

**DTE Energy®**



***ADDENDUM A  
EMERGENCY ACTION PLAN  
FLY ASH BASIN FACILITY***

**EMERGENCY ACTION PLAN**

**INACTIVE BOTTOM ASH BASIN**

**MONROE POWER PLANT**

**Monroe, Michigan**

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## 1. NOTIFICATION PROCEDURES

The Communication Action Flowchart for the *Inactive Bottom Ash Basin* (Inactive BAB) is provided in the beginning of the Emergency Action Plan (EAP) for the Fly Ash Basin Facility along with the contact information. The Flowchart for the Inactive BAB is functionally the same as used for the EAP for the Fly Ash Basin Facility (**Figure 1 of the EAP for Fly Ash Basin Facility**). The alternate contacts and alternate communication methods are provided on **Table 1 of the EAP for Fly Ash Basin Facility**, following the notification Flowchart. This flowchart outlines the communication procedures between DTE Electric Company (DTE) personnel, Monroe County Emergency Management Division (MCEMD), the public and news media, as necessary.

The most current version of this flowchart (**Figure 1 of the EAP for Fly Ash Basin Facility**) shall be provided to those people that have responsibilities as soon as the individuals are identified. It is the responsibility of each individual to have the flowchart easily accessible. Further details of the responsibilities of each individual are presented in Section 5 and Section 6.

DTE and the MCEMD will coordinate press releases/conferences to the public.

## 2. STATEMENT OF PURPOSE

The purpose of this EAP is to serve as a resource by defining emergency response steps and actions for an event of catastrophic perimeter dike failure resulting in the sudden, rapid, and uncontrolled release to the environment of impounded coal combustion residuals (CCRs).

The primary goals of this EAP is to safeguard the lives and reduce the potential for damage to public resources and private property by mitigating potential or ongoing failure impacts around the perimeter of the Inactive BAB. The EAP has been prepared to be consistent with 40 Code of Federal Regulations (CFR) Part 257 (the “CCR Rule”) paragraph 73(a)(3). **Exhibit 1** contains the Emergency Action Plan Certification with the CCR Rule.

This EAP defines the notification and communication procedures, responsibilities of key personnel, and provides procedures to identify conditions that may endanger the Inactive BAB perimeter embankment in time to take mitigative and corrective actions and to notify the MCEMD of impending, or actual failure of the Inactive BAB perimeter embankment.

The potential failure mechanism will more likely be a lakeside breach of the perimeter embankment on the east side of The Inactive BAB. **Figure A** illustrates the aerial view of the Inactive BAB and general vicinity. A lakeside breach would cause a limited release of CCRs because the perimeter embankment is not high and the difference between the normal pool of water within the Inactive BAB is only several feet above the surface elevation of Lake Erie. Any CCR release in this area would have low energy and is expected to be subaqueous (occurring underwater).

No interference with navigation is expected from a release of CCRs. No humans are expected to be injured.

To provide a consistent approach to implementation of this EAP, the same response structure has been established as with the Fly Ash Basin Facility.

### 3. PROJECT DESCRIPTION

The Inactive BAB consists of a perimeter embankment constructed on the natural ground surface using primarily rock fill and earth spoils generated during construction of the Monroe Power Plant in the 1970s. The perimeter embankment is primarily used for containment of water formerly used for settling of coal combustion residuals (CCRs). The perimeter embankment has rip rap armor for shoreline erosion protection. The Inactive BAB is a Significant Hazard dam as the worst-case probable failure scenario would probably cause environmental impact but no loss of life (**Exhibit 2**).

The surface features surrounding the Inactive BAB are:

East: Lake Erie

South: Process Wastewater and Stormwater Basin

West: Plant discharge channel

North: Previously disposed CCR

The surface area of the Inactive BAB is approximately 104 acres. A plan of the Inactive BAB is shown on **Figure A**.

The spillway for the Inactive BAB is a steel sheet pile weir wall with an overflow elevation of 575 ft<sup>1</sup> and is located along the southwest portion of the outer dike.

A road along the top of the outer dike crest has a minimum width of approximately 12 feet and it is 20 feet or wider along the eastern side abutting Lake Erie, which was constructed with additional rock armament for shoreline protection.

There is a divider berm along the southern boundary of the Inactive BAB that is made of crushed rock that separates the Inactive BAB from the Process Wastewater and Stormwater Basin to the south. There are two culvert pipes through the southern separator berm to equalize water levels between the Inactive BAB and the Process Wastewater and Stormwater Basin (AECOM, 2017). There is also a designed low elevation area on the eastern end of the separator berm to allow overflow from The Inactive BAB into the Process Wastewater and Stormwater Basin and vice versa.

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<sup>1</sup> Elevations reported in EAP are in the National Geodetic Vertical Datum of 1929 (NGVD29).

The elevation of the bottom of the Inactive BAB, which is natural ground, is approximately 570 to 571 ft along the eastern, southern and southwestern portions of the perimeter embankment. When the Inactive BAB was active, the CCR was disposed from sluice pipes in the northern area; therefore, the top elevation of CCR within the Inactive BAB slopes downward from the northern area to the south. The deepest water area is located northeast of the southwest perimeter embankment with a ground elevation of 558 ft in a deeper “pool” area. The top elevation of the embankment is approximately 578 ft. The normal pool elevation is 575 ft with a maximum flood pool elevation of 577 ft (AECOM, 2018). The long-term average elevation of Lake Erie is 571.9 ft (US Army CoE, 2018).

## 4. EMERGENCY DETECTION, EVALUATION AND CLASSIFICATION

### 4.1 Detection

DTE has two ongoing monitoring programs in place to detect conditions that may create a potential for embankment failure. For this EAP, an “embankment failure” is defined as a catastrophic failure characterized by sudden, rapid and uncontrolled release of impounded water with CCR. This definition is consistent with FEMA (2013). The two ongoing monitoring programs are: (i) weekly monitoring; and (ii) an annual inspection. The purpose of these two monitoring programs is different, and they are explained below.

#### Weekly Monitoring of the Inactive BAB Perimeter Embankment

The Inactive BAB is inspected by Site Environmental employees every week of the year in accordance with the federal CCR Rule paragraph 83(a)(ii). The inspector is a “qualified person” under the CCR Rule.

Observations are recorded weekly and deficiencies are reported to the Shift Supervisor. The list of items inspected weekly is provided on the CCR Basin Inspection Form **Exhibit 3** and additionally in the NPDES – Operator Day Shift Log.

The purpose of weekly monitoring is to: (i) ensure that the Inactive BAB operates in accordance with its operational guidelines; and (ii) point out items that may require maintenance, further investigation or monitoring.

#### Annual Inspection Program

The Inactive BAB is inspected annually by a qualified professional engineer in accordance with the federal CCR Rule paragraph 83(b). The annual inspection is performed by a third-party consultant to DTE.

### 4.2 Evaluation and Classification

Results from inspections are categorized under two classifications: Failure Condition, or Potentially Imminent Failure Condition.

- Failure Condition – Covers scenarios where the embankment failure has occurred or is imminent (see **Figure B**).
- Potentially Imminent Failure Conditions – Covers the scenarios where the perimeter dike erodes through due to active wave action (**Figure C**).



## 5. GENERAL RESPONSIBILITIES UNDER THE EMERGENCY ACTION PLAN

In the event of an emergency condition, it is imperative to follow the prioritized communication paths outlined in the flowchart in **Figure 1 of the EAP for Fly Ash Basin Facility**. Following these pre-determined communication paths will provide effective implementation of the EAP, avoid possible omissions, and provide a coordinated response to an emergency condition.

The following outlines the general responsibilities of the key DTE personnel to respond to an emergency condition at the Inactive BAB. The contact information of people in EAP and their alternatives are summarized in **Table 1 of the EAP for Fly Ash Basin Facility**.

It is imperative that every participant of the EAP becomes familiar with the content of this EAP and roles and responsibilities of themselves and other participants. To promote effectiveness of the EAP and remind the participants of their roles and responsibilities, training exercises are performed once per year. More information on training exercises is provided in Section 7.14.

### 5.1 Emergency Action Plan Team

The EAP team is the core group of DTE Electric personnel and their contractors who would respond to an emergency condition at the Inactive BAB. Should an emergency condition arise, the Shift Supervisor (SS) and the Plant Director (also referred to as the EAP Coordinator) will initiate the National Incident Management System (NIMS) Incident Command System (ICS) protocols and notify key members of the EAP team who will also serve as members of the incident command staff. Contact information for the EAP team is presented in **Table 1 of the EAP for Fly Ash Basin Facility**. General roles and responsibilities for the EAP team, before they assume ICS roles, are described below. It is expected that the roles of some of the team will require a “deputy” or an “alternate” to continue to fulfill the responsibilities to provide the primary person while on breaks or to provide relief/time off.

#### Observer of the Emergency Condition

An Observer is anyone who notices an emergency condition or the potential for an emergency condition. An Observer must immediately inform the Shift Supervisor (SS) about the emergency condition, then continue to observe the emergency condition from a safe distance and report to the SS until instructed to stop by the SS.

#### Shift Supervisor (SS)

The SS is responsible for assessing conditions to determine whether a failure has occurred or is imminent and initiating emergency communication procedures with the EAP Coordinator and the MCEMD.

The decision whether to call 911 should be made jointly with the Plant Director based on the severity of the situation. The severity of the situation will depend on several factors such as when the incident has occurred, when it is identified, and when the initial action items are taken. The action will be determined with guidance from Section 4.2, Emergency Evaluation and Classification.

The SS will notify the 911 Emergency Call and National Response Center. The 911 operator will have knowledge of this EAP and will immediately notify the designated responders. When contacting 911, the following pre-scripted message must be used, but may be modified by the SS based on observed conditions. The SS will transmit the following message to the MCEMD:

*"This is (name) from the DTE Monroe Power Plant. I am calling to initiate the Monroe Inactive Bottom Ash Basin Emergency Action Plan. An embankment failure has occurred/is imminent on the south/east/west (direction) side. Please notify other Monroe County Emergency Monument Division and local emergency officials."*

#### Plant Director / EAP Coordinator

The Plant Director will serve as the EAP Coordinator is responsible for activating the EAP and ICS if notified by the SS that an emergency condition has occurred. The EAP Coordinator will serve as the main point of contact for the ICS Command Staff.

