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SAFETY FACTOR ASSESSMENT
FORMER ASH BASIN
POWERTON STATION
APRIL 2018

This report presents documentation of the initial periodic safety factor assessment for the Former Ash Basin (FAB) at the Powerton Station (Site) in Pekin, Illinois (Figure 1). This report addresses the initial safety factor assessment requirement for the Coal Combustion Residuals (CCR) regulations, Code of Federal Regulations Title 40, Part 257, Subpart D (referred to as the CCR Rule). These regulations were published in the Federal Register on 17 April 2015, became effective on 19 October 2015, and were amended on 05 August 2016. The Powerton Station is owned and operated by Midwest Generation, LLC (Midwest Generation). Based on the results detailed in this report, it cannot be documented that the FAB achieves the minimum safety factors requirements of §257.73(e)(1)(i) through (iv) of the CCR Rule.

This Report was prepared by Ms. Beth Pittaway and reviewed in accordance with Geosyntec's internal review policy by Mr. Michael Houlihan and Mr. Jesse Varsho, P.E., P.G. Mr. Varsho is a licensed Professional Engineer in the State of Illinois.

1. Regulation Requirements - §257.73

Structural integrity criteria for inactive CCR surface impoundments is described in §257.73. The FAB meets the minimum size and capacity criteria under §257.73(b) and is therefore subject to the safety factor assessment requirements of §257.73(e).

2. Site Conditions

Located to the east of the existing Ash Surge Basin, the FAB is an inactive CCR surface impoundment which was historically used for bottom ash disposal. It is estimated that the FAB stopped receiving CCRs by the 1970s. Originally a single pond, in 2010 the FAB was bisected into two areas by construction of a railroad embankment. The two bisected ponds are now designated as the North Pond and South Pond (Figure 2). Due to the duration of inactive use, both areas contain heavy vegetation. Based on acreage and several soil borings performed in 2016, the volume of CCR in the North Pond and South Pond are estimated to be less than 300,000 and 200,000 cubic yards, respectively.

The FAB is irregularly shaped with maximum dimensions of approximately 1,250 feet by 2,150 feet with a total area of approximately 25 acres. The surface impoundment is surrounded by a gravel and soil perimeter road which allows access to groundwater monitoring wells. The berm height varies in height up to approximately 4 feet around the basin perimeter.

3. Safety Factor Assessment

The initial and periodic safety factory assessment required by §257.73(e)(1) of the CCR Rule is dependent on analyses performed on the critical cross section of the embankment. The critical cross section is defined as the cross section anticipated to be the most susceptible to structural failure based on appropriate engineering considerations, including loading conditions. The minimum safety factors of 1.5 (long-term, maximum storage pool loading conditions), 1.4 (maximum surcharge pool loading conditions) and 1.0 (seismic conditions) to be achieved are detailed in §257.73(e)(1)(i) through (iv).

At the time of this report, information was not available on the construction materials, strength of the berm, or cross-section details necessary to perform the required engineering evaluation. The required calculations for §257.73(e)(1)(i) through (iv) were not performed and it is anticipated that the results, if available, would not meet the minimum safety factor requirements.

An engineering analysis to calculate the safety factors could not be performed due to a lack of necessary information due to the construction age of the FAB. Since the minimum safety factors as required by §257.73(e) cannot be demonstrated, the FAB will be closed in accordance with §257.102 as referenced by §257.73(f)(4).

4. Limitations and Certification

This initial periodic safety factor assessment meets the requirements of §257.73(e) of the Code of Federal Regulations Title 40, Part 257, Subpart D, and was prepared in accordance with current practices and the standard of care exercised by scientists and engineers performing similar tasks in the field of civil engineering. The contents of this report are based solely on the observations of the conditions observed by Geosyntec personnel and information provided to Geosyntec by Midwest Generation. Consistent with applicable professional standards of care, our opinions and recommendations were based in part on data furnished by others, which was consistent with other information that we developed in the course of our performance of the scope of services. The information contained in this report is intended for use solely by Midwest Generation and their subconsultants.

