Coal Combustion Residual
Landfill Annual Inspection Report

Basin Electric Power Cooperative
Antelope Valley Station

January 2016

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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) Antelope Valley Station (AVS) landfill is consistent with recognized and generally accepted good engineering standards.

AVS operates two lignite-fired boilers, resulting in the production of 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 AVS (and thus regulated under 40 CFR 257) include bottom ash, flue gas desulfurization (FGD) materials and fly ash.

CCR Production and Handling

On average, approximately 2200 tons of mixed FGD materials, fly ash, and bottom ash are produced at AVS each day. The proportions of FGD, fly ash, and bottom ash are approximately 5%, 70%, and 25% respectively. The moisture-conditioned CCRs are transported by haul truck approximately 2.3 miles to the AVS CCR landfill, where the CCRs are dumped, spread and compacted.

Review of Existing Records

The area occupied by the landfill was originally permitted as part of the Coteau Properties Freedom Mine. The mining permit was revised in 1989 to allow an approximately 160 acre parcel be set aside for use as a landfill. The site was permitted by the North Dakota Department of Health (NDDoH) for solid waste disposal in 1995 under Permit SP-160. The first phase of liner construction was completed in 1996, with ash placement beginning the same year. The second phase of liner construction was completed in 2000, while the third phase of liner construction was completed and placed into service in 2008. The final phase of liner

construction took place in 2015. In total, the four phases of liner construction encompass approximately 102.66 acres. The landfill underwent partial sequential closure in 2003, 2011, and 2014. 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.

Weekly Inspection Review

Beginning on October 15, 2015, qualified individuals (generally the AVS Environmental Coordinator or one of the Shift Supervisors) 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 AVS CCR landfill indicated no signs of actual or potential structural weakness or other adverse conditions as described above.

Onsite Inspection of Facility

The AVS CCR landfill was visually inspected on October 15, 2015 by Kevin L. Solie, North Dakota Professional Engineer PE-9488. Waste placement appeared consistent with good operating practices and the NDDoH permit. Areas in Cells 1, 2, and 3 were being filled to final closure grade, while the area of newly constructed landfill bottom liner (Cell 4) was carefully being protected by the placement of a four- to five-foot thick lift of CCRs. Run-on and run-off were properly controlled and no fugitive dust was evident.

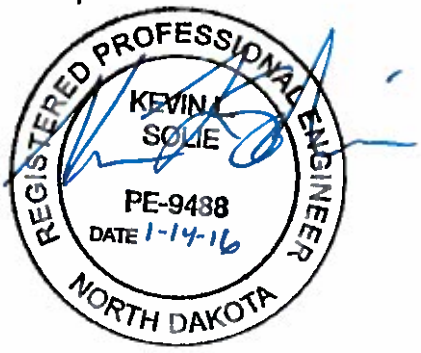
Slopes of previously closed areas appeared to be well-vegetated and were sloped (approximately 15%) in accordance with the NDDoH solid waste landfill permit. No erosion or signs of slope instability were observed. Overall operation and maintenance of the facility appeared to be consistent with good industry 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 AVS landfill as of October 2015 is approximately 9,552,383 cubic yards; approximately 6,447,617 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 AVS 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 of Coal Combustion Residuals in Landfills and Impoundments.*



Kevin L. Solie, North Dakota PE-9488
January 14, 2016