#### Plant Manager

The Plant Manager is responsible for working with the Plant Director/EAP Coordinator to assist with EAP implementation

#### Vice President of Environmental Management and Resources

The Vice President of EM&R is responsible for providing overall quality assurance and safety compliance with this EAP.

Fuel Supply Manager

The Fuel Supply Manager shall maintain on-site storage of key materials such as rip rap, clay, aggregate, etc.

Emergency Response Contractor

The Emergency Response Contractor provides comprehensive emergency response capabilities necessary to support implementation of this EAP by maintaining subcontracts and vendor agreements to allow for rapid mobilization.

Legal Department Director

The Legal Department Director is responsible for assessing legal implications that may arise from failure of the Inactive BAB embankment and providing input to the EAP Coordinator.

Regional Relations Manager

The Regional Relations Manager is responsible for communications with local government officials in coordination with the EAP Coordinator.

Environmental Compliance Supervisor

The Environmental Compliance Supervisor is responsible for assessing the implications of a failure at the Inactive BAB embankment, working with regulatory agencies on permit issues, and providing input to the Operations Section Chief and Incident Commander.

Corporate Security Coordinator

The Corporate Security Coordinator is responsible for providing continuous security of the Inactive BAB.

Public Information Officer (PIO)

The PIO is the point of contact for the media.

Engineering Support Organization (ESO)

The ESO is responsible for engineering service associated with the Inactive BAB EAP.

Geotechnical Engineer

The Geotechnical Engineer is a technical resource to the EAP team and will have an understanding of the specific technical attributes of the Inactive BAB and its environs. He/she will be a qualified professional engineer (P.E.) licensed in Michigan meeting the requirements of 40CFR257.53.

## 6. GENERAL RESPONSIBILITIES UNDER THE INCIDENT COMMAND SYSTEM

An emergency condition is defined as any condition or situation considered to have an actual or potential effect on the safety of individuals, safe operation of the system, production, facilities, or customers' premises and which cannot be corrected by the resources immediately available. In the case that an emergency condition exists, and an emergency response is necessary, this EAP incorporates the NIMS ICS methodology, structure, and titles. Per this methodology, pre-identified individuals have been trained in specific ICS roles, the chain-of-command, the line-of-succession, and delegations of authority to respond in the event of an emergency condition associated with the Inactive BAB. These roles and organization are depicted on **Figure 6 of the EAP for Fly Ash Basin Facility**.

In utilizing the ICS, DTE Electric grants decision-process and communication authority to the individuals identified in this EAP. Utilizing these pre-determined communication paths will facilitate effective implementation of the EAP, avoid possible omissions, and provide a coordinated response to an emergency. It is imperative to follow the prioritized communication paths outlined on **Figure 6** and detailed on **Figure 1 of the EAP for Fly Ash Basin Facility**. The most knowledgeable and qualified individual responding to the scene assumes the role of Incident Commander (IC). For an event regarding the Inactive BAB, the role of IC would be assumed by the SS, and if necessary the Plant Director once he has arrived onsite. All identified response personnel will support the IC in responding to the emergency condition at the Inactive BAB.

Throughout the response, the business units will routinely provide status updates to the senior leadership. If the size of the response exceeds the capability of available resources, the Executive Crisis Management Team (ECMT) will be activated to provide strategic direction, oversight, and coordination of the response of Corporate Crisis. The ECMT will implement the ICS structure, appointing the business unit's Crisis Executive as the IC, and assist with response to the event accordingly. The members of this team are typically corporate executives selected by a Crisis Executive. The DTE Energy Executive Committee may also serve as the ECMT, where not otherwise specified.

### 6.1 Incident Command Staff

#### Incident Commander (IC) / Shift Supervisor (SS)

Upon discovery that a failure has occurred or is imminent, and once the ICS has been enacted, the SS will assume the position of IC. The IC is technically not a part of either the General or Command Staff discussed below and is responsible for overall incident management, including:

- Immediately informing the EAP Coordinator about the emergency condition, following up with Inactive BAB Operations Personnel, and providing information back to the EAP Coordinator as appropriate.
- Calling the MCEMD to inform them of emergency condition.
- Establishing immediate priorities for the incident.
- Ensuring incident safety.
- Establishing an Incident Command Post or Staging Area for incoming law enforcement.
- Determining incident goals and objectives.
- Completing a damage assessment of the Inactive BAB when a failure has occurred.
- Establishing the level of organization needed, and continuously monitoring the operation and effectiveness of that organization.
- Obtaining a briefing from the prior IC and/or assessing the situation.
- Managing planning meetings as required.
- Approving and implementing the Incident Action Plan (IAP).
- Coordinating the activities of the Command and General Staff.
- Authorizing the release of information to the news media.
- Ordering demobilization of the incident when appropriate.
- Ensuring incident after-action reviews are conducted and complete.

#### EAP Coordinator / Plant Director

The EAP Coordinator is responsible for activating this EAP and ICS if notified by the SS that an emergency condition has occurred. The EAP Coordinator is a deputy IC and is also responsible for contacting the incident command staff, the Corporate Environmental Crisis Management team, and the regulatory agencies necessary to coordinate onsite and offsite mitigation activities. The EAP Coordinator will serve as the main point of contact for external emergency management agencies and is responsible for the following:

- Updating DTE Electric personnel on the mitigation progress.
- Assisting the SS in preparing IAP status reports for submittal to the appropriate authorities.
- Maintaining a list of assisting and cooperating agencies and agency representatives.
- Coordinating inter-agency contacts.
- Monitoring incident operations to identify current or potential inter-organizational problems.

- Participating in planning meetings, providing current resource status, including limitations and capabilities of agency resources.
- Facilitating EAP progress meetings as necessary to decide on the content of information that should be shared with the media. At a minimum, the following DTE Electric personnel should attend the EAP progress meetings:
  - Plant Manager
  - Vice President of Environmental Management and Resources
  - Fuel Supply Manager
  - Environmental Response Contractor (if utilized)
  - Legal Department Director
  - Regional Relations Manager
  - Environmental Compliance Supervisor
  - Corporate Security Coordinator
  - Public Information Officer
  - Engineering Support Organization
  - Geotechnical Engineer
- Provide agency-specific demobilization information and requirements.

#### Regional EAP Director

The Regional EAP Director must stay up to date on the situation through close coordination with the EAP Coordinator and is responsible for informing senior DTE Electric Management and the ECMT of conditions and expediting mitigation and cleanup activities, when necessary.

#### Command Staff

The Command Staff is assigned to carry out staff functions needed to support the IC. These functions include public information, interagency liaison, incident safety, and legal ramifications. In the context of large or complex incidents, Command Staff members may need one or more assistants to help manage their workloads. Each Command Staff member is responsible for organizing his or her assistant for maximum efficiency. These Command Staff position responsibilities are summarized below.

#### Public Information Officer

The PIO is the point of contact for the media. Content that will be shared with the media must be reviewed and approved in advance by the IC and the EAP Coordinator as well as the Regional EAP Director. The PIO is responsible for preparing media content and facilitating

the internal review and approval process, communicating with the media, and arranging the media response area and related logistics. The PIO is responsible for:

- Determining, according to the direction from the IC, any limits on information release.
- Developing accurate, accessible, and timely information for use in press/media briefings.
- Obtaining IC's approval of news releases.
- Conducting periodic media briefings.
- Arranging for tours and other interviews or briefings that may be required.
- Monitoring and forwarding media information that may be useful to incident planning.
- Maintaining current information, summaries, and/or displays on the incident.
- Making information about the incident available to incident personnel.
- Participating in the planning meeting.

#### Liaison Officer / Regional Relations Manager

The Regional Relations Manager will serve as the Liaison Officer and is responsible for:

- Acting as a point of contact for agency representatives.
- Acting as a point of contact for local government officials.
- Maintaining a list of assisting and cooperating agencies and agency representatives.
- Assisting in setting up and coordinating interagency contacts.
- Monitoring incident operations to identify current or potential interorganizational problems.
- Participating in planning meetings, providing current resource status, including limitations and capabilities of agency resources.
- Providing agency-specific demobilization information and requirements.

#### Safety Officer

The Safety Officer is responsible for:

- Identifying and mitigating hazardous situations.
- Ensuring safety messages and briefings are made.
- Exercising emergency authority to stop and prevent unsafe acts.
- Reviewing the IAP for safety implications.



- Assigning assistants qualified to evaluate special hazards.
- Initiating preliminary investigation of accidents within the incident area.
- Reviewing and approving the Medical Plan.
- Participating in planning meetings.

#### Legal Officer / Legal Department Director

The Legal Department Director will serve as the Legal Officer and is responsible for assessing legal implications that occur from failure of the Inactive BAB embankment and provide input to the EAP Coordinator.

#### General Staff

The General Staff is responsible for the functional aspects of the incident command structure. Typically, the General Staff consists of Operations, Planning, Logistics, and Finance/Administration Section Chiefs. General guidelines related to the General Staff positions include the following:

- Only one person will be designated to lead each General Staff position. Positions should not be combined.
- General Staff positions may be filled by a qualified person from any agency or organization.
- Members of the general staff report directly to the IC. If a General Staff position is not activated, the IC will have the responsibility for that functional activity.
- Deputy positions may be established for each of the General Staff positions. Deputies are individuals fully qualified to fill the primary position.
- General Staff members may exchange information with any person within the organization. Direction takes place through the chain of command; this is an important concept in ICS.

#### Operations Section Chief / Plant Production Manager

The Operations Section Chief will manage all field operations, including oversight of all tactical resources and types of work being directed from the command post. He or she assists in developing the IAP by providing the strategies and tactics that the field would like to use to achieve the established incident objectives and oversees operational work and resources for the execution of the IAP. Specific responsibilities include:

- Participating in preplanning activities as requested by the IC.
- Obtaining briefings from Emergency Operations Center (EOC) IC and/or from initial Planning Section Chief.
- Documenting incident status summary information and advising the IC and other staff of any significant changes in incident status or conditions.