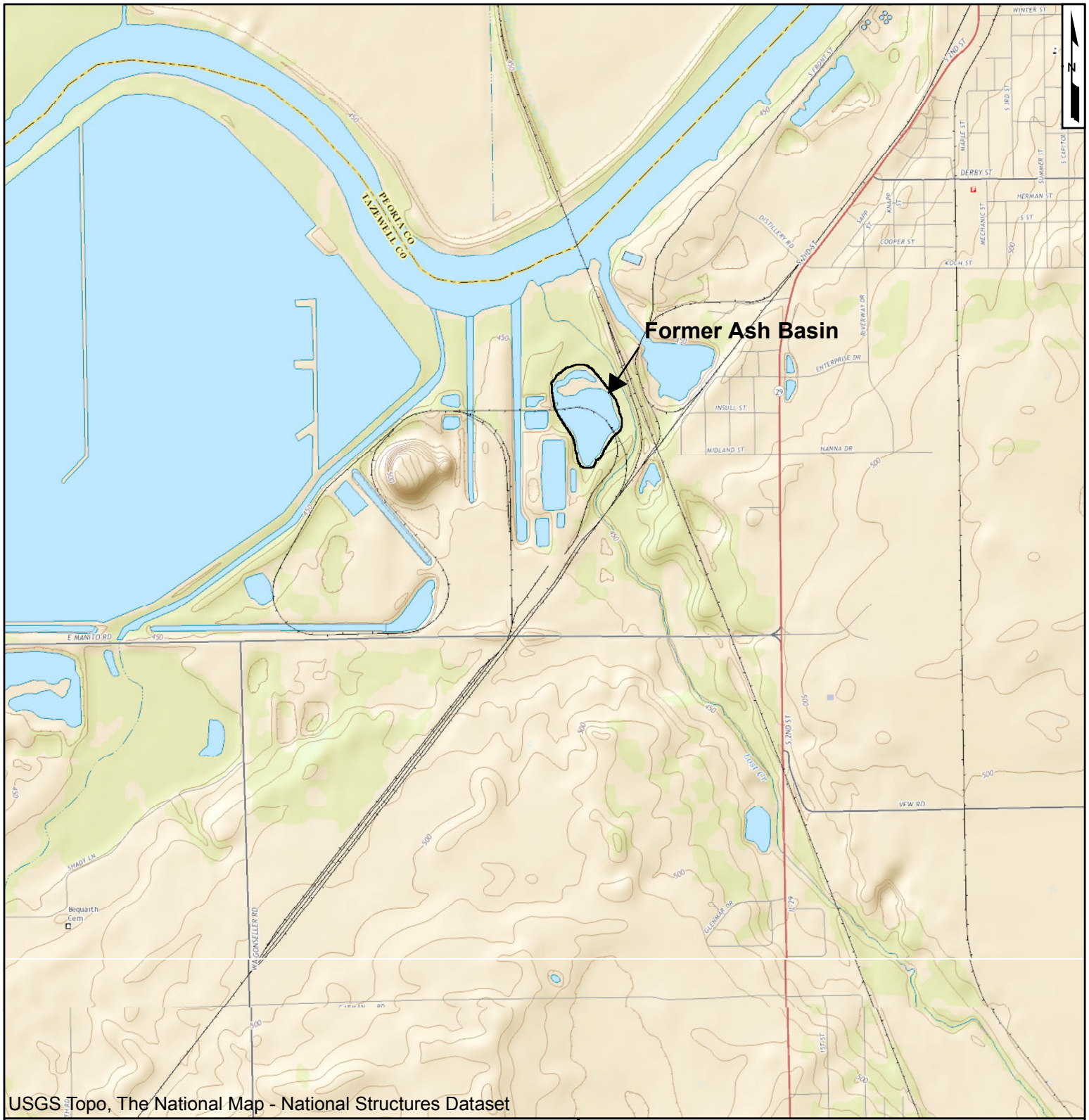
Jesse Varsho April 13, 2018

Jesse Varsho, P.E., P.G.
Illinois Professional Engineer No. 062.059069
Expiration Date: 11/30/2019

