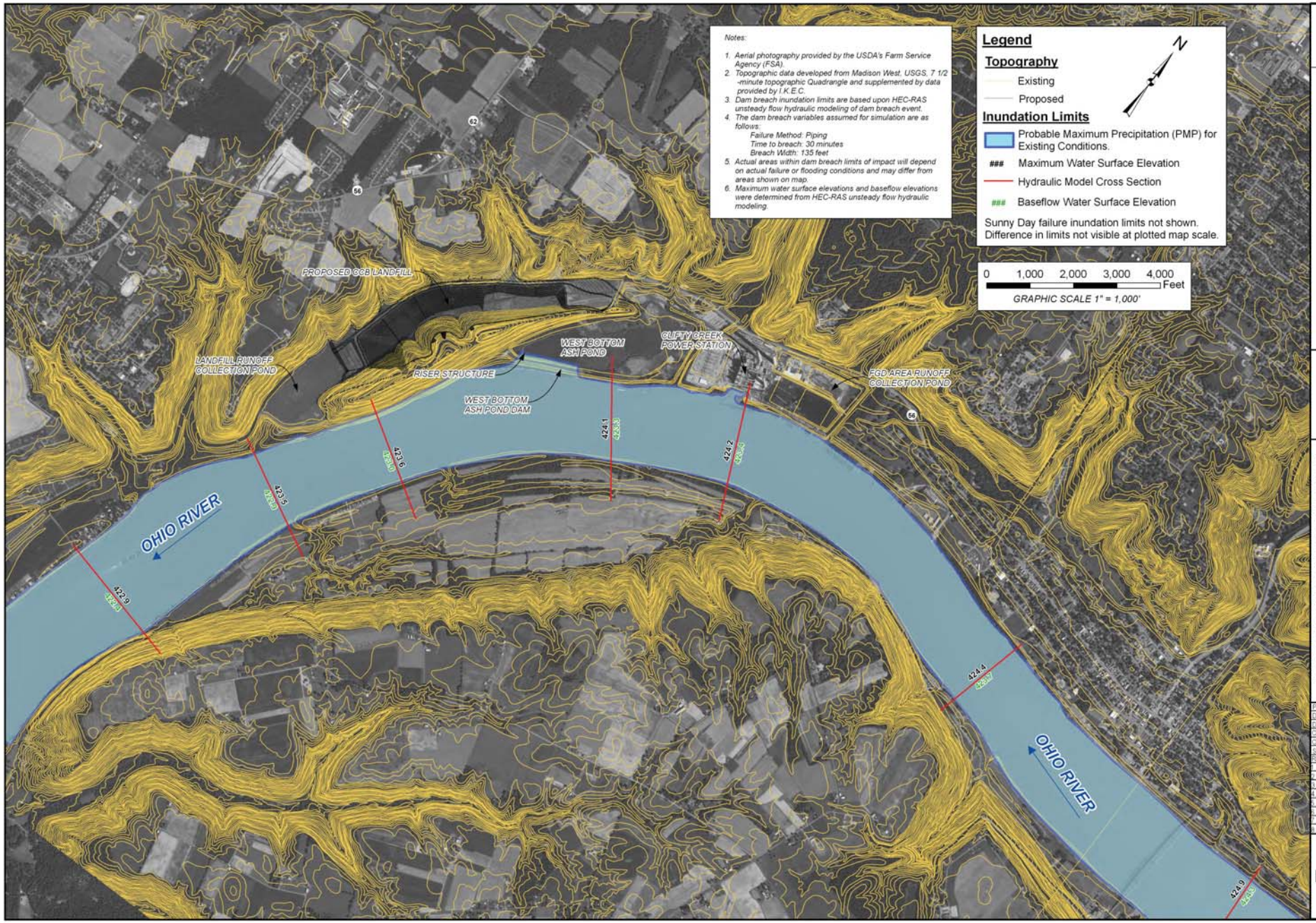
8. Indiana Kentucky Electric Corp, Clifty Creek Plant, Plot Plan. Drawings: Dwg. 16-3002A-3, 16-3002-5, Sheets 2 and 3 of 5, August 19, 1953.

9. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-RAS River Analysis System, Versions 4.0 Beta, Davis, California, November 2006.