- Staffing and organizing his or her section, as appropriate, maintaining span of control (3-7 subordinates reporting to one supervisor).
- Consulting with the IC regarding the length of operational period and scheduling staffing for multiple operational periods, if necessary.
- Receiving an update on the staffed ICS positions within the response organization, an overview of the status of the incident, and prioritized incident objectives.
- Ensuring incident objectives are SMART (Specific, Measurable, Achievable/ Action Orientated, Realistic, and Time-Bound).
- Providing any additional information or concerns regarding operational resources and assigned work as appropriate
- Briefing all assigned resources within the Operations Section on the objectives/ tasks.

#### Fuel Supply Manager

The Fuel Supply Manager is responsible for performing onsite mitigation and cleanup activities as directed by the IC. It is the responsibility of the Fuel Supply Manager to assess the scale of the mitigation and cleanup activities required and inform the IC whether the mitigation and cleanup activities can be performed in-house by DTE Electric resources or if outside resources are needed from the emergency response contractor.

#### Environmental Compliance Supervisor

The Environmental Compliance Supervisor will coordinate all water quality, hydraulic, and biological monitoring. The sampling will be conducted either by DTE Electric personnel or their representative, as directed by the EAP Coordinator.

#### Emergency Response Contractor

The emergency response contractor is responsible for implementing mitigation and cleanup activities as directed by the EAP Coordinator/IC. The emergency response contractor responsibilities include:

- Resource management
- Twice daily check-ins
- Review/projections of materials and equipment
- Staffing resiliency
- Subcontractor coordination
- Daily/weekly/monthly reporting
- Data management

### Corporate Security Coordinator

The Corporate Security Coordinator is responsible for providing continuous security of the Inactive BAB and offsite spill area and coordinating the work with local and state police departments.

### Finance Section Chief / Fossil Generation (FG) Controller

The FG Controller will serve as the Finance/Administration Section Chief and is responsible for managing all financial aspects of an incident. Not all incidents will require a Finance/Administration Section; only when the involved agencies have a specific need for finance services will the Section be activated. Major responsibilities of the Finance Section Chief/FG Controller are:

- Managing all financial aspects of an incident.
- Providing financial and cost analysis information as requested.
- Ensuring compensation and claims functions are being addressed relative to the incident.
- Gathering pertinent information from briefings with responsible agencies.
- Developing an operating plan for the Finance/Administration Section and fill Section supply and support needs.
- Determining the need to set up and operate an incident commissary.
- Meeting with assisting and cooperating agency representatives as needed.
- Maintaining daily contact with agency(s) headquarters on finance matters.
- Verifying personnel time records are completed accurately and transmitted to home agencies.
- Ensuring all obligation documents initiated at the incident are properly prepared and completed.
- Briefing agency administrative personnel on all incident-related financial issues needing attention or follow-up.

### Corporate Supply Chain Manager

The Corporate Supply Chain Manager will assist the finance section chief during an emergency response.

### Planning Section Chief / MPP FG

The MPP FG will serve as the Planning Section Chief and is responsible for providing planning services for the incident. Under the direction of the Planning Section Chief, the Planning Section collects situation and resource status information, evaluates it, and processes the information for use in developing IAP. Dissemination of information can be in

the form of the IAP, in formal briefings, or through map and status board displays. Major responsibilities of the Planning Section Chief are:

- Collecting and managing all incident-relevant operational data.
- Supervising preparation of the Incident Action Plan.
- Providing input to the IC and Operation Sections Chief in preparing the IAP.
- Incorporating the Traffic, Medical, and Communications Plan and other supporting materials into the IAP.
- Conducting and facilitating planning meetings.
- Reassigning personnel within the ICS organization.
- Compiling and displaying incident status information.
- Establishing information requirements and reporting schedules for units (ex. Resources, and Situation Units).
- Determining the need for specialized resources.
- Establishing specialized data collections systems as necessary (e.g., weather reports).
- Providing periodic predictions on incident potential.
- Reporting significant changes in incident status.
- Overseeing preparation of the Demobilization Plan.
- Completing a damage assessment with the SS.

#### Logistics Section Chief / FG Administration

The FG Administration will serve as the Logistics Section Chief and provides all incident support needs. The Logistics Section is responsible for providing facilities, transportation, communications, supplies, equipment maintenance and fueling, food services, medical services for responders, and all off-incident resources. Major responsibilities of the Logistics Section Chief are:

- Supplying facilities, transportation, communications, supplies, equipment maintenance and fueling, food services, medical services for responders, all off-incident resources, and hotel accommodations if necessary.
- Preparing financial and cost analysis information as requested.
- Ensuring compensation and claims functions are being addressed relative to the incident.
- Gathering pertinent information from briefings with responsible organizations/agencies.

- Developing an operating plan for the Finance/Administration Section and fill Section supply and support needs.
- Determining the need to set up and operate an incident commissary.
- Maintaining daily contact with headquarters on finance matters.
- Ensuring personnel time records are completed accurately.
- Providing input to the IAP.

## 7. PREPAREDNESS

### 7.1 Overview

Preparedness actions are taken to avoid uncontrolled release of water or CCR from the Inactive BAB or to help reduce the effects of such release and facilitate response in a timely manner.

Preparedness actions are taken both before and following the development of emergency conditions. DTE has a weekly and a long-term monitoring program detect conditions that may create the potential for embankment failure if not addressed in a timely manner. Details about the weekly and annual monitoring programs are provided in Section 4.1.

This section of the EAP addresses preparedness actions taken to prepare for an emergency and respond after the development of an emergency condition. These actions are as follows:

- 1) Retain a contract(s) with Environmental Response Contractor(s) (ERC) and obtain and maintain minimum necessary equipment and materials to perform emergency on-site and off-site clean-up and conduct emergency repairs to avoid further failure or mitigate the effects of a failure if such condition arises.
- 2) Provide reporting for ongoing mitigation and clean-up activities.
- 3) Conduct periodic training to improve EAP implementation efficiency and effectiveness.
- 4) If necessary, update periodic training to improve EAP implementation efficiency and effectiveness.
- 5) If necessary, update the EAP on an annual basis.

Additional guidance regarding the ICS and emergency condition response coordination for a lake side breach is provided in the EAP for Fly Ash Basin (FAB) Facility.

### 7.2 Communication

The primary source of communication will be the existing local emergency radio system. This will be coordinated with the MCEMD. Radios will be maintained by the Fuel Supply Department. Secondary communication methods will be conducted with cell phones and email as appropriate.

Additional communication resources that are a part of the ICS are provided in Section 6 of the Fly Ash Basin Facility EAP.

### 7.3 **Safety**

Pursuant to requirements under the Michigan Occupational Safety and Health Administration, a site-specific HASP addressing the potential hazards associated with bottom ash exposure as well as other potential hazards (e.g., heavy equipment traffic) must be reviewed and acknowledged by the emergency response contractor employees and any subcontractors who will work on site. Additionally, subcontractors of the emergency response contractor will also prepare their own HASPs specific to their roles and responsibilities onsite. Anticipated safety procedures include, but are not limited to, air monitoring and Level D personal protection. Level D personal protection consists of the following personal protection equipment:

- Hard hat
- Safety glasses
- Hearing protection (if appropriate)
- Reflective vest/clothing
- Steel-toed boots

Based on the task, dust masks and air purifying respirators equipped with High Efficiency Particulate Air filters may be used to address potential inhalation exposures. Tyvek suits and gloves will also be necessary to reduce the potential for dermal contact with the fly ash. Per the MIOSHA (Michigan Occupational Safety and Health Administration) R408.40636 construction safety standard and the OSHA (Occupational Safety and Health Administration) Safety and Health Regulations for Construction standard 1926.106, personal flotation devices will be required around water-based operations. All emergency response contractor subcontractors will be required to ensure their employees are fit to perform assigned activities.

Prior to initiating work, safety protocols (e.g., job hazard analyses, safe work practices, job safety briefing) based on activity-specific elements will be reviewed by the emergency response contractor and their subcontractors working onsite. Job safety briefings will be completed daily and additional safety briefings will be completed as necessary when conditions change or when new site personnel arrive.

### 7.4 **IAP Status Reports**

The purpose of the IAP status reports is providing the EAP Team with the status of emergency and on-going mitigation and clean-up activities. Status reports will be prepared by the IC/SS and will be provided to MCEMD Director and other local and state

government officials, as necessary. The IC/SS will address the comments from the MCEMD Director and incorporate them in the next IAP status report.

The frequency of IAP status reports will be decided based on discussions with the MCEMD Director along with the time frame within which comments shall be provided.

Status reports will provide information on the situation so that DTE and the MCEMD and other emergency management officials can modify the course of action accordingly. The MCEMD Director will declare when and how the emergency situation will be terminated at the impacted areas beyond the limits of the Inactive BAB. The EAP Coordinator will declare when and how the emergency situation will be terminated at the Inactive BAB with the input from rest of the DTE personnel involved in the EAP.

#### **7.5 Access to the Site**

Access to the site is available from two access roads on the north side of the Inactive BAB. The locations of these roads are shown on **Figure A**.

#### **7.6 Response during Periods of Darkness**

If needed, the Fuel Supply Department will supply portable/alternative lighting and power sources during periods of darkness, or other scenarios where such equipment is deemed necessary.

#### **7.7 Response during Weekends and Holidays**

The Plant is staffed 24 hours per day, 365 days per year. These personnel will be trained on the use of the EAP.

#### **7.8 Response during Periods of Adverse Weather**

If an emergency condition arises, the response will be as fast as the weather conditions would permit.

#### **7.9 Availability and Use of Alternative Systems of Communication**

The existing local emergency radio system will be utilized. This will be coordinated with the MCEMD. Radios will be maintained by Fuel Supply Department.

Alternate communication methods will be conducted with cell phones and email as appropriate.



## **7.10 Actions to Mitigate Breaches and Impede Flows**

Based on initial reconnaissance and field conditions, the emergency response contractor may implement rapid breach mitigation through placement of aggregate-filled nylon bags within the perimeter dike breach, including using industrial helicopters, if needed. This will mitigate the initial breach and reduce risks to release additional ash to Lake Erie.

