Periodic Hazard Potential Classification Assessment – Bottom Ash Basins

Belle River Power Plant
East China Township, Michigan
(PMP-22810)

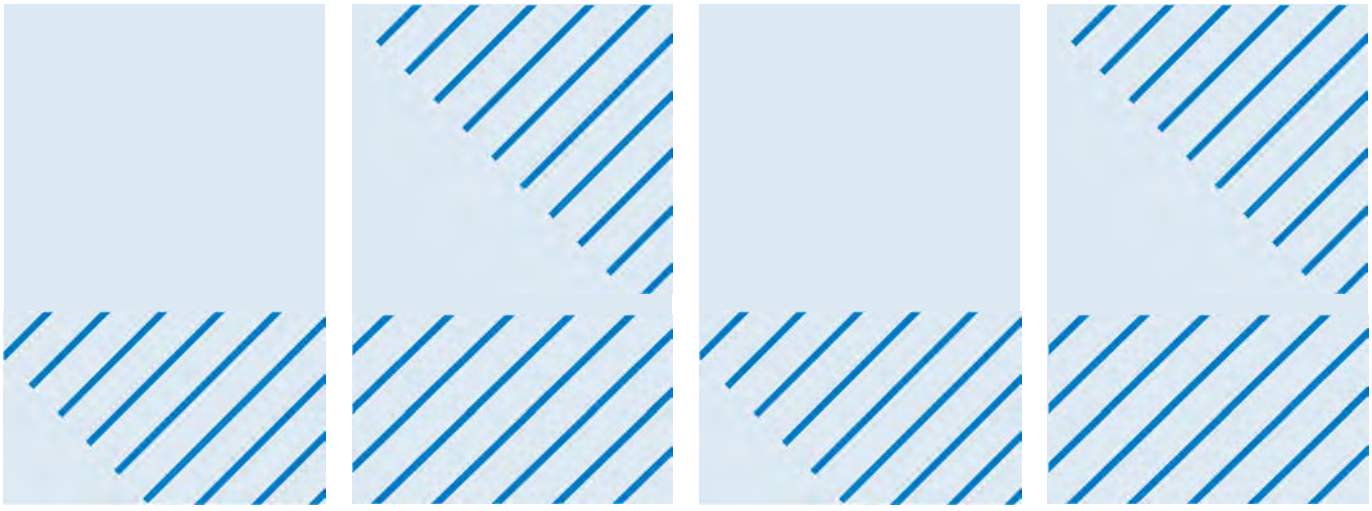
Prepared for
DTE Electric Company (DTE)

Prepared by
Barr Engineering Michigan LLC

October 2026

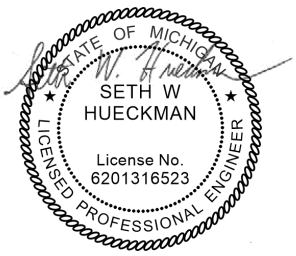
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Certification

I hereby certify that I, or my agent, have examined the facility and, being familiar with the provisions of 40 CFR Part § 257.73, attest that this Coal Combustion Residuals Periodic Hazard Potential Classification has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and the requirements of 40 CFR Part § 257.73(a)(2). I certify that the plan is adequate for this facility and that procedures for recordkeeping and reporting have been established.



Seth W. Hueckman
Michigan PE #: 6201316523

10/14/2026
Date

1 Introduction

DTE Electric Company (DTE) operates the Belle River Power Plant (BRPP), a coal fired power plant located in East China Township, Michigan. BRPP is currently being converted to natural gas fired boilers, which is to be completed in 2026. During operation as a coal fired power plant, bottom ash and other plant process effluents have been discharged in the North and South Bottom Ash Basin's (BAB's). The BAB's consist of two, approximately 0.8 acre sedimentation ponds. A system of weirs and ditches convey discharge water from the BAB's to the facility's stormwater management system where it is ultimately discharged in accordance with the National Pollutant Discharge Elimination System (NPDES) permit. Solids (bottom ash) accumulated in the BAB's are periodically dredged and disposed in the Range Road CCR Landfill. The BAB's must comply with the requirements of 40 CFR Part 257, Subpart D – Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments, herein referred to as the CCR Rule.

The initial and first periodic update to the Hazard Potential Classification for the BAB's was developed by NTH Consultants, Ltd in October of 2016 and 2021. These reports classified the BAB's as low hazard. To complete the second periodic update to the report, Barr has reviewed these reports as well as changes implemented at the facility since the last periodic update in coordination with DTE staff. In 2023, the BAB's were retrofit with a composite liner system. This work included dredging of the BAB's to remove accumulated bottom ash and other solids and installing a liner system consisting of 60-mil high-density polyethylene (HDPE) geomembrane over a geosynthetic clay liner. Protective sand and coarse aggregate were placed over the liner system to act as protective layers during future dredging operations.

