



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/CCRCCompliance.php>

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

Sincerely,

A handwritten signature in black ink that reads "Gabriel S. Coriell".

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

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.



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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

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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

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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).

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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)



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**Landfill Runoff Collection Pond Dam
Emergency Action Plan (EAP)
Clifty Creek Power Station**

City of Madison
Jefferson County, Indiana

National Inventory of Dams No. Unassigned

Indiana Department of Natural Resources
(IDNR) Dam No. 39 -12



August, 2016

**LANDFILL RUNOFF COLLECTION POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION**

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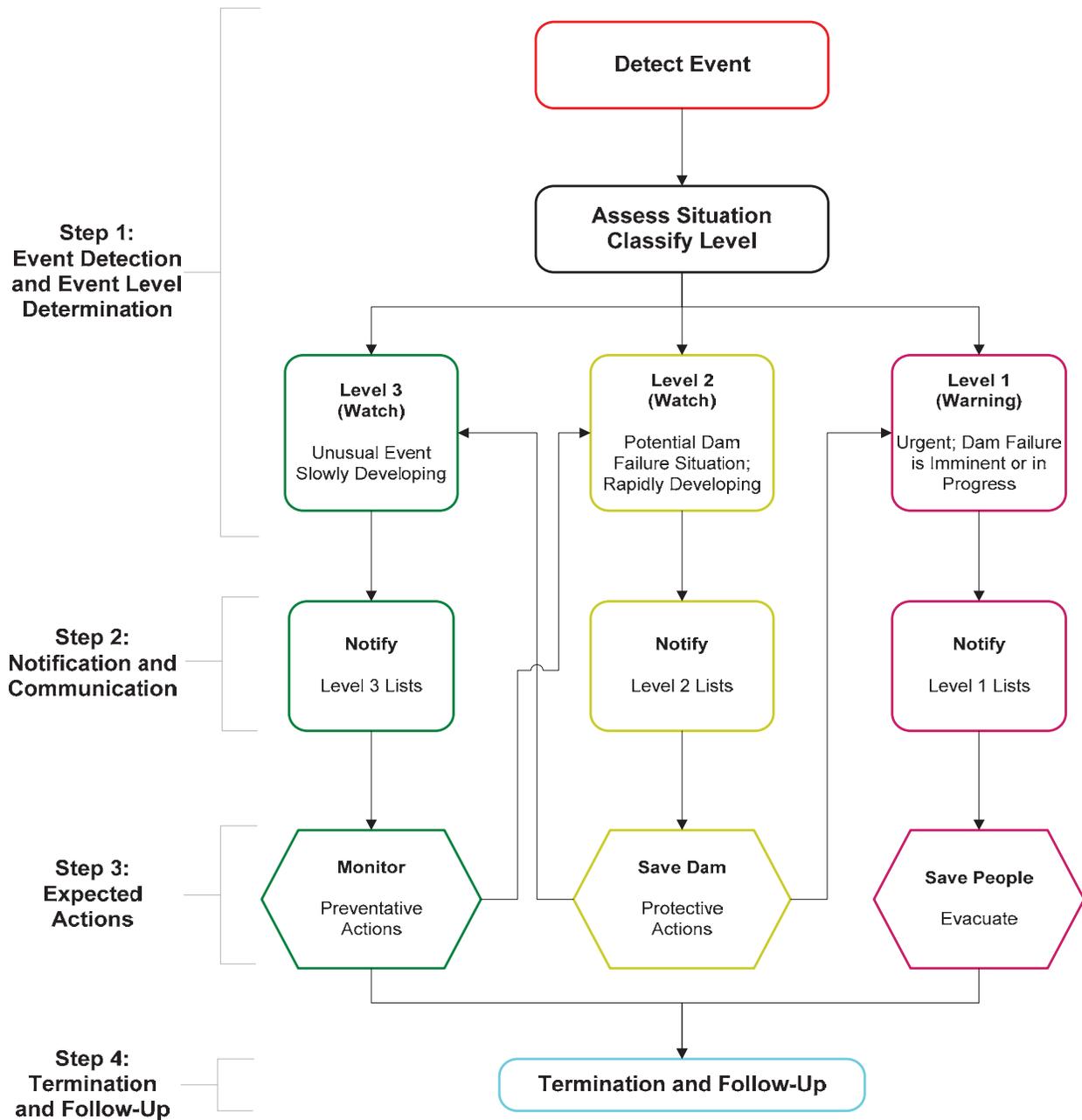
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EMERGENCY ACTION PLAN (EAP)
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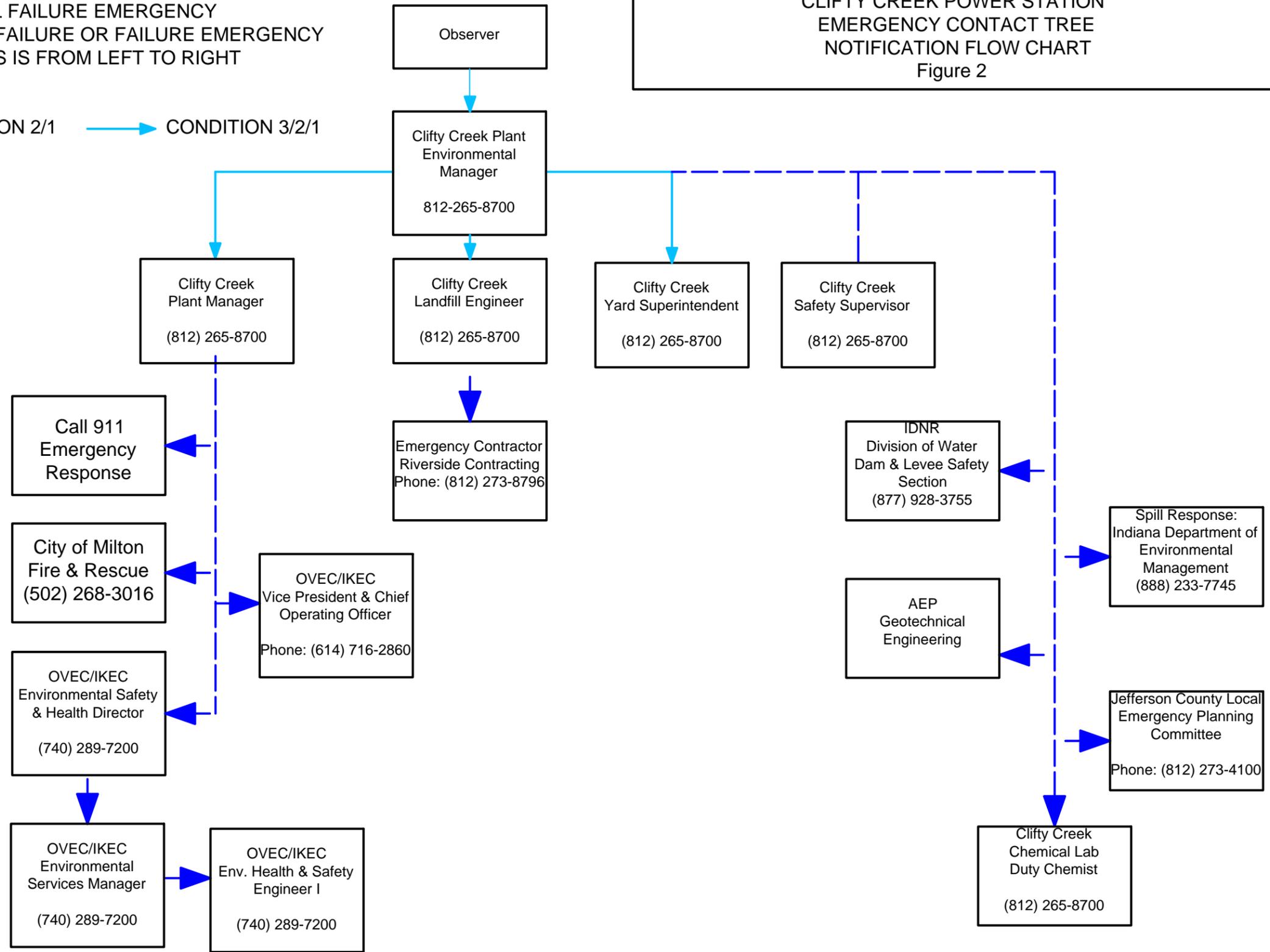
**Figure 1
Emergency Action Plan Overview**