Several advanced response mechanisms are available for reducing impacts on human health and the environment; however, the key to effectively responding to the dike failure is careful selection and proper use of the equipment and materials best suited to the conditions at the release site.

In the event of a breach, with approval from the IC, the emergency response contractor will develop situation-specific procedural refinements based on Standard Operating Procedures to execute operations. As the situation allows, the emergency response contractor will provide strategic input from the field relevant to transitioning the situation from emergency response to the post-response phase.

## **7.11 Emergency Supplies and Resources**

The ERC will identify resources that could be used during mitigation and clean-up activities and will have contracts in place to expedite implementation of mitigation and clean-up activities.

### **7.11.1 Contractors**

In case of an emergency, and if directed by the EAP Coordinator, the ERC will act as the general contractor and will subcontract the individual components of the mitigation and clean-up activities, as necessary. The ERC has established contracts with subcontractors and vendors to facilitate implementation of the EAP.

### **7.11.2 Supplies and Resources**

#### **Soil & Aggregate Resources**

The ERC will identify aggregate resources that should be stockpiled on site and identify sources for additional materials. Mitigation will likely include the use of imported soils from adjacent DTE property and/or rock sourced from local quarries. Alternatively, DTE may choose to pre-stage rock stockpiles near the site.

### Staging Area

The location of possible staging areas for contractor equipment and supplies will be based on the exact location of the failure and extent of the impact areas. Potential locations for these staging areas are provided in **Figure A**. The off-site staging areas can be adjusted as the mitigation and clean-up activities progress but must be coordinated with local agencies through the EAP Coordinator.

### **7.12 Media Response Facility**

The media response facility is at the DTE Energy Monroe Activity Center located at 2035 Fix Road, Monroe, Michigan. Corporate Communication and PIO will provide and setup the necessary tools to have a press conference.

### **7.13 Unified Command Center and Emergency Communication**

The initial command center for the response will be at MPP. It is up to the EAP Coordinator to make the decision on moving the unified command center to the Emergency Operations Center (EOC) at the Monroe County Emergency Management Office. The EOC is located at 987 S. Raisinville Road, Monroe, Michigan, 48161. The EOC can accommodate more than 60 people and is equipped with a kitchen area and state-of-the-art communication tools.

Public notifications, weather monitoring and other emergency messaging are handled at the EOC. MCEMD utilizes the Monroe County Alert Notification System (MCANS), which allows use of multiple means of communication for residents and emergency responders. Methods of communications include home phones, mobile phones, Voice over IP (VOIP) landlines, e-mail and/or text messaging.

### **7.14 Training Exercises**

The main purpose of conducting training exercises is to improve the effectiveness of the EAP. Regularly executed training exercises will remind everybody involved in the EAP of their role and responsibilities, and identify additional items and procedures that will allow more effective communication and execution of the EAP.

The EAP Coordinator is responsible for establishing and organizing the training exercises. Lessons learned from these training exercises will be incorporated in the EAP and redistributed to EAP participants by the EAP Coordinator. Lessons learned will be immediately addressed and any program updates will be completed within 90 days of the exercise. The EAP Coordinator will prepare the training exercise logs and include them in the revised EAP as **Exhibit 5** or maintained as part of the Tabletop Exercise documentation. The training exercise logs will include at a minimum:

- 1) list of EAP participants involved in the training exercise;
- 2) the type of training exercise;
- 3) emergency conditions that were considered;
- 4) lessons learned; and
- 5) meeting minutes.

The following types of training will be conducted:

Orientation Seminar. The first exercise that The EAP Coordinator will organize is the “Orientation Seminar”, which will be attended at a minimum by the EAP Coordinator and the MCEMD Director. The purpose of this meeting is to enable each participant to become familiar with the roles and responsibilities, and procedures involved.

Tabletop Exercises. The EAP Coordinator will implement at a minimum one “Tabletop Exercise” annually. The Tabletop Exercise is a higher level exercise than the Drill. The Tabletop Exercise involves a meeting with MCEMD and other emergency management agencies as necessary in a conference room environment. The exercise begins with the description of a simulated event and proceeds with discussions by the participants to evaluate the EAP and response procedures and to resolve concerns regarding coordination and responsibilities.

## 7.15 Updating the EAP

As the owner and sole operator of the MPP, DTE is the EAP owner and takes full responsibility for the execution of the EAP. The EAP will be revised periodically to incorporate updated or more detailed information and improvements based on lessons learned. The key communication resources for the EAP listed below must be kept up to date in order to be effective:

- Fly Ash Basin Facility EAP Notification/Communication Action Flowchart (**Figure 1 of EAP for Fly Ash Basin Facility**)
- DTE EAP Team Contact information (**Table 1 of the EAP for Fly Ash Basin Facility**)

The EAP will be reviewed once a year. This review will consider personnel changes in positions established in the EAP, and changes to communication systems such as telephone numbers or radio frequencies. The revised EAP will be updated with the revision date. This

will ensure other EAP participants that the existing EAP is up to date and has been reviewed in consideration of current operational procedures. Additional revisions may be necessary as part of the outcomes and lessons learned from exercises.

As part of the EAP annual review, DTE will document any revisions to the EAP for Inactive BAB Facility with a Record of Revisions, **Exhibit 6**.

## 8. POTENTIAL IMPACT AREAS

The most probable failure mechanism is judged to be a breach of the containment along the Lake Erie (eastern) side of the Inactive BAB. A breach would result in release of CCRs into Lake Erie (a “lakeside breach”). This area is north of the eastern end of the separator berm and south of the current (2018) maximum extent of CCR disposal. The most probable failure location is shown on **Figure A**. It is judged that this area will have the highest energy during a high wind storm that could potentially create a breach caused by the force of Lake Erie waves. A cross section of the outer dike at this location is shown on **Figure B**.

The other areas of the perimeter embankment are shielded from high energy destructive mechanisms by either the Process Wastewater and Stormwater Basin or the discharge canal. There is no dike to the north and no surface water/Lake Erie, therefore, a breach to the north is not considered.

A lakeside breach would cause a limited release of CCRs because the perimeter embankment is not high and the difference between the normal pool of water within the Inactive BAB is only several feet above the surface elevation of Lake Erie. Any CCR release in this area would have low energy and is expected to be subaqueous (occurring underwater).

No interference with navigation is expected from a release of CCRs. No humans are expected to be injured.

## 9. REFERENCES

AECOM, “Inactive Bottom Ash Impoundment CCR Rule Compliance Project, Annual Inspection Report- 2017”, June 28, 2017.

AECOM, “Safety Factor Assessment Report, Area 15, DTE Monroe Power Plant”, April 2018.

FEMA (2013), “Emergency Action Planning for Dam Owners – Federal Guidelines for Dam Safety” Federal Emergency Management Agency (FEMA)

US Army Corps of Engineers, May 2018 Great Lakes Water Level Summary, May 2018.

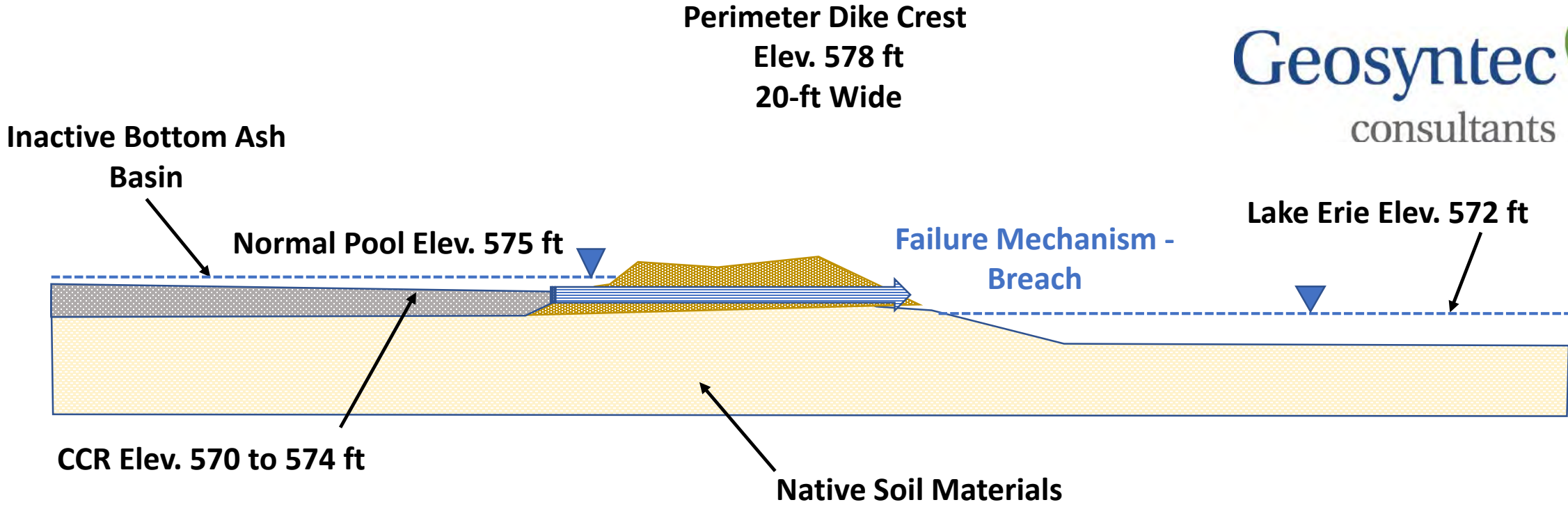
DTE Energy, “Emergency Action Plan Ash Basin Facility Monroe Power Plant”, August 2017.