DTE is in the process of converting the BRPP to natural gas fired boilers. During the conversion the BAB's will receive small volumes of CCR from construction activities related to the conversion. After the conversion, the BAB's will continue to receive low volumes of wastewater generated from the converted BRPP. The existing infrastructure (inflow piping, outlet weirs, outlet piping, and discharge ditches) will remain in place after the conversion and the BAB's will continue to operate in the same manner as prior to the conversion, with lower anticipated inflows.

2 Periodic Hazard Potential Classification

This Periodic Hazard Potential Classification for the BRPP BAB's has been developed to satisfy the requirements described in 40 CFR Part § 257.73(a)(2). The following sections document the basis for the BAB's Hazard Potential Classification according to the requirements of the CCR Rule.

2.1 Definitions in the CCR Rule

Guidance for the hazard potential classification is provided in 40 CFR § 257.53 stating "*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 hazard potential classifications include high hazard potential CCR surface impoundment, significant hazard potential CCR surface impoundment, and low hazard potential CCR surface impoundment.*"

40 CFR § 257.53 further goes on to define these terms:

- *High hazard potential CCR surface impoundment* means a diked surface impoundment where failure or mis-operation will probably cause loss of human life.
- *Significant hazard potential CCR surface impoundment* means a diked surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns.
- *Low hazard potential CCR surface impoundment* means a diked surface impoundment where failure or mis-operation 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.

2.2 BAB's Location and Physical Description

The BAB's are located on the north side of the facility, approximately 500 feet from the main plant structures, see Figure 1. The BAB's are surrounded by stormwater conveyance ditches to the north, south, and west, see Figure 2. Beyond the stormwater ditches lies undeveloped land to the north, storage yards and outbuildings to the west and south, and roads/rail tracks to the east. The North and South BAB's share a separation embankment on the south/north side of each basin, therefore failure of this embankment is not a concern as the flood would be contained by the adjacent basin. The BAB's generally have an embankment crest elevation of 592 feet, with varying embankment heights as the natural topography varies around the toe of the embankments. The lowest elevation at the toe of the North Basin is on the west side with an elevation of approximately 588 feet. The lowest elevation near the South Basin embankment is approximately 585 feet on the south side of the basin. Both BAB's discharge via box weir's on the west side that run the width of the basins (approximately 92 feet). The box weirs have a fixed elevation of 590 feet, limiting the pool elevation during normal operations.

2.3 BAB's Hazard Classification

To conservatively estimate the impacts of an embankment breach, the resulting flood was calculated during the 100-year flood event when the pool elevation reaches a peak elevation of approximately 590.1 feet. The flood volume was calculated by multiplying the area of the pool by the difference in elevation from the peak pool elevation to the lowest elevation at the embankment toe for each basin. The North Basin lowest toe elevation is on the east side, around elevation 588 feet. The South Basin lowest toe elevation is approximately 585 feet. See Table 1 for flood volumes of each BAB.

Table 1 – Calculated Flood Volume at breach for each Bottom Ash Basin

Basin	Area (AC)	Peak Pool Elevation (ft)	Minimum Toe Elevation (ft)	Flood Volume (cft)	Flood Volume (Gal.)
North	0.8	590.1	588	73,200	547,000
South	0.8	590.1	585	177,700	1,329,000

The flood created by a breach of the North Basin would spill into the discharge ditches to the north and west of the basin and may overflow out of the ditches into the undeveloped land to the north of the BAB's. There are no structures or manned workstations in this area, therefore impacts would be minimal.

A breach of the South Basin would spill out into the stormwater ditches on the south side of the BAB's and routed towards the combined discharge ditches on the west and north side of the BAB's. The flood would be large enough to overtop these ditches and flood the storage areas southwest of the BAB's. DTE has confirmed that these storage areas are unpopulated during normal operations and the flood therefore would not threaten workers.

Impacts of a flood from mis-operation or failure of either the North or South Basin would be mitigated by the existing system of stormwater ditches surrounding the BAB's. The ditches would convey discharged water away from the immediate area of impact and help to contain the discharge. There would be overtopping of these ditches, however, as discussed, the surrounding areas that would be impacted are either undeveloped or unmanned storage yards.

The resulting flood from a breach of the BAB's would not threaten human life and would be contained to the owner's property. There are no permanent structures within the estimated flood limits that would risk serious economic loss. A majority of the flood would be contained within existing ditches and because water within the BAB's falls within the facility NPDES permit's allowable discharge parameters, there is little risk to environmental losses. Therefore, the BAB's can be classified as Low Hazard Potential CCR Surface Impoundments, as defined by the CCR Rule.

3 Conclusion

Failure or mis-operation of either bottom ash basin is not expected to result in loss of life or significant economic and environmental losses, therefore, the basins remain classified as Low Hazard Potential CCR Surface Impoundments as defined by 40 CFR § 257.53.