FIGURE 1

Flow Routing Results





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11687 Lebanon Road
Cincinnati, Ohio 45241-2012
(513) 842-8200

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DAM BREACH INUNDATION LIMITS

WEST BOTTOM ASH POND
CLIFTY CREEK POWER STATION
MADISON, INDIANA

PROJECT NO.	175606013
DATE	SEPT. 2009
DRAWN BY	KAS
CHECKED BY	JRM
CHECKED BY	
SCALE	1" = 1000'
REVISED	

FIGURE 2

Appendix C

Past EAP Activity

This Appendix is a tab for copies of past EAP activity reports, 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 Review, Testing and Revision

1. Training

The Clifty Creek Power Station will host and facilitate a periodic training seminar and tabletop exercise for the EAP. Attendance should include staff members of IKEC Environmental Affairs, plant personnel, the responsible AEP Geotechnical Engineer and others as designated by Clifty Creek Plant Management or IKEC Environmental Affairs.

Training will cover overall EAP procedure and usage, as well as problem detection and evaluation. Before the tabletop exercise begins, meeting participants will visit the dam to familiarize themselves with the dam site.

The tabletop exercise will begin with the facilitator presenting a scenario of an unusual or emergency event at the dam. The scenario will be developed prior to the exercise. Once the scenario has been presented, the participants will discuss the responses and actions that they would take to address and resolve the scenario. The narrator will control the discussion, ensuring realistic responses and developing the scenario throughout the exercise. The EAP Coordinator should complete an event log as they would during an actual event.

After the tabletop exercise, the EAP will be reviewed and discussed. Environmental Affairs will prepare a written summary of the periodic test and revise the EAP as necessary.

2. Updating and Posting the EAP

IKEC/OVEC Environmental Affairs will review and, if needed, update the EAP at least once each year. The EAP annual review will include the following:

- Calling all contacts on the notification flow charts in the EAP to verify that the phone numbers and persons in the specified positions are current. The EAP will be revised if any of the contacts have changed. In addition, the EAP Coordinator will ask if the person contacted knows where the EAP is kept and if responsibilities as described in the EAP are understood.

- Calling the locally available resources to verify that the phone numbers, addresses, and services are current.

- Reviewing summary of periodic tests and implementing proposed revisions.

IKEC/OVEC Environmental Affairs is responsible for updating the EAP documents. The EAP document held by the Clifty Creek Power Station is the master document. When revisions occur, IKEC/OVEC Environmental Affairs will provide the revised pages and a revised revision summary page to all EAP document holders.

The EAP document must be up-to-date and placed in a prominent location near the posted notification flow charts. The document holders are responsible for revising the outdated copy of the respective document(s) whenever revisions are received. Outdated pages shall be immediately discarded to avoid any confusion with the revisions.

FORM D.1
EAP REVIEW VERIFICATION STATEMENT

Name of Dam: West Boiler Slag Pond Dam

Date of Drill: 7-27-16

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

Additional Comments:

_____

_____

_____ 8-4-16

(Individual responsible for conducting EAP Annual Review) Date

Daniel L. Hunt

(printed name)

_____ 8-4-16

(EAP Coordinator) Date

Paul de Lamerens

(printed name)

7/27/16

Emergency Action Plan – Table Top Exercise

Conducted by: Paul de Lamerens Daniel Hunt

Tom Spurgeon Gabe Coriell

Dalton Barnes Mike Brown

Hank Cleland

Scenario: On 7/27/2016 at approximately 0945 a 6.5 magnitude earthquake was reported with an epicenter in the Wasbash valley seismic zone in central, western Indiana. Significant shaking was felt here at the Clifty Creek Plant site. Once the quake subsided and an all clear was announced Environmental department responded, utilizing our ponds' EAPs as follows:

1. Initially, before any inspections occur this event was categorized as an event level 3 per the EAP's guidelines.
2. Paul de Lamerens, Environmental Managr, calls Cliff Carnes, Plant Manager, and notifies him of initiation of EAP activities concerning the dams onsite. Paul informs Cliff that he will send out his personnel who have been trained to inspect dams and dikes to assess the integrity of our structures. At this time information does not need to be shared outside the plant.
3. Paul meets with Landfill Engineer Daniel Hunt and Env. Department personnel Tom Spurgeon and Dalton Barnes and together they plan an inspection of the dams and dikes. Before the job begins a JSA is conducted. Of note the discussion of the JSA leads to the decision to place cones across the roadways of the dams and dikes to keep company personnel off of them and also to use the backbone road to get to the LRCP as the roadway through the landfill may be questionable from the shaking.
4. Danny, Tom and Dalton head out to perform the inspection and inspect the LRCP main dam, saddle dam, and outfall structures. Next the WBSP dike and outfall structure was assessed. Lastly, the FGD runoff collection pond dike dam was inspected.
5. Assessments of the dam and structures are made cautiously and thoroughly.
6. No damage was found to any of the dam structures. No cracks, slides or seeps were found.
7. The wells at the top of the dike on the WBSP were surveyed and found to be the same height.
8. The piezometers around the LRCP were surveyed and found to be the same height.
9. Cliff Carnes was notified that no damage was found from the earthquake event. No information is required at this point to be shared with outside entities.
10. EAP event log Form found in each EAP was completed and filed.
11. The inspections are added to our Dams and Dike inspections event log and also to our CCR logbook.
12. Plans to perform thorough inspections weekly are made for the next 3 months to assure dam integrity.