## Figures

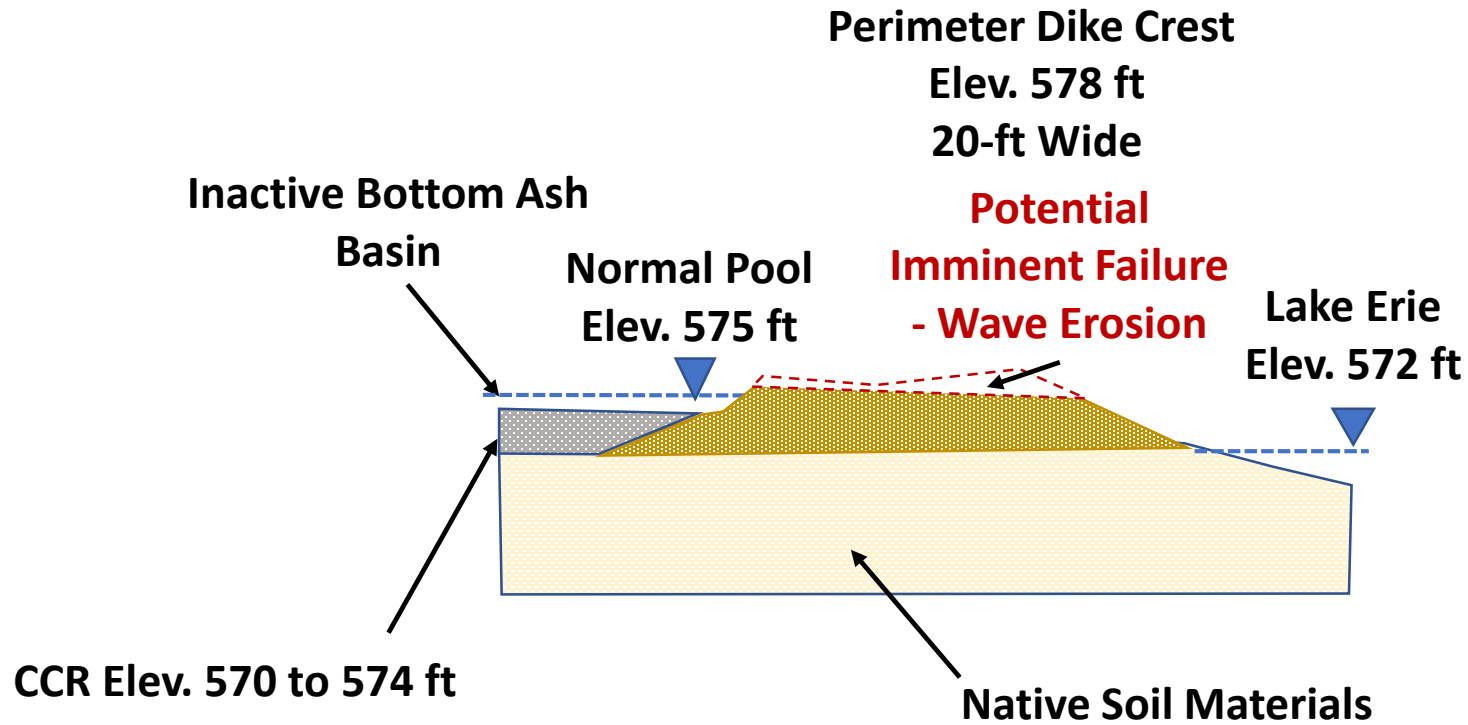


**Figure A:**  
**Site Plan**  
**Inactive Bottom Ash Basin**  
**Emergency Action Plan**  
**Monroe Power Plant**  
**Monroe, Michigan**





**Figure B:**  
**Cross Section A-A'**  
**Inactive Bottom Ash Basin**  
**Emergency Action Plan**  
**Monroe Power Plant**  
**Monroe, Michigan**



**Figure C:**  
**Potential Imminent Failure Condition**  
**Inactive Bottom Ash Basin**  
**Emergency Action Plan**  
**Monroe Power Plant**  
**Monroe, Michigan**

**Exhibit 1:**  
**Emergency Action Plan Professional Engineer Certification**  
Inactive Bottom Ash Basin Emergency Action Plan  
Monroe Power Plant  
Monroe, Michigan

15 October 2018

*Via Email*

Mr. William Neal, P.E.  
Technological Specialist  
DTE Electric Company  
One Energy Plaza  
Detroit, MI 48226

**Subject: Emergency Action Plan Certification  
Monroe Power Plant Inactive Bottom Ash Basin  
Monroe, MI**

Dear Mr. Neal:

This letter presents Geosyntec Consultants' (Geosyntec's) certification for the Emergency Action Plan (EAP) for DTE Electric Company's (DTE's) Monroe Power Plant Inactive Bottom Ash Basin.

## **BACKGROUND**

A certification of the EAP for the Inactive Bottom Ash Basin is required under the United States Environmental Protection Agency (USEPA) Coal Combustion Residual Rule (CCR Rule) 40 CFR 257.73(a)(3)(iv), published on 17 April 2015. Under the CCR Rule, the Inactive Bottom Ash Basin an "existing surface impoundment" and the EAP must be prepared for an existing surface impoundment that has been identified as either a High Hazard Potential or Significant Hazard Potential under 40 CFR 257.73(a)(2). The EAP must be assessed and certified by a Qualified Professional Engineer in accordance with 40 CFR 257.73(a)(3)(iv).

In April 2018, DTE identified that the Inactive Bottom Ash Basin had a Significant Hazard Potential in accordance with 40 CFR 257.73(a)(2). Hazard potential certification was placed in the operating record and posted on a publicly accessible website in accordance with the CCR Rule.

The EAP was prepared by Geosyntec Consultants (Geosyntec).

Mr. William Neal  
15 October 2018  
Page 2

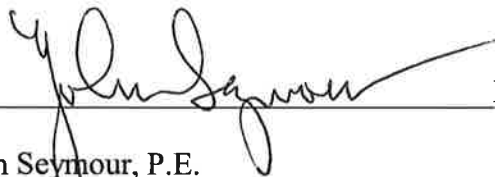
## QUALIFICATIONS OF LICENSED PROFESSIONAL ENGINEER

John Seymour is a qualified licensed professional engineer with over 30 years of experience in civil and geotechnical engineering associated with dams. He has provided engineering services for the DTE Monroe since 2008 and has extensive knowledge of the history of the facility, its design, operational components, and knowledge of the surrounding geographical, cultural and environmental features.

## CERTIFICATION

I, John Seymour, am a qualified licensed professional engineer in Michigan. I have evaluated the Inactive Bottom Ash Basin EAP and I certify that the EAP is in accordance with the requirements of 40 CFR 257.73(a)(3).

Certified by:



Date 15 Oct 2018

---

John Seymour, P.E.  
Michigan License Number 620103356  
Senior Principal Engineer

Copy to: Bryan Reid (DTE)

**Exhibit 2:**  
**Initial Hazard Potential Assessment**  
Inactive Bottom Ash Basin Emergency Action Plan  
Monroe Power Plant  
Monroe, Michigan

April 12, 2018

Mr. Robert Lee  
DTE Electric Company  
One Energy Plaza  
Detroit, MI 48226

**RE: CCR Impoundment Hazard Potential Classification Assessment: Inactive Bottom Ash Impoundment (Area 15), Monroe Power Plant, DTE Energy, Monroe, Michigan**

Dear Mr. Lee:

As requested by DTE Energy (DTE), AECOM is pleased to present the result of our initial hazard potential classification assessment for the Monroe Power Plant Inactive Bottom Ash Impoundment (Area 15).

## **Background**

On April 17, 2015, the US Environmental Protection Agency (USEPA) published rule 40 CFR Part 257 titled Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule). The CCR Rule requires that an initial hazard potential classification assessment for an inactive CCR surface impoundment be completed by April 17, 2018. 40 CFR §257.100 (e) specifically states:

### *40 CFR §257.100(e)(3)*

- *(v) No later than April 17, 2018, complete the initial hazard potential classification, structural stability, and safety factor assessments as set forth by § 257.73(a)(2), (b), (d), (e), and (f).*

### *40 CFR §257.73(a)(2)*

- *(2) Periodic hazard potential classification assessments. (i) The owner or operator of the CCR unit must conduct initial and periodic hazard potential classification assessments of the CCR unit according to the timeframes specified in paragraph (f) of this section. The owner or operator must document the hazard potential classification of each CCR unit as either a high hazard potential CCR surface impoundment, a significant hazard potential CCR surface impoundment, or a low hazard potential CCR surface impoundment. The owner or operator must also document the basis for each hazard potential classification.*  
  
*(ii) The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the initial hazard potential classification and each subsequent periodic classification specified in paragraph (a)(2)(i) of this section was conducted in accordance with the requirements of this section.*

Area 15 is an inactive CCR surface impoundment as defined by 40 CFR §257.53. It consists of a bottom ash impoundment bordered by Lake Erie to the east and the Plant cooling water discharge channel to the west, which discharges cooling water from the Monroe coal power plant to the lake. The impoundment is separated from the cooling water discharge channel and Lake Erie by a perimeter dike. The southern boundary of the ash pond is formed by an earthen divider berm constructed of aggregate material, which separates the ash pond from the process waste and stormwater basin to the south. The normal water surface elevation of Area 15 is approximately 575 ft (NAVD88) and of Lake Erie/the cooling water discharge channel is 572 ft (NAVD88). Industrial process water and storm water discharge from Area 15 into the cooling water discharge channel via an overflow weir.

## Hazard Classification

In AECOM's opinion the CCR unit at the Monroe Power Plant should be classified as a **significant** hazard potential CCR surface impoundment.

The definitions section of the CCR Rule states the following (40 CFR §257.53):

*Hazard potential classification means the possible adverse incremental consequences that result from the release of water or stored contents due to failure of the diked CCR surface impoundment or mis-operation of the diked CCR surface impoundment or its appurtenances. The hazardous potential classifications include high hazard potential CCR surface impoundment, significant hazard potential CCR surface impoundment, and low hazard potential CCR surface impoundment, which terms mean:*

*(1) High hazard potential CCR surface impoundment means a diked surface impoundment where failure or misoperation will probably cause loss of human life.*

*(2) Low hazard potential CCR surface impoundment means a diked surface impoundment where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the surface impoundment owner's property.*

*(3) Significant hazard potential CCR surface impoundment means a diked surface impoundment where failure or misoperation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.*

The reason Area 15 is **not** a **high** hazard potential CCR surface impoundment is that it is unlikely that failure of the unit and a resulting release of the impounded water would result in the loss of human life. The impounded water would either be released directly into Lake Erie to the east or into the cooling water discharge channel to the west which would then drain directly into Lake Erie. Neither scenario is likely to cause loss of human life.