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
 LANDFILL RUNOFF COLLECTION POND DAM
 CLIFTY CREEK POWER STATION
 EMERGENCY CONTACT TREE
 NOTIFICATION FLOW CHART
 Figure 2



**LANDFILL RUNOFF COLLECTION POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION**

Summary of EAP Process

The four steps to be followed when an unusual or emergency event is detected at the Landfill Runoff Collection 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 appropriate notification flow chart provided in 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.

**LANDFILL RUNOFF COLLECTION 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)

7-27-16

(Date)

Owner/Engineering Department Director's Approval and Acceptance:



(Signature)

Clifford Carnes

(Printed Name)

Clifty Creek Plant Manager

(Title)

7.27.2016

(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 Landfill Runoff Collection Pond Dam, formerly known as the South Fly Ash 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 Landfill Runoff Collection Pond Dam.

A secondary purpose of this EAP is to minimize the potential for property damage during an unusual or emergency event at the Landfill Runoff Collection 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 Landfill Runoff Collection Pond Dam.

EAP 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.

**LANDFILL RUNOFF COLLECTION 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 6 (Approval & Acceptance)
003	2/2015	Updated Page 13 (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:



(Signature)

Daniel Hunt

(Printed Name)

7-28-16

(Date)

**LANDFILL RUNOFF COLLECTION POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION****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 Landfill Runoff Collection 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 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

**LANDFILL RUNOFF COLLECTION POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION**

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

1.2.2 Level Determination

The EAP Coordinator shall be responsible for defining 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 Landfill Runoff Collection 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 Landfill Runoff Collection 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.

**LANDFILL RUNOFF COLLECTION POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION**

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
CCB Landfill Slope Failure	Slope failure occurs on pool side of CCB Landfill / No wave caused erosion	3
	Slope failure occurs on pool side of CCB Landfill / Wave run up causes erosion to upstream slope	2
	Slope failure occurs on pool side of CCB Landfill / Wave run up overtops 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

**LANDFILL RUNOFF COLLECTION POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION**

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 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 prescribed 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 Landfill Runoff Collection Pond Dam EAP.
- An unusual event has been detected at the Landfill Runoff Collection 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 Landfill Runoff Collection Pond Dam EAP.
- Problems have occurred with the Landfill Runoff Collection 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 of areas along the Ohio River directly opposite the power station.

LANDFILL RUNOFF COLLECTION POND DAM EMERGENCY ACTION PLAN (EAP) CLIFTY CREEK 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 Landfill Runoff Collection Pond Dam EAP.
- Failure of the Landfill Runoff Collection Pond Dam 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 Manager will be alerted and briefed on the situation. The Clifty Creel Plant Manager will prepare and deliver a message for public release based on the existing conditions and information from the Clifty Creek Plant Environmental Manager 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) 856-0376
Public Access Channel 115 (Executive Director Dennis Crank):	(812) 274-2073
WORX/WXGO Radio	(812) 265-3322
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 supplies 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.

**LANDFILL RUNOFF COLLECTION POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION**

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 safely possible.
Seepage / Sinkholes	Using 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 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.

**LANDFILL RUNOFF COLLECTION POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION**

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

Dam Name: Landfill Runoff Collection 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 vii of the preliminary pages.

Stantec

**LANDFILL RUNOFF COLLECTION POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION**

5.0 Maps, Figures and Supporting Data

This section will be a tab in the EAP Binder.