Form 1
Unusual or Emergency Event Log
(to be completed during the emergency)

Dam Name: West Bottom Ash Pond Dam County: Jefferson County

When and how was the event detected? At approximately 0945 on 7-27-2016 a 6.5 magnitude earthquake was reported with an epicenter in the Wabash Valley seismic zone. Significant shaking was felt here at the Clifty Creek Plant site.

Weather conditions: Partly sunny, hot, humid 92 deg F.

General description of the emergency situation:

In response to the earthquake the EAP was consulted and a plan was put together to inspect the dams and dikes here at Clifty's site.

Emergency level determination: 3 Made by: Daniel Hunt

ACTIONS AND EVENT PROGRESSION

Date	Time	Action/event progression	Taken by
7-27-2016	0945	Quake was reported	PdL
7-27-2016	1100	All clear, Env. Dept. meet to initiate EAP activities	PdL
7-27-2016	1200	EAP reviewed, level determination, plan of inspection and JSA	DLH
7-27-2016	1245	Inspections began of dams and dikes	DLH
7-27-2016	1800	Inspections complete - no damage or unusual situations found on the dam	DLH

Report prepared by: Daniel Hunt Date: 7-27-2016

Appendix E

EAP Distribution

Distribution List

Contact	Organization	Phone Number	Address	Copies Sent

Appendix F

Supplementary Information

PERTINENT DATA[1]

A. GENERAL	
Name of Dam	West Bottom Ash Pond Dam
Name of Reservoir	West Bottom Ash Pond
Owner	Indiana-Kentucky Electric Corp. (IKEC)
County	Jefferson County
River or Stream	Ohio River
Watershed Basin	
IDNR Dam Number	39-12
National Inventory of Dams Number	
Hazard Potential Classification	Significant Hazard
Required Spillway Capacity (% PMF Design Flood)	
Year Constructed	1953
Legal Description (of Dam)	
Latitude	38°43'1.2"N
Longitude	85°26'56.4"W
B. DAM	
Type	Earthfill Dam
Crest Elevation (ft., NAVD 1988)	475
Crest Width (feet)	10
Crest Length (feet)	2,900
Embankment Height (feet)	45
Upstream Slope	1.75:1
Downstream Slope	2.5:1
C. SPILLWAY SYSTEM	
1. Principal Spillway	
Type	Box riser structure.
Control Sill Elevation	457.7
Dimensions	3'x3'
Freeboard above Control Sill Elevation (feet)	17.3
Discharge during Design Storm (cfs)	154
Terminal Structure	

PERTINENT DATA (CONT'D)

2. Emergency Spillway	
Type	None
Control Sill Elevation (ft, NAVD 1988)	
Length of Control Section (feet)	
Freeboard above Control Sill Elevation (feet)	
Discharge during Design Storm (cfs)	
Terminal Structure	
3. Combined Spillway	
Total Spillway Discharge Capacity (cfs)	200
Freeboard at Peak of Design Flood (feet)	6.2
D. OUTLET WORKS (Drawdown Facility)	
Type	Circular concrete culvert
Dimensions	36" diameter
Control Structure (valve, gate, stoplogs, etc.)	Stop logs
Inlet / Outlet Inverts (ft, NAVD 1988)	433 / 430
Discharge Capacity at Normal Pool (cfs)	0
E. RESERVOIR	
Normal Pool Elevation (Feet)	
Reservoir Area at Normal Pool (Acres)	
Estimated Storage at Normal Pool (Acre-feet)	
Reservoir Area at Top of Dam (Acres)	96
Estimated Storage at Top of Dam (Acre-feet)	3,713
F. DRAINAGE BASIN	
Drainage Area (square miles)	0.8
Description	A runoff collection pond that also serves as a coal combustion products settlement pond for the Clifty Creek Power Station. Located adjacent to the Ohio River at river mile 560.5.

NOTES: 1. *Reservoir areas, storage, spillway type and dimensions, and dam dike dimensions were based on 2005 topographic maps and the original West Bottom Ash Pond Dam construction drawings provided by IKEC.*