The reason Area 15 is **not** a **low** hazard potential CCR surface impoundment is that losses due to an uncontrolled release would not be principally limited to DTE's property. As stated above, the impounded water would either be released directly into Lake Erie to the east or into the cooling water discharge channel to the west which would then drain directly into Lake Erie.

There are, however, environmental concerns with a release from the impoundment. A release of water from the impoundment into Lake Erie would likely be accompanied by a release of at least some of the CCR residuals from the impoundment. This would result in a considerable amount of siltation to the lake and environmental damage. This is the primary reason AECOM regards the unit as a significant hazard potential CCR impoundment.

## Conclusion

It is AECOM's opinion Area 15 at the Monroe Power Plant should be classified as a significant hazard potential CCR surface impoundment.

AECOM appreciates this opportunity to provide assistance to DTE at the Monroe Power Plant. Please contact us if you have any questions.

Sincerely,

Scott G. Hutsell, PE  
Senior Project Manager

cc: Mark Rokoff, P.E.



### Professional Engineer Certification

I, Scott G. Hutsell, being a Registered Professional Engineer, in accordance with the Michigan Professional Engineer's Registration, do hereby certify to the best of my knowledge, information and belief, that this Initial Hazard Potential Classification Assessment, dated April 12, 2018, meets the requirements of 40 C.F.R. § 257.73, is true and correct, and has been prepared in accordance with generally accepted good engineering practices.

SIGNATURE



DATE

04/16/18

**Exhibit 3:**

**CCR Basin Inspection Form**

**Inactive Bottom Ash Basin Emergency Action Plan**

**Monroe Power Plant**

**Monroe, Michigan**



**WEEKLY INSPECTION REPORT - CCR SURFACE IMPOUNDMENT**

<b>Basin Name: Monroe Power Plant Bottom Ash Basin–Area 15</b>	<b>Date &amp; Time:</b>
<b>Owner/Operator: DTE Energy</b>	<b>Weather:</b>
<b>Qualified Person:</b>	<b>Precipitation (since last inspection):</b>

**I. SURFACE IMPOUNDMENT** Description of Operation: Inactive CCR Impoundment with continuous flow of process water.

ITEM	Yes	No	Description (indicate problems on map)
1. Are there problems with the rip rap on the outside edge of the east cell that reduce erosion protection?			If yes, describe (size of area, location, severity, etc.)
2. Is there any erosion around the impoundment?			If yes, describe (size of area, location, severity, etc.)
3. Is there excessive CCR build-up above the water surface?			There is a large area of bottom ash deposited above water surface on the north side of the basin. This is unchanged since ceasing placement of CCR material in basin.

**II. CREST** Description of Crest: Flat unpaved surface on all surfaces except the south side. South side is an aggregate wall with a low point designed to prevent overtopping of the external walls of the impoundment/ basin.

ITEM	Yes	No	Description (indicate problems on map)
1. Any trees or undesired vegetation on crest?			If yes, describe.
2. Are driving surfaces in inadequate condition?			If yes, describe.
3. Any depressions, animal burrows, ruts or holes on crest?			If yes, describe (size, depth, location)
4. Any cracks on crest?			If yes, describe (length and width, location and direction of cracking, etc.)

**III. WALLS (North, East, and West Sides)**

ITEM	Yes	No	Description (indicate problems on map)
1. Any depressions, holes, or erosion?			If yes, describe (size, location, severity, etc.)
2. Is there evidence of riprap erosion on the east and west sides?			If yes, describe (size, location, etc.)
3. Are there any cracks or indication of distress?			If yes, describe (location, severity, etc.)
4. Any observable concerns with sheet piling anchorage?			If yes, describe (location, severity, condition, etc.)

**IV. STONE/ AGGREGATE WALL (SOUTH SIDE)**

ITEM	Yes	No	Description (indicate problems on map)
1. Any areas of depressions, holes, or erosion of the wall?			If yes, describe (size, location, severity, etc.)
2. Is there evidence that the wall is not stable, sinking/ settling or change in width?			If yes, describe (location, severity, etc.)
3. Are there any cracks or indication of distress?			If yes, describe (size, location, severity).

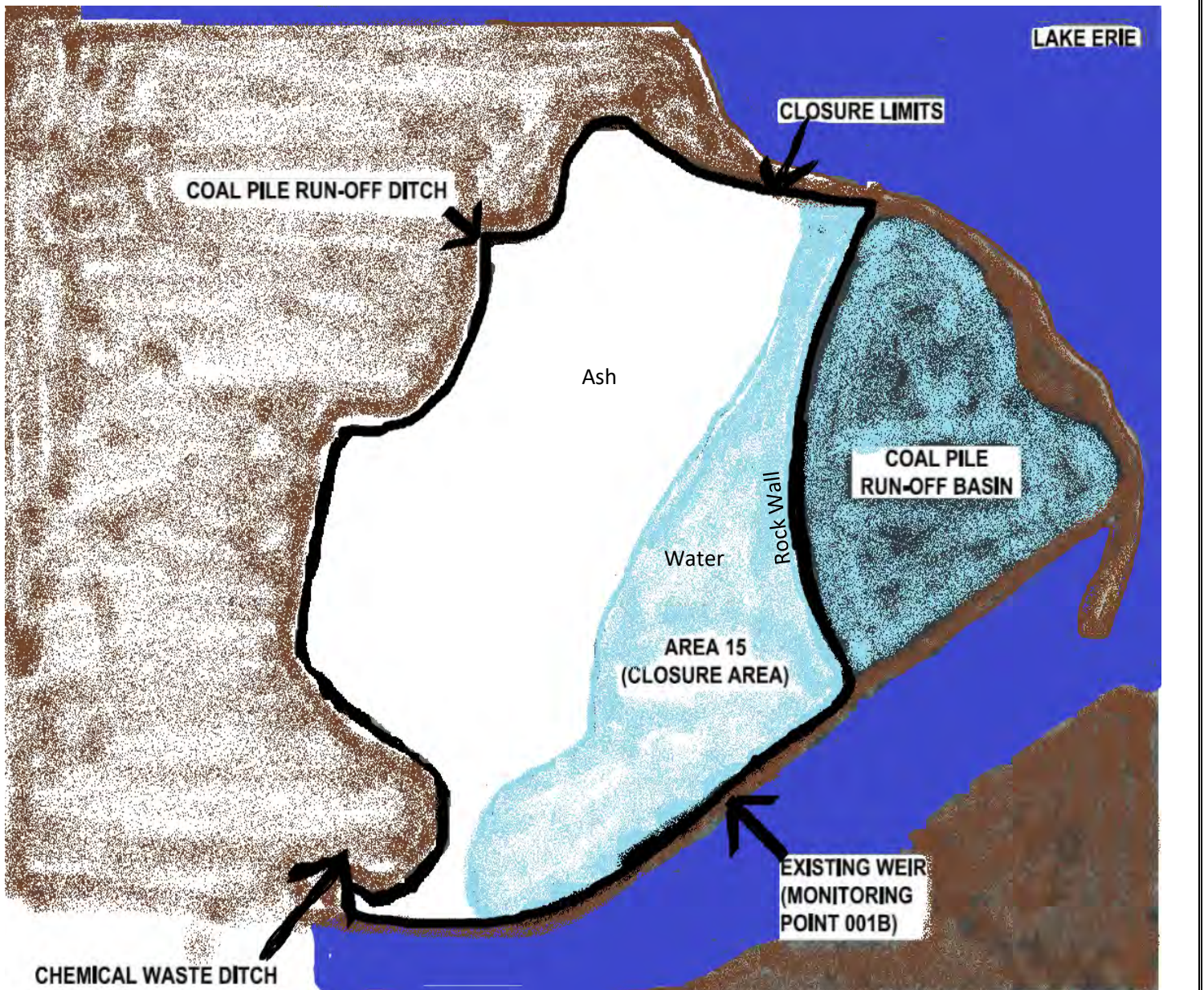
**V. INLET AND OUTLET STRUCTURES – Max Pool Level is 8.12” above the weir due to NPDES permit**

1. Is the water level above the weir within normal range (0” – 8”) ? _____ (Yes/No)					
How would you describe the overall condition of ...?	Functioning Normally	Not Functional	Deteriorated	Damaged	Other (describe):
2. Inlet Structures					
3. Rip Rap after weir?					
4. Weir					
ITEM	Yes	No	Description (indicate problems on map)		
5. Is there erosion present around the outlet riprap?			If yes, describe (size of area, location, severity, etc.)		
6. Is there evidence of erosion or settlement around the box culvert?			If yes, describe (size of area, location, severity, etc.)		
7. Are there obstructions that prevent free flowing at the weir outlet?			If yes, describe (type of debris, reason for obstruction, etc.)		
8. Are there unusual characteristics to the discharge?			If yes, describe (type of debris, reason for obstruction, etc.)		



**VI. MISCELLANEOUS ITEMS AND OTHER OBSERVATIONS**

ITEM	Yes	No	Description (indicate problems on map)
1. Is the water level above the Rock wall on the south side?			If yes, describe.
2. Are the tie lines from the inactive basin and the coal pile run off properly screened?			If no, describe.
3. Other observations (changes since last inspection, etc.):			



**Exhibit 4:**  
**Bottom Ash Safety Data Sheet**  
Inactive Bottom Ash Basin Emergency Action  
Plan Monroe Power Plant  
Monroe, Michigan

# Safety Data Sheet

## Section 1 Identification of the Substance and of the Supplier

### 1.1 Product Identifier

<b>Product Name/Identification:</b>	Bottom Ash
<b>Synonyms:</b>	Coal Bottom Ash, Boiler Slag
<b>Product Code:</b>	N/A
<b>Formula:</b>	UVCB Substance

### 1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

<b>Relevant Identified Uses:</b>	Aggregate, Light Weight Block Aggregate, Ice Control
<b>Uses Advised Against:</b>	Any uses not meeting appropriate engineering specifications

### 1.3 Details of the Supplier of the SDS

<b>Manufacturer/Supplier:</b>	Headwaters Resources, Inc.
<b>Street Address:</b>	10701 South Riverfront Parkway
<b>City, State and Zip Code:</b>	South Jordan, UT 84095
<b>Customer Service Telephone:</b>	801.984.9400
<b>Website Address:</b>	flyash.com

### 1.4 Emergency Telephone Number

<b>Emergency Phone Number:</b>	877.347.8096
<b>Hours Available:</b>	24 hours/7 days a week


## Section 2 Hazards Identification

### 2.1 Classification of the Substance

GHS Classification(s) according to OSHA Hazard Communication Standard (29 CFR 1910.1200):

- STOT-SE Category 3 (Respiratory Irritation).
- STOT-RE Category 2.