Figure 5
Composite Rating Curve

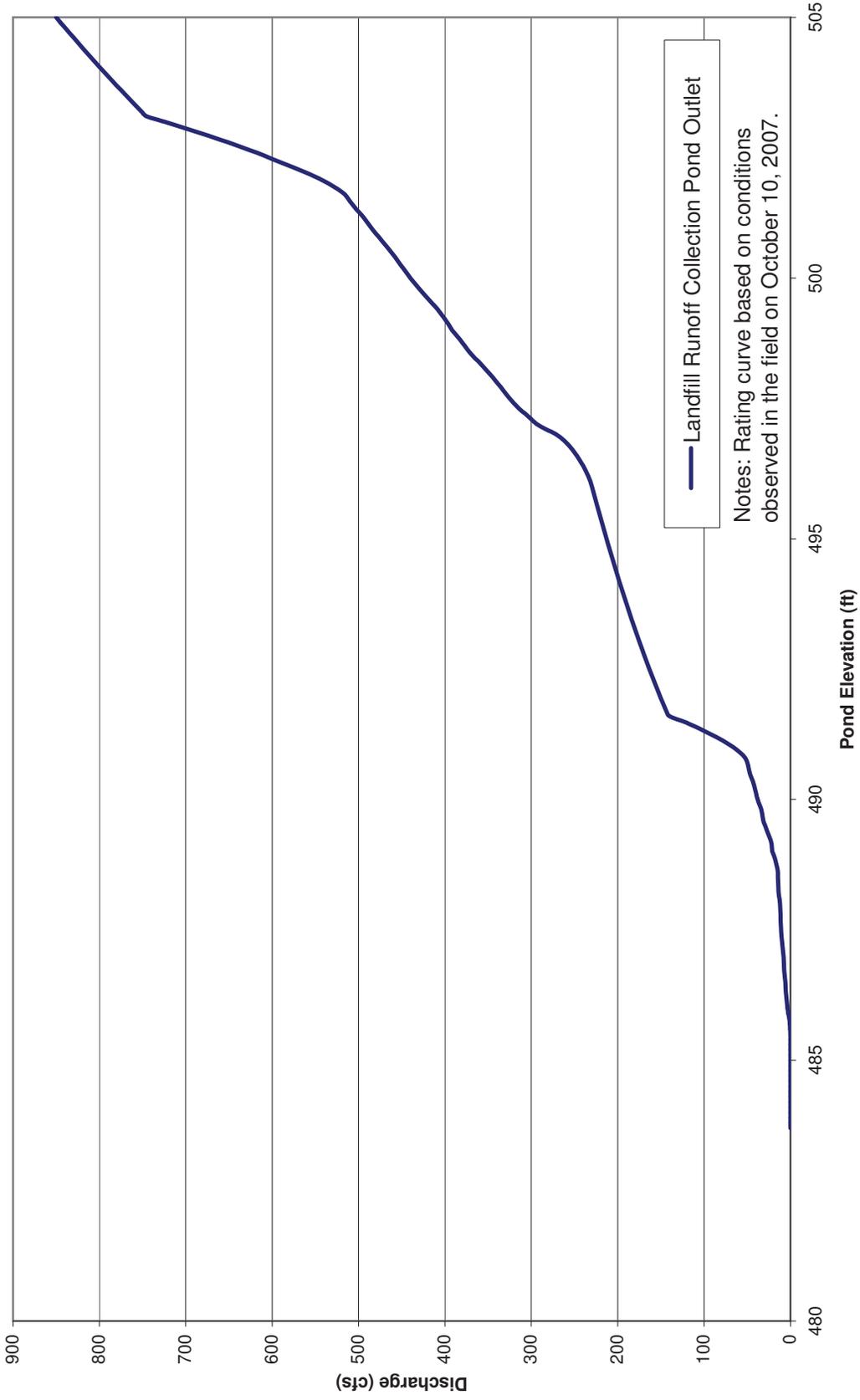


FIGURE 6
Reservoir Storage



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**

Landfill Runoff Collection Pond
Clifty Creek Coal Ash Dams

City of Madison
Jefferson County, Indiana

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1.0 Introduction and Summary

Dam breach analyses were performed for the Landfill Runoff Collection Pond (LRCP), formally known as the South Fly Ash Pond, to determine possible inundation limits for use in an Emergency Action Plan. The Sunny Day and Probable Maximum Precipitation (PMP) events were modeled for both existing conditions and the proposed final landfill grade. The breach analyses included stormwater runoff calculations, reservoir pool routing and breach failure and finally hydraulic routing of the floodwave along the Ohio River.

The results of the pond routing analyses indicate that the LRCP is capable of passing flows generated from the Probable Maximum Precipitation (PMP) event for both existing and proposed landfill conditions without overtopping. The breach failure analysis and hydraulic modeling results indicate a maximum of 2.4 foot rise in water surface elevations on the Ohio River for the highest magnitude breach event.

2.0 Stormwater Runoff Calculations

Stormwater runoff calculations were performed using a hydrologic model previously developed for the *Clifty Creek Fly Ash Pond Sediment Evaluation and Dredging Plans Project* by Stantec Consulting Services Inc., formerly FMSM (Reference 1). The previous report evaluated hydrologic conditions for existing field conditions, as well as proposed final landfill grade. The previous project used SEDCAD 4 for hydrologic and sediment transport modeling (Reference 2). The methodology used to determine the watershed response, or runoff from a rainfall event, was the Curve Number Method (Reference 3).

The LRCP was evaluated in the hydrologic model for existing and final landfill construction conditions. 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 (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 (Reference 4). The hydrologic properties of modeled sub-watersheds including curve numbers, times of concentration and lag times were determined using the methodology outlined in TR-55 (Reference 6). Hydrologic properties of the watershed are listed in Table 1. The resultant watershed runoff hydrograph is presented in Figure 1.

APPENDIX B: INVESTIGATION AND ANALYSIS OF DAM BREACH FLOODS

Stormwater Runoff Calculations

September 21, 2009

Table 1. Hydrologic Model Parameters

Sub-Watershed No.	Area (Acres)	Curve Number	Time of Concentration (minutes)	Lag Time (minutes)
SB5 (E)	185.60	77	62.7	37.6
SB6 (E,F)	30.10	72	24.6	14.7
SB7(E,F)	95.00	75	101.7	61.0
SB8(E, F)	70.40	76	24.7	14.8
SB9(E,,F)	20.60	72	23.0	13.8
SB10(E,F)	36.60	72	33.0	19.8
SB11(E,F)	41.30	71	58.4	35.0
SB16(F)	4.95	86	14.0	8.4
SB17(F)	3.77	86	8.0	4.8
SB18(F)	13.28	86	8.2	4.9
SB19(F)	16.19	86	8.0	4.8
SB20(F)	17.35	86	8.0	4.8
SB21(F)	11.83	86	8.3	5.0
SB22(F)	8.47	73	17.0	10.2
SB-A (F)	15.31	73	16.6	9.9
SB-C (E)	9.05	73	16.6	9.9
SB-D (E)	71.86	73	42.8	25.7
SB-E (E)	81.30	86	38.5	23.1
Ash Pond (E)	51.64	99	-	-
Ash Pond (F)	44.96	99	-	-

Key: (E) = Existing Condition, (F) = Final Condition

3.0 Dam Breach Analysis

Following completion of the hydrologic modeling, the runoff hydrographs from the existing and final conditions models were routed through the reservoir and the dam breach simulations run using HEC-RAS (Reference 7). In addition to the PMP events, the Sunny Day failure scenario was evaluated for each condition. Dam breach parameters input into the HEC-RAS model were based on IDNR guidelines (Reference 4).