4 References

NTH, 2021. Periodic Hazard Potential Classification Assessment – Bottom Ash Basins, Belle River Power Plant, October 2021.

NTH, 2016. Hazard Potential Classification Assessment, Belle River Power Plant, October 2016.

Figures

Barr Footer: ArcGISPro 3.7.1, 2026-09-25 08:57 File: I:\Projects\22\74\1143\Maps\BRPP Site Features\Site Features.aprx Layout: Figure 1 Site Location User: AMB5



Bottom Ash Basins
Diversion Pond

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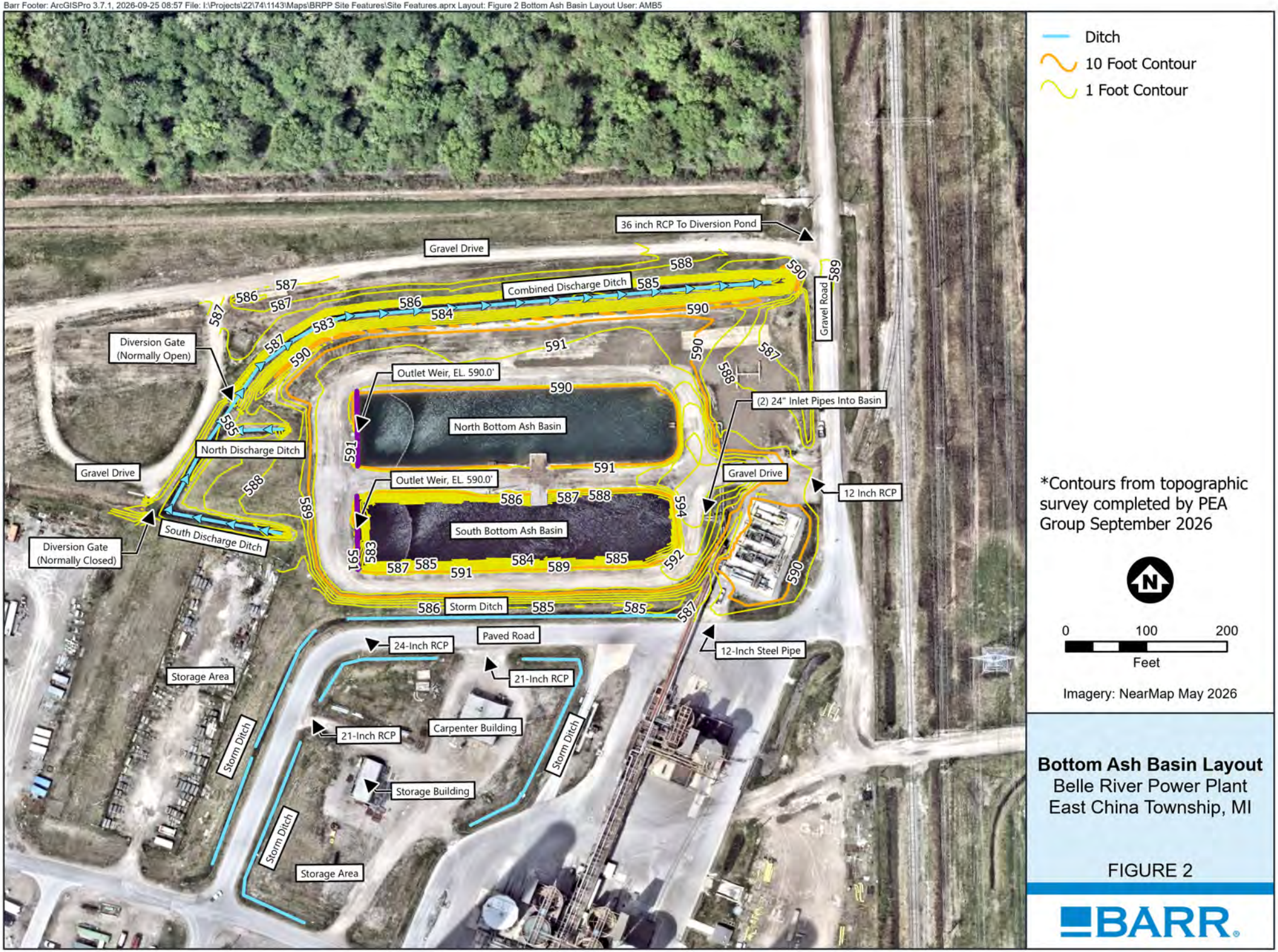
0 150 300
Feet

Imagery: NearMap May 2026

Site Location
Belle River Power Plant
East China Township, MI

FIGURE 1

BARR



Bottom Ash Basin Layout
Belle River Power Plant
East China Township, MI

FIGURE 2

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