### 2.2 Label Elements

Labeling according to 29 CFR 1910.1200 Appendices A, B and C*	
<b>Hazard Pictogram(s):</b>	
<b>Signal Word:</b>	Danger
<b>Hazard Statement(s):</b>	May cause respiratory irritation. May cause damage to lungs after repeated/prolonged exposure via inhalation.
<b>Precautionary Statement(s):</b>	Do not breathe dust. Use outdoors or in a well ventilated area. If inhaled: Remove to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell. Store in a secure area. Dispose of product in accordance with local/national regulations.

\* Bottom ash and other coal combustion products (CCPs) are UVCB substances (substance of unknown or variable composition or biological). Various CCPs, noted as Ashes; Ash; Ash residues; Ashes, residues, bottom; bottom ash; bottom ash residues; waste solids, ashes under TSCA are defined by the US EPA as: "The residuum from the burning of a combination of carbonaceous materials. The following elements may be present as oxides: aluminum, calcium, iron, magnesium, nickel, phosphorus, potassium, silicon, sulfur, titanium, and vanadium." Ashes, including bottom ash and fluidized bed combustion ash, are identified by CAS number 68131-74-8. The exact composition of the ash is dependent on the fuel source and flue additives composed of a large number of constituents. The classification of the final substance is dependent on the presence of specific identified oxides as well as other trace elements.

### 2.3 Other Hazards

**Listed Carcinogens:** Respirable Crystalline Silica

**IARC:** Yes      **NTP:** Yes      **OSHA:** No      **Other:** No

## Section 3 Composition/Information on Ingredients

Substance	CAS No.	Percentage (%)	GHS Classification
Aluminosilicates	Various: See note 1	70-95	Single Exposure STOT, Category 3
Crystalline Silica	14808-60-7	<10	Repeat Dose STOT, Category 2
Silica, crystalline respirable (RCS)	14808-60-7	See note 2	Repeat Dose STOT, Category 2
Calcium oxide (CaO)	1305-78-8	<2%	Skin Irritant Category 2 Eye irritant Category 2B

Substance	CAS No.	Percentage (%)	GHS Classification
Manganese dioxide (MnO <sub>2</sub> )	1313-13-9	<2%	Skin Irritant Category 2 Eye irritant Category 2B
Phosphorus pentoxide (P <sub>2</sub> O <sub>5</sub> )	1314-56-3	<2%	Skin Irritant Category 2 Eye irritant Category 2B
Potassium oxide (K <sub>2</sub> O)	12136-45-7	<2%	Skin Irritant Category 2 Eye irritant Category 2B
Magnesium sulfate	7487-88-9	<2%	Skin Irritant Category 2 Eye irritant Category 2B

- Aluminosilicates (CAS# 1327-36-2) may be in the form of mullite (CAS# 1302-93-8); aluminosilicate glass; pozzolans (CAS# 71243-67-9); or calcium aluminosilicates such as tricalcium aluminate (C<sub>3</sub>A), or calcium sulfoaluminate (C<sub>4</sub>A<sub>3</sub>S). The form is dependent on the source of the coal and or the process used to create the CCP. Pulverized coal combustion would be more likely to create high levels of pozzolans. Aluminosilicates may have inclusions of calcium, titanium, iron, potassium, phosphorus, magnesium and other metal oxides.
- RSC in the CCP has not been determined.

**Section 4  
First Aid Measures**

**4.1 Description of First Aid Measures**

<b>Inhalation</b>	If product is inhaled and irritation of the nose or coughing occurs, remove person to fresh air. Get medical advice/attention if respiratory symptoms persist.
<b>Skin Contact</b>	If skin exposure occurs, wash with soap and water.
<b>Eye Contact</b>	If product gets into the eye, rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Seek medical attention/advice if irritation occurs or persists.
<b>Ingestion</b>	No specific first aid measures are required.

**4.2 Most Important Health Effects, Both Acute and Delayed**

<b>Acute Effects</b>	Direct exposure may cause respiratory irritation, eye irritation and skin irritation. The product dust can dry and irritate the skin and cause dermatitis and can irritate eyes and skin through mechanical abrasion.
<b>Chronic Effects</b>	Chronic exposure may cause lung damage from repeated exposure. Chronic inhalation of dusts containing respirable crystalline silica may result in silicosis.

**4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed**

Seek first aid or call a doctor or Poison Control Center if contact with eyes occurs and irritation remains after rinsing.



## Section 5 Firefighting Measures

### 5.1 Extinguishing Media

<b>Suitable Extinguishing Media:</b>	Product is not flammable. Use extinguishing media appropriate for surrounding fire.
<b>Unsuitable Extinguishing Media:</b>	Not applicable; the product is not flammable.

### 5.2 Special Hazards Arising From the Substance or Mixture

<b>Hazardous Combustion Products:</b>	None known.
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### 5.3 Advice for Firefighters

<b>Special Protective Equipment and Precautions for Firefighters:</b>	As with any fire, wear self-contained breathing apparatus (NIOSH-approved or equivalent) and full protective gear.
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## Section 6 Accidental Release Measures

### 6.1 Personal Precautions, Protective Equipment and Emergency Procedures

#### 6.1.1 Personal Precautions/Protective Equipment

See Section 8.2.2 "Personal Protective Equipment". For concentrations exceeding Occupational Exposure Levels (OELs), use a self-contained breathing apparatus (SCBA).

#### 6.1.2 Emergency Procedures

Use scooping, water spraying/flushing/misting or ventilated vacuum cleaning systems to clean up spills. Do not use pressurized air.

### 6.2 Environmental Precautions

Prevent contamination of drains or waterways and dispose of according to local and national regulations.

### 6.3 Methods and Material for Containment and Cleaning Up

Do not use brooms or compressed air to clean surfaces. Use dust collection vacuum and extraction systems.

Large spills of dry product should be removed by a vacuum system. Dampened material should be removed by mechanical means and recycled or disposed of according to local and national regulations.

See Sections 8 and 13 for additional information on exposure controls and disposal.

**Section 7  
Handling and Storage**

**7.1 Precautions for Safe Handling**

Practice good housekeeping. Use adequate exhaust ventilation, dust collection and/or water mist to maintain airborne dust concentrations below permissible exposure limits. (Note: respirable crystalline silica dust may be in the air without a visible dust cloud.)

Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Maintain and test ventilation and dust collection equipment. In cases of insufficient ventilation, wear a NIOSH-approved respirator for silica dust when handling or disposing dust from this product. Avoid contact with skin and eyes. Wash or vacuum clothing that has become dusty. Avoid eating, smoking, or drinking while handling the material.

**7.2 Conditions for Safe Storage, Including Any Incompatibilities**

Minimize dust produced during loading and unloading.

**Section 8  
Exposure Controls/Personal Protection**

**8.1 Control Parameters**

OCCUPATIONAL EXPOSURE LIMITS					
SUBSTANCE		OSHA PEL TWA (mg/m <sup>3</sup> )	NIOSH REL TWA (mg/m <sup>3</sup> )	ACGIH TLV TWA (mg/m <sup>3</sup> )	CA - OSHA PEL (mg/m <sup>3</sup> )
Calcium oxide		5	2	2	2
Particulates Not Otherwise Regulated	Total	15	15	-	10
	Respirable	5	5	-	5
Crystalline Silica	Total Quartz	30 ÷ (%SiO <sub>2</sub> +2) (Total Quartz)	-	-	0.3
	Respirable Crystalline Silica	10 ÷ (%SiO <sub>2</sub> +2)	0.05	0.025 (α-quartz & cristobalite)	0.1
	Cristobalite	-	0.05	0.025 (α-quartz & cristobalite)	0.05 (respirable)
Manganese dioxide (as manganese compounds)	Total	5 (Ceiling)	1 3 (STEL)	0.1	0.2
	Respirable	-	-	0.02	-

**8.2 Exposure Controls**

**8.2.1 Engineering Controls**

Provide ventilation to maintain the ambient workplace atmosphere below the occupational exposure limit(s). Use general and local exhaust ventilation and dust collection systems as necessary to minimize exposure.

**8.2.2 Personal Protective Equipment (PPE)**

<b>Respiratory protection:</b>	Wear a NIOSH-approved particulate respirator if exposure to airborne particulates is unavoidable and where occupational exposure limits may be exceeded. If airborne exposures are anticipated to exceed applicable PELs or TLVs, a self-contained breathing apparatus or airline respirator is recommended.
<b>Eye and face protection:</b>	If eye contact is possible, wear protective glasses with side shields or dust goggles, as appropriate. Avoid contact lenses.
<b>Hand and skin protection:</b>	Wear gloves and protective clothing. Wash hands with soap and water after contact with material.

