2018 Annual Surface Impoundment Inspection

Coyote Station – Nelsen Pond

Prepared for
Otter Tail Power Company
Beulah, North Dakota

November 2018

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Certifications

I hereby certify that I have examined the facility and, being familiar with the provisions of 40 CFR 257 Subpart D, attest that Otter Tail Power Company's Coyote Station, Nelsen Pond CCR surface impoundment design, construction, operation, and maintenance are consistent with recognized and generally accepted good engineering standards, including consideration of applicable industry standards and the requirements of 40 CFR §257.83.

Scott F. Korom, PhD, PE
Barr Engineering Co.
North Dakota Registration Number PE 3835

Dated this 7th day of November, 2018

Scott F. Korom
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1.0 Introduction

Otter Tail Power Company (OTP) operates Coyote Station (Coyote), in Beulah, North Dakota. Coyote is a coal-fired steam-electrical generator, operation of which results in coal combustion residuals (CCR) as a by-product. CCR management is subject to Federal Standards for Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments per 40 CFR 257 Subpart D (CCR Rule).

CCR is sluiced from the plant to the Sluice Outfall, an incised impoundment. Coarse material is excavated from the Sluice Outfall for disposal at an on-site CCR landfill. Water and CCR discharges from the Sluice Outfall to the Slag Pond, another incised impoundment. OTP periodically dredges and pumps CCR material that accumulates in the incised Sluice Outfall and incised Slag Pond to Nelsen Pond to dewater prior to disposal.

Nelsen Pond is subject to periodic structural stability assessments under the CCR Rule; therefore, it is also subject to annual inspections by a qualified professional engineer in accordance with CCR Rule requirements for surface impoundments. This report includes the information required by § 257.83(b) *Annual inspections by a qualified professional engineer* and documents the annual inspection performed by Scott F. Korom, PE, on September 9, 2018, as required by the CCR Rule.

2.0 Review of Existing Information

A review of existing information was performed to confirm that the design, construction, operation, and maintenance of the surface impoundment are consistent with recognized and generally accepted good engineering standards. No deficiencies were found and the existing information reviewed is described in the following subsections.

2.1 CCR Unit Design and Construction Information

The Nelsen Pond History of Construction (October 2016) report is located at OTP's CCR website (http://www.ccr-cs.net/nelsen-pond-sp-170/). It was reviewed in the 2016 Annual Inspection Report and no deficiencies were found. The report has not been revised since it was last reviewed.

2.2 Previous Periodic Structural Stability Assessments

The Initial Structural Stability Assessment report (Carlson McCain. October 17, 2016) is located at OTP's CCR website (http://www.ccr-cs.net/nelsen-pond-sp-170/). It concluded that, "The CCR unit was designed, constructed, and is operated and maintained with recognized and generally accepted good engineering practices for the maximum volume of CCR and CCR wastewater which can be impounded."

2.3 Previous Annual Surface Impoundment Inspection Reports

Since 2015, Barr Engineering Co. (Barr) has completed the Annual Surface Impoundment Inspection Reports (Barr, January 2016; Barr, November 2016; Barr, November 2017). All three reports are located at OTP's CCR website (http://www.ccr-cs.net/nelsen-pond-sp-170/). They stated that existing site information was reviewed, a site inspection was completed, and no deficiencies were found.

2.4 Weekly Inspections

Weekly inspection reports from November 7, 2017, through October 29, 2018, were reviewed for this report. All of the weekly inspections were done by Mr. Justin Sailer, Plant Engineer. The inspection reports were dated at intervals not exceeding seven days and no significant problems in the design, construction, operation, and maintenance of Nelsen Pond were noted.

3.0 Structural Integrity and Operational Review

An on-site inspection was performed on September 9, 2018, to visually identify signs of distress or malfunction of the CCR unit. No deficiencies were found and the results of the inspection are included in the following subsections.

3.1 Visual Inspection of Nelsen Pond

The inspection consisted of on-foot inspection of perimeter berms and embankments, toe-of-slope, mid-slope, and crest-of-slope. The geometry of Nelsen Pond is unchanged from the 2017 inspection. This result and other visual inspection items and results are summarized in the following table:

Table 3-1 Summary of Visual Inspection

Item	Visual Inspection Description	Consistent With Good Engineering Standards (Yes/No)	Notes
1	Free of signs of excessive, turbid, or sediment-laden seepage.	Yes	None.
2	Free of signs of piping and other internal erosion.	Yes	None.
3	Free of signs of deep transverse, longitudinal, and desiccation cracking.	Yes	None.
4	Free of signs of slides, bulges, boils, sloughs, scarps, sinkholes, or depressions.	Yes	None.
5	Geometry of surface impoundment is unchanged from previous inspection.	Yes	None.
6	Free of signs of abnormally high pool levels.	Yes	None.
7	Animal burrows absent or of no significance.	Yes	There were more animal burrows than last year, but they were not excessive.
8	Adequate vegetation density and vegetation maintenance.	Yes	None.
9	Adequate slope stability and erosion control.	Yes	None.
10	Debris controlled or absent.	Yes	Recommend removal of the two or three wood pallets.
11	Outlet control structure is free of obstructions.	Yes	None.

3.2 Other Changes

No other changes to the CCR unit design, maintenance, or operations were observed or reported by OTP as part of the annual inspection that could affect the stability or operation of the CCR unit. The annual inspection did not reveal any conditions that would cause concern with regard to actual or potential structural weakness of the CCR unit, or any existing conditions that are disrupting, or have the potential to disrupt, the operation and safety of the CCR unit and appurtenant structures.

4.0 Volume of CCR Contained

The following table summarizes the CCR unit usage at the time of the inspection and since the previous annual inspection. During the inspection, precipitation had caused some puddles in Nelsen Pond that were up to a few inches deep; however, Nelsen Pond is normally dry, except when slag has been recently placed for dewatering. OTP reported that such use did not occur since the previous annual inspection and that the next expected use is anticipated to be in 2019.

The values below are based on there currently being no standing water in Nelsen Pond and that the dry CCR is about 0.5 feet thick over the underlying clay liner, as noted in the 2016 Annual Inspection Report.

Table 4-1 Approximate Minimum, Maximum, and Present Depth and Elevation of Impounded Water and CCR.

Water Level	Approx. Depth of Impounded CCR and Water (ft)	Approx. Elevation of Impounded CCR and Water (ft)	Approx. Volume of Impounded CCR and Water (cy)	Approx. Volume of Storage Capacity Remaining (cy)[1]
Minimum	0.5	Ave. elev. = 1935.5	3,000	39,500
Maximum	0.5	Ave. elev. = 1935.5	3,000	39,500
At Inspection	0.5	Ave. elev. = 1935.5	3,000	39,500

[1] Estimated total capacity of Nelsen Pond with 2 ft of freeboard (elev. = 1942 ft) is 42,500 cy.

5.0 References

Barr, January 2016. 2015 Annual Surface Impoundment Inspection, Coyote Station – Nelsen Pond.

Barr, November 2016. 2016 Annual Surface Impoundment Inspection, Coyote Station – Nelsen Pond.

Barr, November 2017. 2017 Annual Surface Impoundment Inspection, Coyote Station – Nelsen Pond.