

# **Coal Combustion Residual Landfill Annual Inspection Report 2017**

**Basin Electric Power Cooperative  
Leland Olds Station**

**January 2018**

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## Purpose and Definitions

In accordance with **40 CFR §257.84(b)(2)**, the purpose of this document is to fulfill the requirements for an Annual Inspection Report prepared by a Qualified Professional Engineer (QPE) to ensure the design, construction, operation, and maintenance of the Basin Electric Power Cooperative (Basin Electric) Leland Olds Station (LOS) landfill is consistent with recognized and generally accepted good engineering standards.

LOS operates two lignite-fired boilers, resulting in the production of coal combustion residuals (CCRs). CCRs are defined in 40 CFR §257.53 (Definitions) as:

*“CCR means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.”*

CCRs generated at LOS (and thus regulated under 40 CFR 257) include boiler slag, flue gas desulfurization (FGD) materials and fly ash.

## CCR Production and Handling

On a daily average, approximately 1400 tons of FGD materials, fly ash, and boiler slag (oftentimes referred to as bottom ash) are generated at LOS. Not all CCRs generated at LOS are managed in solid waste facilities; significant amounts of boiler slag and fly ash are sold for beneficial use. The proportions of FGD, fly ash, and boiler slag produced at LOS are approximately 40%, 30% and 30% respectively. When not being beneficially reused, the moisture-conditioned CCRs (fly ash, boiler slag, and FGD material) are transported by haul truck approximately 4.5 miles to the LOS Glenharold Mine Landfill, where the CCRs are dumped, spread and compacted.

## Review of Existing Records

The LOS Glenharold Mine Landfill, designated as 0143 by the North Dakota Department of Health (NDDoH), was first permitted for the disposal of CCRs in 1992. The landfill is located in an area of spoils left by the mining of the Hagel Lignite Bed. Disposal of CCRs at the site began in late 1992, with an area permitted for CCR disposal encompassing approximately 67.79 acres.

The active disposal area encompasses approximately 33.65 acres, in various stages of filling. Approximately 34.14 acres of the landfill have undergone partial sequential closure through 10 discrete landfill closure/capping projects. A review of existing records for the facility confirms the design, construction, operation, and maintenance of the landfill has been generally consistent with recognized and accepted good engineering standards.

## CCR Landfill Lateral Expansion

A lateral expansion of the CCR landfill was approved by the North Dakota Department of Health in 2017 in order to accommodate the FGD waste stream resulting from the installation of new air pollution control equipment at LOS. The lateral expansion includes eight future disposal cells encompassing 80.7 acres of lined landfill footprint. The disposal area is bounded by the existing landfill to the east and perimeter berms on the north, west and south sides. Ancillary features include perimeter ditches to capture runoff, three ponds to manage storm water, a leachate evaporation pond, soil stockpiles and access roads. Each landfill cell is divided into two subcells. The initial phase of development for the expansion area (constructed in 2017) included Cell 1, which contains approximately 14.9 acres of composite landfill liner. Subsequent cells may be constructed either as subcells or as entire cells, depending on future disposal volume needs.

## Weekly Inspection Review

During 2017, qualified individuals (generally the LOS Environmental Coordinator or the LOS Coal and Yard Supervisor) conducted weekly inspections for any appearance of actual or potential structural weakness and other conditions which were disrupting or had the potential to disrupt the operation or safety of the CCR unit. Appearances of structural weakness may include, but are not limited to: (1) signs of piping and other internal erosion; (2) transverse, longitudinal, and desiccation cracking; (3) slides, bulges, boils, sloughs, scarps, sinkholes, or depressions; (4) animal burrows; (5) excessive or lacking vegetative cover; and (6) slope erosion. A review of the periodic inspection reports for the LOS CCR landfill indicated no signs of actual or potential structural weakness or other adverse conditions as described above.

## Onsite Inspection of Facility

The LOS CCR landfill was visually inspected several times during 2017 by Kevin L. Solie, North Dakota Professional Engineer PE-9488. Waste placement appeared consistent with good operating practices and the NDDoH permit. Run-on and run-off were properly controlled and no fugitive dust was evident.

Previously closed areas appeared to be well-vegetated and were gently sloped in accordance with the NDDoH solid waste landfill permit. To a large extent, the landfill is an incised solid waste management unit, with relatively low relief in comparison to the surrounding topography. No erosion or signs of slope instability were observed. Overall operation and maintenance of the facility appeared to be consistent with good industry practices. No signs of distress or malfunction of the CCR unit were observed during the inspection.

## Annual Report Findings and Recommendations

The total volume of CCRs present in the LOS landfill as of October 2017 is approximately 13,085,000 cubic yards; approximately 10,011,000 cubic yards of permitted airspace remain. The annual inspection revealed no appearance of actual or potential structural weakness of the CCR unit. No signs of distress or malfunction of the CCR unit were observed during the inspection and no changes have occurred that affect the stability or operation of the facility. The design, construction, operation and maintenance of the facility are consistent with recognized and generally accepted good engineering standards and industry practices. No corrective measures are recommended for the LOS CCR landfill.

## Certification Statement

I certify that this report has been prepared in accordance with **40 CFR §257.84(b)(2)** requiring a written Annual Inspection Report by a Qualified Professional Engineer as set forth in the *Standards for the Disposal of Coal Combustion Residuals in Landfills and Impoundments*.



Kevin L. Solie, North Dakota PE-9488

January 13, 2018