3.1 DEVELOPMENT OF MODEL GEOMETRY

The breach models include physical characteristics of the reservoir, spillway and dam embankment. The stage-storage information input into the model is used in the determination of the water level in the reservoir, as well as the volume of material released following dam failure. For this analysis, it is assumed the volume of material released will include the impounded water, the historic sluiced fly ash and for the final conditions model a portion of the landfill due to slope failure. The stage-storage data was calculated from 2005 topographic maps, the original LRCP construction drawings, soil borings performed for the landfill design and the proposed landfill permit drawings (References 8, 9, 10 and 11). Tables 2 and 3 provide the cumulative volume for a given elevation.

Information regarding the physical dam characteristics was obtained from the original construction drawings and was verified with a 2005 topographic survey (References 9 and 8). The dam crest was set at elevation 504 and the dam downstream toe at elevation 430. The LRCP primary spillway consists of an inclined 6-foot x 3-foot reinforced concrete box culvert with a riser box structure containing grated inlets located at every 11 feet in elevation. Currently, the two uppermost sections of riser box structure are above the pond level and the lower riser section is the active outlet for the pond. The inclined box is connected to a 400-foot long, 72-inch diameter concrete pipe that discharges to the Ohio River. A gate structure was created within the dam geometry to model the performance of the dam outlet structure. The LRCP does not have an emergency spillway, therefore none was modeled.

APPENDIX B: INVESTIGATION AND ANALYSIS OF DAM BREACH FLOODS

Dam Breach Analysis

September 21, 2009

Table 2. LRCP Stage-Storage – Existing Conditions

Elevation (feet)	Total Storage (acre-feet)	Pond Storage (acre-feet)	Ash Storage (acre-feet)
440	0.0	0.0	0.0
445	14.7	14.7	0.0
450	62.7	62.7	0.0
455	170.5	170.5	0.0
460	353.0	353.0	0.0
465	590.2	590.2	0.0
470	871.9	871.9	0.0
475	1198.0	1198.0	0.0
480	1569.5	1491.9	77.7
490	2444.8	1737.5	707.3
495	2951.8	1965.0	986.8
500	3509.0	2248.9	1260.2
504	3997.0	2560.8	1436.2

Table 3. LRCP Stage-Storage – Final Conditions

Elevation (feet)	Total Storage (acre-feet)	Pond Storage (acre-feet)	Ash Storage (acre-feet)	Landfill Storage (acre-feet)
440	0.0	0.0	0.0	----
445	14.7	14.7	0.0	----
450	62.7	62.7	0.0	----
455	167.4	167.4	0.0	----
460	330.1	330.1	0.0	----
465	521.1	521.1	0.0	----
470	730.2	730.2	0.0	----
475	955.4	955.4	0.0	----
480	1196.1	1146.9	49.2	----
485	1451.9	1196.7	255.2	----
490	1724.4	1362.8	361.6	----
495	2015.7	1550.9	464.8	----
500	2329.3	1754.8	574.5	----
504	2600.8	1942.5	658.4	----
505	2601.5	----	----	0.6
510	2605.0	----	----	4.2
515	2609.1	----	----	8.2
520	2613.8	----	----	12.9
525	2619.0	----	----	18.2
530	2624.9	----	----	24.0
535	2631.0	----	----	30.2

APPENDIX B: INVESTIGATION AND ANALYSIS OF DAM BREACH FLOODS

Dam Breach Analysis

September 21, 2009

Table 3. LRCP Stage-Storage – Final Conditions (cont.)

Elevation (feet)	Total Storage (acre-feet)	Pond Storage (acre-feet)	Ash Storage (acre-feet)	Landfill Storage (acre-feet)
540	2637.0	----	----	36.2
545	2643.4	----	----	42.5
550	2650.0	----	----	49.2
560	2664.2	----	----	63.4
570	2679.5	----	----	78.6
580	2695.5	----	----	94.6
590	2712.1	----	----	111.3
600	2729.2	----	----	128.4
610	2746.6	----	----	145.8
620	2764.2	----	----	163.4
630	2782.0	----	----	181.1
640	2799.7	----	----	198.8
650	2815.3	----	----	214.4
660	2827.7	----	----	226.8
670	2836.7	----	----	235.9
680	2841.9	----	----	241.1
690	2843.5	----	----	242.7
700	2844.3	----	----	243.5
710	2845.1	----	----	244.3
720	2845.4	----	----	244.6
725	2845.4	----	----	244.6

