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2026 CCR Rule Report: Periodic Safety Factor Assessment

Bottom Ash Pond 3
Laramie River Station
Wheatland, Wyoming

Basin Electric Power Cooperative
Bismarck, North Dakota

Project Number: 60788384

October 12, 2026

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Quality information

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1. Introduction

This Coal Combustion Residual (CCR) Rule Report documents that Bottom Ash Pond 3 at the Basin Electric Power Cooperative Laramie River Station meets the safety factor assessment requirements specified in Title 40 Code of Federal Regulations (40 CFR) § 257.73(e).

Bottom Ash Pond 3 is an existing CCR surface impoundment as defined by 40 CFR § 257.53. The CCR Rule[1] requires that an initial safety factor assessment be completed by October 17, 2016 and no more than every five years thereafter. The previous safety factor assessment for the Bottom Ash Pond 3 was completed on October 12, 2021; therefore, the current 5-year update is due October 12, 2026.

The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the periodic safety factor assessment meets the requirements of 40 CFR § 257.73(e).

2. Periodic Safety Factor Assessment

40 CFR § 257.73(e)(1)
The owner or operator must conduct initial and periodic safety factor assessments for each CCR unit and document whether the calculated factors of safety for each CCR unit achieve the minimum safety factors specified in (e)(1)(i) through (iv) of 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.

(i) The calculated static factor of safety under the long-term, maximum storage pool loading condition must equal or exceed 1.50.
(ii) The calculated static factor of safety under the maximum surcharge pool loading condition must equal or exceed 1.40.
(iii) The calculated seismic factor of safety must equal or exceed 1.00.
(iv) For dikes constructed of soils that have susceptibility to liquefaction, the calculated liquefaction factor of safety must equal or exceed 1.20.

Since the 2021 assessment, the west area of Bottom Ash Pond 3 has been converted into a landfill cell, and the east area has been retrofitted with a new geosynthetic liner in 2022. Additionally, the south slope of the pond had been re-graded as part of the 2022 retrofit. As part of the periodic assessment, an updated analysis has been performed to document that the calculated factors of safety for Bottom Ash Pond 3 achieve the minimum factors of safety listed in § 257.73(e)(1)(i) through (iv). The periodic safety factor assessment included evaluating multiple cross-sections of existing conditions and performing analyses at the critical (i.e. most susceptible) cross section, based on appropriate engineering considerations at the time of this assessment and calculations. The analyses used subsurface information collected from historical subsurface investigations and laboratory data. Engineering properties for the various material strata were selected based on the results of available field and laboratory data. The results of the safety factor assessment are listed in Table 1.

Table 1. Summary of Periodic (5-Year) Safety Factor Assessment

Loading Conditions	§ 257.73(e)(1) Subsection	Minimum Factor of Safety	Calculated Factor of Safety	
			South Dike	North Dike
Maximum Storage Pool Loading	(i)	1.50	2.25	1.75
Maximum Surcharge Pool Loading	(ii)	1.40	2.25	1.75
Seismic	(iii)	1.00	1.58	1.25
Soils Susceptible to Liquefaction	(iv)	1.20	2.00	2.00

[1] U.S. Environmental Protection Agency. (USEPA). (2015). *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule*, 40 CFR §257. Federal Register, Volume 80, Subpart D, April 17, 2015.

Based on this evaluation, Bottom Ash Pond 3 meets the requirements in § 257.73(e)(1).

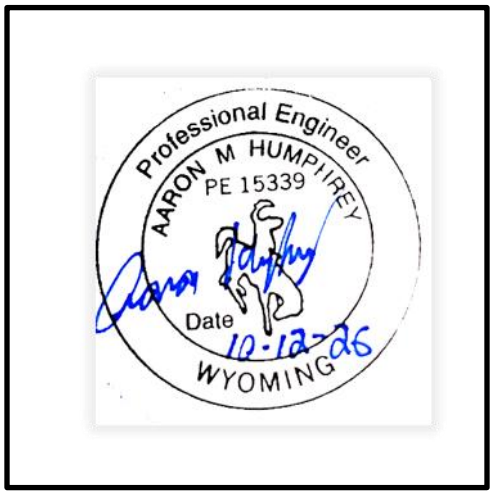
3. Certification Statement

CCR Unit: Basin Electric Power Cooperative; Laramie River Station; Bottom Ash Pond 3

I, Aaron Humphrey, being a Registered Professional Engineer in good standing in the State of Wyoming, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this CCR Rule Report has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Unit, that the periodic safety factor assessment meets the requirements of 40 CFR § 257.73(e).

Aaron M Humphrey

Printed Name

October 12, 2026

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