**Section 9  
Physical and Chemical Properties**

**9.1 Information on Basic Physical and Chemical Properties**

Property: Value	Property: Value
<b>Appearance (physical state, color, etc.):</b> light gray/tan to dark gray/brown particulate. Fine sand to stone sized solid.	<b>Upper/Lower Flammability or Explosive Limits:</b> Not applicable
<b>Odor:</b> Odorless	<b>Vapor Pressure (Pa):</b> Not applicable
<b>Odor Threshold:</b> Not applicable	<b>Vapor Density:</b> Not applicable
<b>pH (25°C):</b> Not applicable	<b>Specific Gravity:</b> 2.2 - 2.8
<b>Melting Point/Freezing Point (°C):</b> Not applicable	<b>Water Solubility:</b> Slight
<b>Initial Boiling Point and Boiling Range (°C):</b> Not applicable	<b>Partition Coefficient: n-octane/water:</b> Not determined
<b>Flash Point (°C):</b> Not determined	<b>Auto Ignition Temperature (°C):</b> Not applicable
<b>Evaporation Rate:</b> Not applicable	<b>Decomposition Temperature (°C):</b> Not determined
<b>Flammability (solid, gas):</b> Not combustible	<b>Viscosity:</b> Not applicable

**9.2 Other Information**

None.

**Section 10  
Stability and Reactivity**

**10.1 Reactivity**

The material is an inert, inorganic material primarily composed of elemental oxides.

**10.2 Chemical Stability**

The material is stable under normal use conditions.

**10.3 Possibility of Hazardous Reactions**

The material is a relatively stable, inert material. Polymerization will not occur.

**10.4 Conditions to Avoid**

Product can become airborne in moderate winds.

**10.5 Incompatible Materials**

None known.

**10.6 Hazardous Decomposition Products**

None known.

**Section 11  
Toxicological Information**

**11.1 Information on Toxicological Effects**

Endpoint	Data
Acute oral toxicity	LD50 > 2000 mg/kg
Acute dermal toxicity	LD50 > 2000 mg/kg
Acute inhalation toxicity	LC50 > 5.0 mg/L
Skin corrosion/irritation	Not irritating to skin.
Eye damage/irritation	Slight but reversible eye irritation.
Respiratory/skin sensitization	Not a respiratory or dermal sensitizer.
Germ cell mutagenicity	Not mutagenic in <i>in vitro</i> and <i>in vivo</i> assays with or without metabolic activation.
Carcinogenicity	Not available. Respirable crystalline silica has been identified as a carcinogen by NTP and IARC.

Endpoint	Data
Reproductive toxicity	An animal study with a CCP has indicated some effects on male and female reproductive organs and parameters without a clear dose response, while studies with other CCPs have not shown reproductive effects. Therefore, there is not enough evidence available to classify according to reproductive toxicity. No developmental toxicity has been observed in available animal studies.
STOT-SE	No specific target organ toxicity after a single exposure to the substance is expected; however, presence as a nuisance dust may result in respiratory irritation.
STOT-RE	NOAEC = 4.2 mg/m <sup>3</sup> bottom ash dust; as no effects were observed at the highest dose tested during the 180-day inhalation study, it is not possible to assess the level at which toxicologically significant effects may occur.  Repeated inhalation exposures to high levels of respirable crystalline silica may result in lung damage (i.e., silicosis).
Aspiration Hazard	Not applicable based on product form.

**Section 12**  
**Ecological Information**

**12.1 Toxicity**

Coal Ash CAS# 68131-74-8	
Toxicity to fish	LC50 >100 mg/L
Toxicity to invertebrates	Data indicates that the test substance is not toxic to <i>Daphnia magna</i> (EC50 undetermined)
Toxicity to algae and plants	EC50 = 10 mg/L

Calcium oxide CAS# 1305-78-8	
Toxicity to fish	LC50 = 50.6 mg/L The findings were closely related to the pH of the test solutions; therefore, pH is considered to be the main reason for the effects.
Toxicity to invertebrates	EC50 = 49.1 mg/L The findings were closely related to the pH of the test solutions; therefore, pH is considered to be the main reason for the effects.
Toxicity to algae and plants	NOEC =48 mg/L @ 72 hours based on Ca(OH) <sub>2</sub> The initial pH of the test medium was not directly related to the biologically relevant effects. The formation of precipitates is likely the result of the reaction between CO <sub>2</sub> dissolved in the medium.

**12.2 Persistence and Degradability**

Not relevant for inorganic materials.

**12.3 Bioaccumulative Potential**

No data available.

**12.4 Mobility in Soil**

No data available.

**12.5 Results of PBT and vPvB Assessment**

No data available.

**12.6 Other Adverse Effects**

None known.

**Section 13  
Disposal Considerations**

See Sections 7 and 8 above for safe handling and use, including appropriate hygienic practices.

Dispose of all waste product and containers in accordance with federal, state and local regulations.

**Section 14  
Transport Information**

<b>Regulatory entity:</b> U.S. DOT	Shipping Name:	Not Regulated
	Hazard Class:	Not Regulated
	ID Number:	Not Regulated
	Packing Group:	Not Regulated

**Section 15  
Regulatory Information**

**15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Mixture**

- **TSCA Inventory Status**

All components are listed on the TSCA Inventory.

- **California Proposition 65**

The following substances are known to the State of California to be carcinogens and/or reproductive toxicants:

- Respirable crystalline silica
- Titanium dioxide (airborne particles)

- **State Right-to-Know (RTK)**

Component	CAS	MA <sup>1,2</sup>	NJ <sup>3,4</sup>	PA <sup>5</sup>	RI <sup>6</sup>
Calcium oxide	1305-78-8	Yes	Yes	Yes	No
Iron oxide	1309-37-1	Yes	Yes	Yes	No
Magnesium oxide	1309-48-4	No	Yes	No	No
Phosphorus pentoxide (or phosphorus oxide)	1314-56-3	Yes	Yes	Yes	No
Potassium oxide	12136-45-7	No	Yes	No	No
Silica-crystalline (SiO <sub>2</sub> ), quartz	14808-60-7	Yes	Yes	Yes	No
Titanium dioxide	13463-67-7	Yes	Yes	Yes	No

<sup>1</sup> Massachusetts Department of Public Health, no date

<sup>2</sup> 189th General Court of The Commonwealth of Massachusetts, no date

<sup>3</sup> New Jersey Department of Health and Senior Services, 2010a

<sup>4</sup> New Jersey Department of Health, 2010b

<sup>5</sup> Pennsylvania Code, 1986

<sup>6</sup> Rhode Island Department of Labor and Training, no date

- **Coal bottom ash is not a SARA 313 substance.**

Bottom ash is required for SARA Tier II (311/312) reporting when in sufficient quantities. Trace elements in bottom ash should be considered in TRI reporting.

**Section 16**  
**Other Information, Including Date of Preparation or Last Revision**

**16.1 Indication of Changes**

Date of preparation or last revision: May 27, 2015

## 16.2 Abbreviations and Acronyms

ACGIH:	American Conference of Industrial Hygienists	PA:	Pennsylvania
ANSI:	American National Standards Institute	Pa:	Paschal
CA:	California	PBT:	Persistent, Toxic and Bioaccumulative
CAA:	Clean Air Act	PEL:	Permissible exposure limit
CAS:	Chemical Abstract Services	PPE:	Personal Protective Equipment
CCP:	Coal Combustion Product	REL:	Recommended exposure limit
CFR:	Code of Federal Regulations	RI:	Rhode Island
EPA:	Environmental Protection Agency	RCS:	Respirable Crystalline Silica
GHS:	Globally Harmonized System of Classification and Labeling	RTK:	Right-to-Know
HMIS:	Hazardous Materials Identification System	SARA:	Superfund Amendments and Reauthorization Act
IARC:	International Agency for Research on Cancer	SCBA:	Self-contained breathing apparatus
LC50:	Concentration resulting in the mortality of 50% of an animal population	SDS:	Safety Data Sheet
LD50:	Dose resulting in the mortality of 50% of an animal population	STEL:	Short-term exposure limit
LEL:	Lower explosive limit	STOT-RE:	Specific target organ toxicity-repeated exposure
MA:	Massachusetts	STOT-SE:	Specific target organ toxicity-single exposure
NA:	Not Applicable	TLV:	Threshold limit value
NJ:	New Jersey	TSCA:	Toxic Substances Control Act
NOEC:	No observed effect concentration	TWA:	Time-weighted average
NIOSH:	National Institute of Occupational Safety and Health	UEL:	Upper explosive limit
NOx:	Nitrogen oxides	UVCB:	Unknown or Variable Composition/Biological
NTP:	US National Toxicology Program	U.S.:	United States
OEL:	Occupational Exposure Limit	U.S. DOT:	United States of Department of Transportation
OSHA:	Occupational Safety and Health Administration	vPvB:	Very Persistent and Very Bioaccumulative

## 16.3 Other Hazards

**Table 1: Bottom Ash**

Hazardous Materials Identification System (HMIS)			Degree of hazard (0 = Low; 4= Extreme)
<b>Health:</b> 1*	<b>Flammability:</b> 0	<b>Reactivity:</b> 1	<b>Personal Protection:</b> -

\* Chronic Health Effects

### DISCLAIMER:

*This SDS has been prepared in accordance with the Hazard Communication Rule 29 CFR 1910.1200. Information herein is based on data considered to be accurate as of date prepared. No warranty or representation, express or implied, is made as to the accuracy or completeness of this data and safety information. No responsibility can be assumed for any damage or injury resulting from abnormal use, failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.*



**Exhibit 5:**  
**Training Seminar Logs**  
Inactive Bottom Ash Basin Emergency Action Plan  
Monroe Power Plant  
Monroe, Michigan

## Training Seminar Logs

Date of Training: \_\_\_\_\_

Type of Training Completed:

- Orientation Seminar
- Tabletop Exercises
- Other: \_\_\_\_\_

Emergency Conditions Considered:

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Meeting Minutes:

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Lessons Learned:

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EAP Updated Needed (Circle One)?    YES    NO    If Yes, Date Update Completed: \_\_\_\_\_

Instructor's Name	Instructor's Signature
Participant's Name	Participant's Signature

**Exhibit 6:**  
**Records of Revisions**

**Inactive Bottom Ash Basin Emergency Action Plan  
Monroe Power Plant  
Monroe, Michigan**

**This plan supersedes all previous plans.**

**Record of Revisions**

The following is a list of revisions made to the Inactive Bottom Ash Basin EAP. This chart tracks the date that changes were made, reason for the changes, updated pages, and who made the revision.

<b>Date</b>	<b>Reason for Revision</b>	<b>Page Numbers</b>	<b>Revised By</b>