3.2 BREACH PARAMETERS

For the existing and final conditions PMP breach analyses, peak water surface elevations were used as the initiating water surface elevations of the breach. Peak water surface elevations for existing and final conditions models were 503.4 and 501.4 feet, respectively. Elevations were determined from routing of the PMP runoff hydrographs. The normal pool elevation of 485.5 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-RAS provides the option of selecting either overtopping or piping as the failure mode for the breach event. Although the PMP inflows come near to overtopping the, piping was deemed the more likely cause of failure and was selected for modeling.

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 guidelines (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 222 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 (74 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-RAS was run for each of the scenarios. Breach outflow hydrographs were exported for use in routing the floodwave downstream. Figure 2 shows the outflow hydrographs for each event.

4.0 Downstream Routing

A HEC-RAS 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.

The maximum water surface elevations were determined along the Ohio River for each model analysis. Model results indicate a maximum of 2.4 foot rise in water surface elevation on the Ohio River with the floodwave dissipating to half a foot rise 11 miles downstream. Figure 3 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.

For the future conditions PMP model, an analysis was run to determine the sensitivity of water surface elevations on the Ohio River with regards to the volume of material released from a slope failure of the proposed landfill. The initial volume of the landfill estimated to be carried away during a PMF failure of the LRCP Dam was gradually increased to a factor of six (6) and the resultant flood waves were routed on the Ohio River. Table 4 below summarizes the results of routing the breach flood waves for multiple volumes of landside material.

Table 4. Summary of Ohio River Routing for Multiple Landfill Volumes

Percent of Original Volume Estimate (%)	Landfill Volume (Acre*ft)	Peak Discharge (cfs)	Max Ohio River Elevation (ft)	Rise in Elevation (ft)
50	451	139,932	424.5	1.6
100	903	151,989	424.7	1.8
200	1,806	198,342	425.1	2.2
300	2,709	224,034	425.3	2.4
600	5,418	226,755	425.5	2.6

As indicated in Table 3, increasing the volume of the landfill slope failure by a factor of six results in only a 0.8 foot increase in water surface elevations from the initial analysis. Also of note, the 2.6 foot rise attributed to the 600% increase in volume is only 0.1 foot higher than the existing conditions failure scenario that is depicted on the inundation map.

5.0 Bibliography and References

1. Fuller, Mossbarger, Scott, and May Engineers, Inc. (FMSM), "Fly Ash Pond Sediment Evaluation and Dredging Plans" February 8, 2008
2. Warner, Richard C., Pamela J. Scwab, and Dennis j. Marshall. SEDCAD 4 for Windows (computer software), 1998.
3. Soil Conservation Service, National Engineering Handbook (NEH) Section 4: Hydrology, August 1972.
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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. U.S. Army Corps of Engineers, Hydrologic Engineering Center, HEC-RAS River Analysis System, Versions 4.0 Beta, Davis, California, November 2006.
8. Henderson Aerial Surveys Inc., Clifty Creek East Pond NAVD 27/NAVD88 in South, (2 foot contours), aerial photography exposed on 4/16/2005.
9. Indiana Kentucky Electric Corp. "Fly Ash Area", Drawings: Dr. 16-3002A-3, Dr 16-3171-4, Dr. 16-3171A, Dr. 16-3172-1, Dr. 16-3173. 1956.
10. Fuller, Mossbarger, Scott, and May Engineers, Inc. (FMSM), "Permit Drawings, Indiana Kentucky Electric Corporation, Clifty Creek Coal Ash Landfill Modification", Drawings 16-30500- 07 through 29, November 15, 2006.
11. Fuller, Mossbarger, Scott, and May Engineers, Inc. (FMSM), "Phase 1 Construction Drawings, Indiana Kentucky Electric Corporation, Clifty Creek Coal Ash Landfill Modification," Drawings 16-30870- 01 through 29 November 15, 2006.