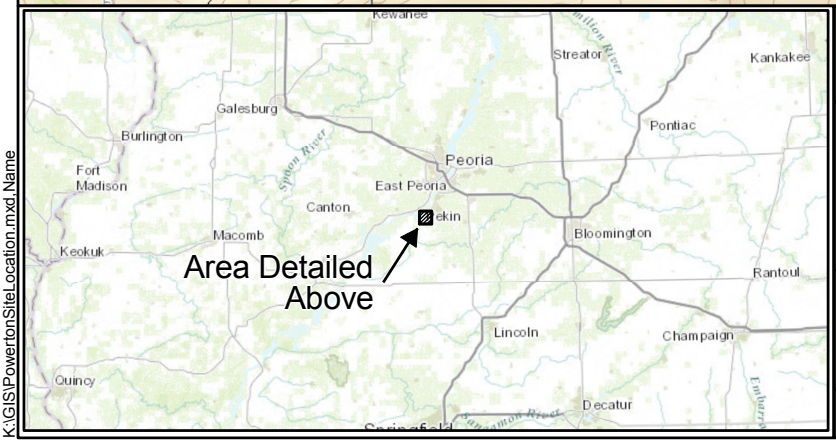
Attachments

Figure 1 – Site Location
Figure 2 – North and South Pond Detail

FIGURES



USGS Topo, The National Map - National Structures Dataset



2,000 1,000 0 2,000 Feet

Site Location

Former Ash Basin
Powerton Station
Pekin, IL

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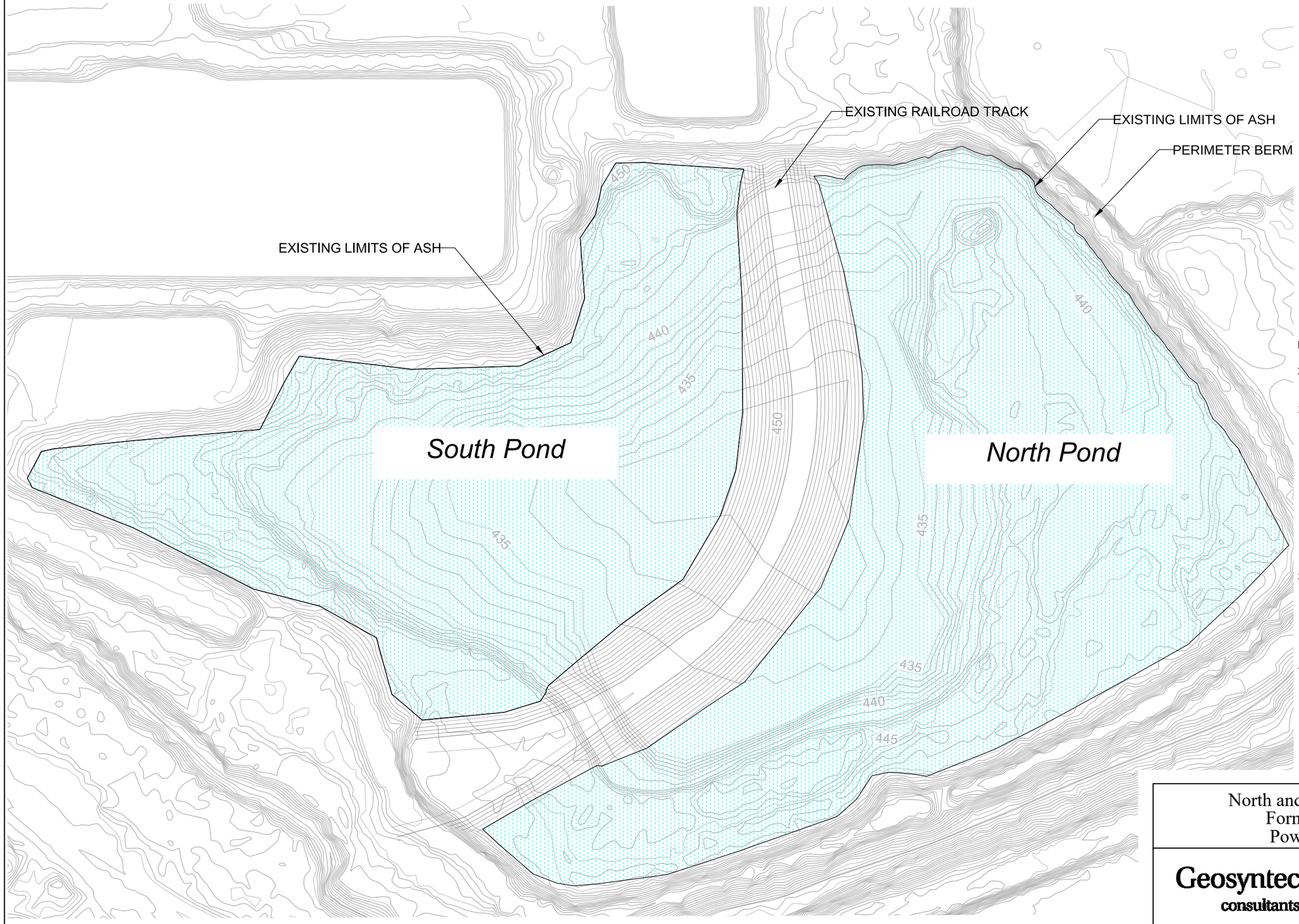
Figure 1

K:\GIS\PowertonSiteLocation.mxd Name



N

LEGEND

440 EXISTING CONTOUR

NOTES:

1. ELEVATIONS ARE IN FEET ABOVE MEAN SEA LEVEL.
2. CONTOURS BELOW ELEVATION 440 FT-MSL WERE OBTAINED FROM A DRAWING ENTITLED, "BORING LOCATIONS PLAN", BY PATRICK ENGINEERING INC., LISLE, ILLINOIS DATED 6 OCTOBER 2008. REMAINING SURVEY INFORMATION WAS OBTAINED FROM ELECTRONIC FILE OF AERIAL SURVEY BY AER-METRIC, INC. OF SHEBOYGAN, WISCONSIN; FLYOVER DATE 19 JUNE 2006.
3. RAILROAD EMBANKMENT WAS LOCATED USING SATELLITE INFORMATION OBTAINED FROM GOOGLE EARTH. TOP OF THE EMBANKMENT WAS ASSUMED TO BE ELEVATION 458 FT-MSL.
4. EXTENT OF ASH IS CONSIDERED TO BE AT THE TOE OF THE PERIMETER BERM.

0 150'
SCALE IN FEET

North and South Pond Detail
Former Ash Basin
Powerton Station

Geosyntec consultants
COLUMBIA, MARYLAND

DATE:	April 2018
PROJECT NO.	ME1615
DOCUMENT NO.	
FILE NO.	f005
FIGURE NO.	2