

Prepared for

Dynegy Midwest Generation, LLC
1500 Eastport Plaza Drive
Collinsville, Illinois 62234

CCR INITIAL SAFETY FACTOR ASSESSMENT

**VERMILION POWER PLANT
NEW EAST ASH POND
OAKWOOD, ILLINOIS**

Prepared by

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Project Number CHE8404A

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1. INTRODUCTION

Dynegy Midwest Generation, LLC (Dynegy) is the owner of inactive coal-fired Vermilion Power Plant (VPP), also referred to as Vermilion Power Station, located approximately 13 miles Northwest of Danville, Illinois. The New East Ash Pond (NEAP) is an inactive surface impoundment storing coal combustion residuals (CCR). The NEAP must meet the requirements of 35 Ill. Admin. Code 845, Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments (Part 845).

NEAP is an existing CCR surface impoundment as defined by Section 845.120. This Initial Safety Factor Assessment addresses the requirements of Section 845.460 for the NEAP.

1.1. Facility Information

| | |
|-----------------|---|
| Facility: | Vermilion Power Plant 10188 East 2150 North Rd Oakwood, IL 61858 |
| Owner/Operator: | Dynegy Midwest Generation, LLC 1500 Eastport Plaza Drive Collinsville, IL 62234 |

2. INITIAL SAFETY FACTOR ASSESSMENT

Section 845.460(a): The owner or operator of a CCR surface impoundment must conduct an initial and annual safety factor assessments for each CCR surface impoundment and document whether the calculated factors of safety for each CCR surface impoundment achieve the minimum safety factors specified in this Section for the critical cross section of the embankment. The critical cross section is the cross section anticipated to be the most susceptible of all cross sections to structural failure based on appropriate engineering considerations, including loading conditions. The safety factor assessments must be supported by appropriate engineering calculations.

- 1. For new CCR surface impoundments, the calculated static factor of safety under the end-of-construction loading condition must equal or exceed 1.30. The assessment of this loading condition is only required for the initial safety factor assessment and is not required for subsequent assessments.*
- 2. The calculated static factor of safety under the long-term, maximum storage pool loading condition must equal or exceed 1.50.*
- 3. The calculated static factor of safety under the maximum surcharge pool loading condition must equal or exceed 1.40.*
- 4. The calculated seismic factor of safety must equal or exceed 1.00.*
- 5. For dikes constructed of soils that have susceptibility to liquefaction, the calculated liquefaction factor of safety must equal or exceed 1.20.*

A geotechnical investigation program and stability analyses were performed by Geosyntec to evaluate the stability of the NEAP perimeter dike. Available data from field investigations, existing documents and reports, and other information provided to Geosyntec from Dynege were utilized to perform this assessment.

In general, the perimeter dike of NEAP consists of a fine-grained compacted soil overlying native clay alluvium and sand alluvium ranging from 5 to 20 feet thick extending down to bedrock. The phreatic surface was established considering groundwater level readings from both borings and established wells in and around the NEAP.

One (1) representative cross section was analyzed using limit equilibrium slope stability analysis software to evaluate the stability of the perimeter dike system and foundations. The cross section were located to represent critical surface geometry, subsurface stratigraphy, and phreatic conditions across the site. The cross sections was evaluated for the loading conditions stipulated in Section 845.460(a).

NEAP was constructed in 2003, and it is currently inactive. Therefore, the end-of-construction short-term loading condition was not applicable and not analyzed for this initial safety factor assessment.

Results of the Initial Safety Factor Assessments, for the critical cross section for the applicable loading conditions, are provided in Table 1 (i.e., the table identifies the lowest calculated factor of safety for any one of the two analyzed cross sections for each loading condition).

Table 2-1: Summary of Initial Safety Factor Assessments

| Loading Conditions | 845.460(a) Subsection | Minimum Factor of Safety | Calculated Factor of Safety |
|---|--------------------------|-----------------------------|--------------------------------|
| End-of-Construction Loading | 1 | 1.30 | Not Applicable |
| Long-term Maximum Storage Pool Loading | 2 | 1.50 | 2.42 |
| Maximum Surcharge Pool Loading | 3 | 1.40 | 2.41 |
| Seismic | 4 | 1.00 | 2.02 |
| Soils Susceptible to Liquefaction | 5 | 1.20 | >1.20 |

Based on this evaluation, NEAP meets the requirements in 845.460(a).

3. CERTIFICATION

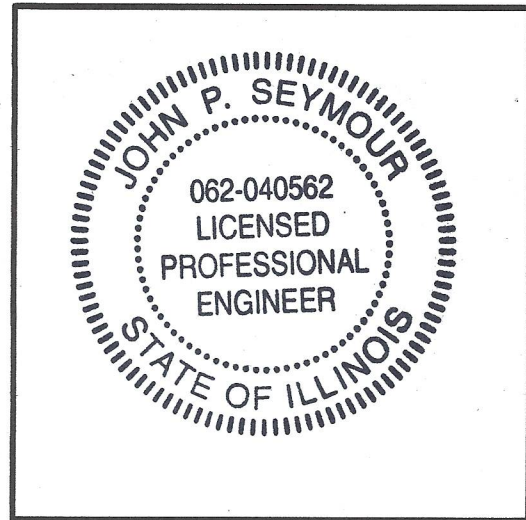
CCR Unit: Dynegy Midwest Generation, LLC; Vermilion Power Plant, New East Ash Pond

I, John Seymour, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify in accordance with Section 845.460(b), to the best of my knowledge, information, and belief, that the information contained in this plan has been prepared in accordance with the accepted practice of engineering and meets the requirements of Section 845.460.

John Seymour
Printed Name

John Seymour 10/22/2021
Signature Date

062.040562 Illinois 30 November 2021
Registration Number State Expiration Date



Affix Seal