FIGURE 1
PMP Inflow Routing Results

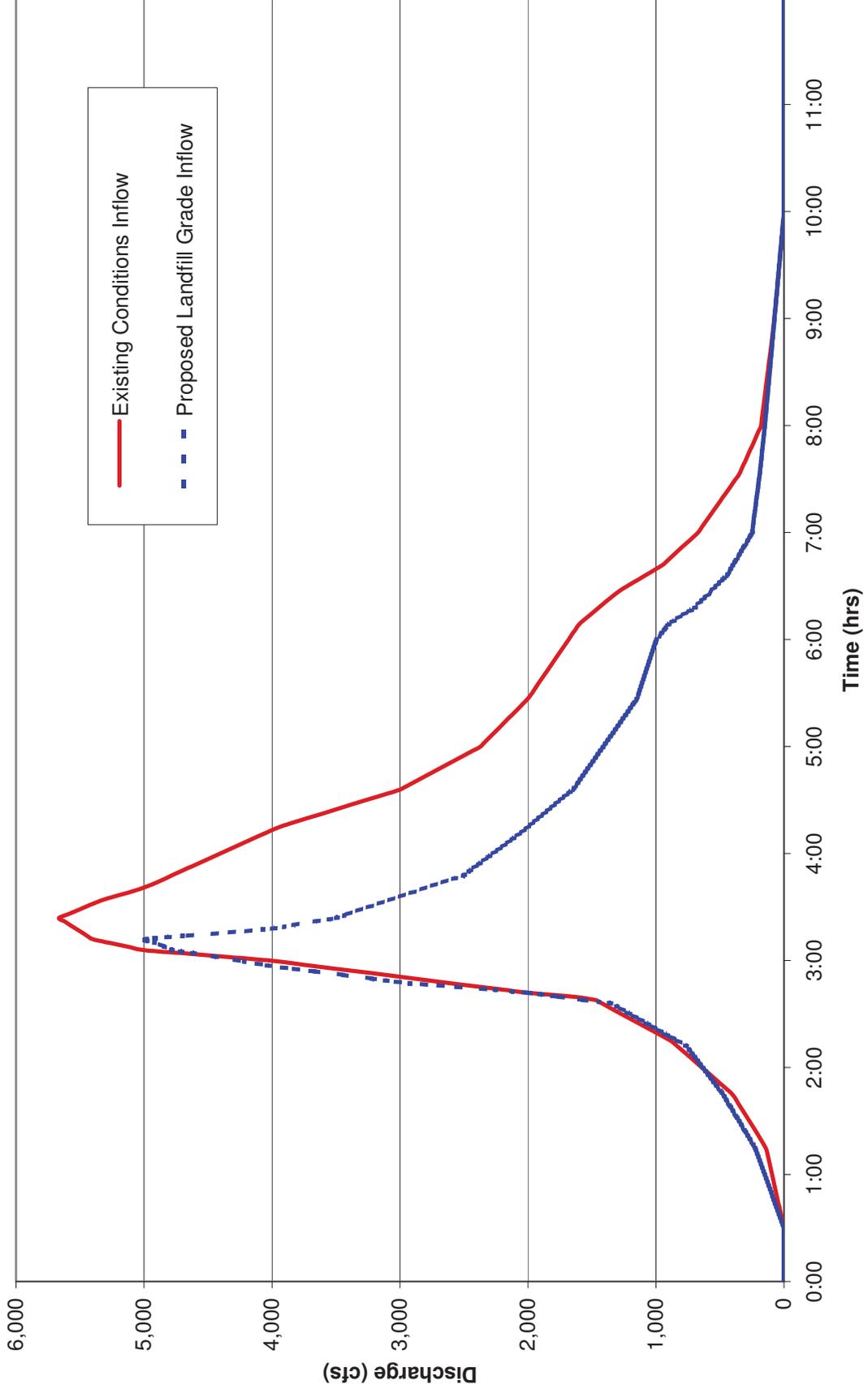
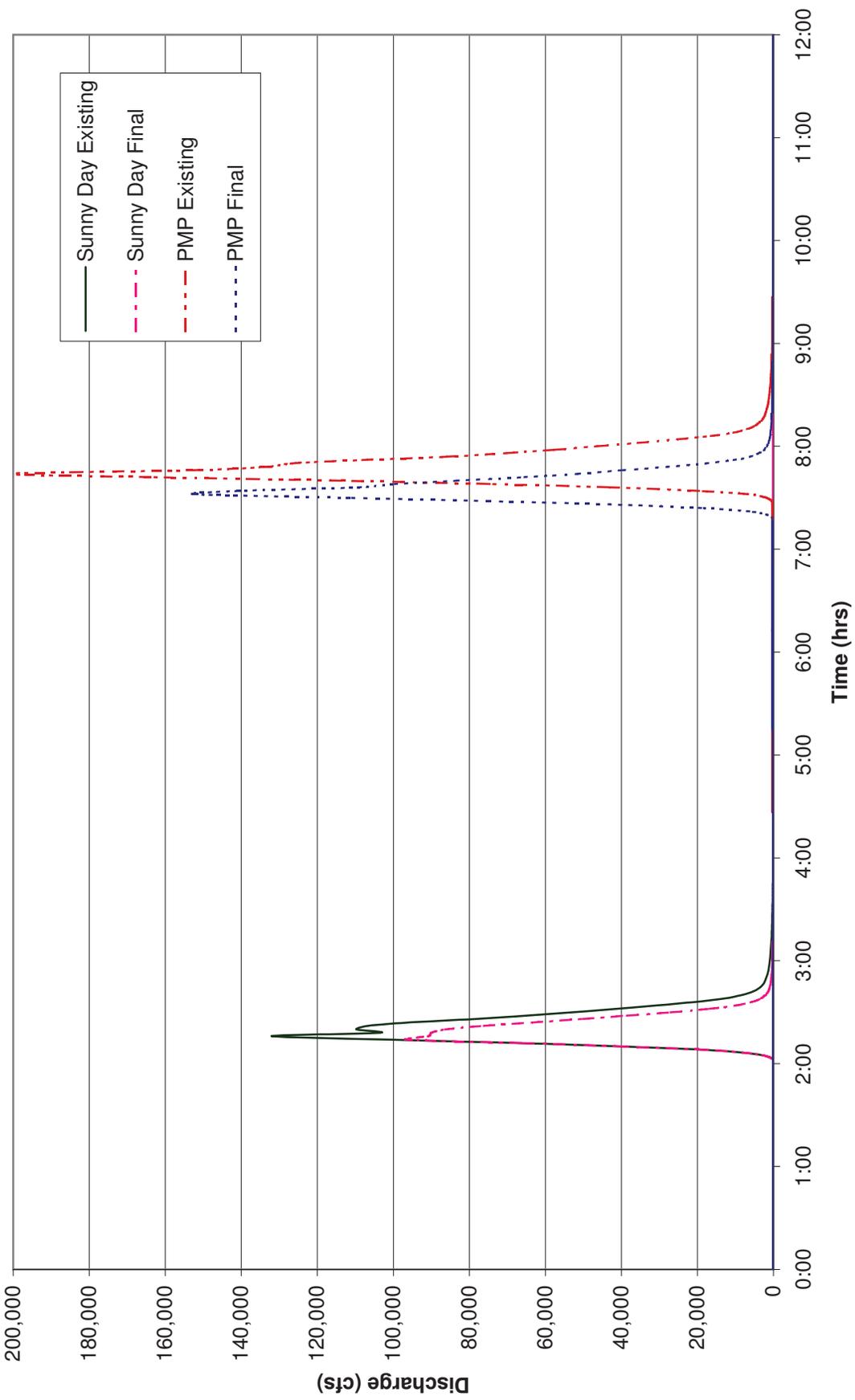


FIGURE 2
Flow Routing Outflows



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.

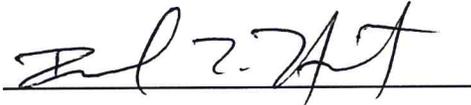
FORM D.1
EAP REVIEW VERIFICATION STATEMENT

Name of Dam: Landfill Runoff Collection Pond

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:



(Individual responsible for conducting
EAP Annual Review)

8-4-16

Date

Daniel L. Hunt
(printed name)


(EAP Coordinator)

8-4-16
Date

Paul de Lamerens
(printed name)

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.

**LANDFILL RUNOFF COLLECTION POND DAM
EMERGENCY ACTION PLAN (EAP)
CLIFTY CREEK POWER STATION**

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

Dam Name: Landfill Runoff Collection 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: _____

Appendix F

Supplementary Information

PERTINENT DATA¹

A. GENERAL	
Name of Dam	Landfill Runoff Collection Pond Dam
Name of Reservoir	Landfill Runoff Collection 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	High Hazard
Required Spillway Capacity (% PMF Design Flood)	
Year Constructed	1956
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)	504
Crest Width (feet)	26
Crest Length (feet)	1,550
Embankment Height (feet)	74
Upstream Slope	2.5:1
Downstream Slope	2.5:1
C. SPILLWAY SYSTEM	
1. Principal Spillway	
Type	Inclined reinforced box culvert with box riser.
Control Sill Elevation	485
Dimensions	6'x3'
Freeboard above Control Sill Elevation (feet)	19
Discharge during Design Storm (cfs)	760
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)	800
Freeboard at Peak of Design Flood (feet)	0.6
D. OUTLET WORKS (Drawdown Facility)	
Type	Circular concrete culvert
Dimensions	72" diameter
Control Structure (valve, gate, stoplogs, etc.)	
Inlet / Outlet Inverts (ft, NAVD 1988)	432 / 430
Discharge Capacity at Normal Pool (cfs)	0
E. RESERVOIR	
Normal Pool Elevation (Feet)	485
Reservoir Area at Normal Pool (Acres)	21.5
Estimated Storage at Normal Pool (Acre-feet)	117.5
Reservoir Area at Top of Dam (Acres)	85.7
Estimated Storage at Top of Dam (Acre-feet)	2,560
F. DRAINAGE BASIN	
Drainage Area (square miles)	Existing: 1.08 Final: 0.672
Description	A runoff collection pond for the coal combustion products landfill.

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