

Coal Combustion Residual Fugitive Dust Control Plan

**Basin Electric Power Cooperative
Antelope Valley Station**

**Revision 1
February 2017**

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Revision History

Revision Number	Description of Revision	Reviser's Name	Revision Date
1	Remove references to SDA Pond and Decant Pond as CCR Units because they do not receive CCRs. See Regulatory Determination for additional information.	Kevin L. Solie	February 7, 2017

Purpose and Definitions

In accordance with 40 CFR §257.80, the purpose of this Fugitive Dust Control Plan (Plan) is to adopt measures that will effectively minimize Coal Combustion Residuals (CCRs) from becoming airborne at the Basin Electric Power Cooperative (Basin Electric) Antelope Valley Station (AVS) Landfill, including CCR fugitive dust originating from CCR units, roads, and other CCR material management and material handling activities.

AVS operates two lignite-fired boilers, resulting in the production of CCRs. CCRs and CCR fugitive dust 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.”

“CCR fugitive dust means solid airborne particulate matter that contains or is derived from CCRs, emitted from any source other than a stack or chimney.”

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

Dust from coal piles, aggregate surfaced roads, soil stockpiles and other non-CCR sources are not subject to this plan.

Responsibility

Implementation of this plan is the responsibility of the facility Environmental Coordinator, Coal Yard Supervisors, all Shift Supervisors, Lead Yard Equipment Operators and Equipment Operators.

CCR Production and Handling

On average, approximately 1850 tons of mixed FGD materials, fly ash, and bottom ash are disposed in the AVS CCR landfill each day. The proportions of FGD, fly ash, and bottom ash are approximately 5%, 70%, and 25% respectively. A description of CCR generation and handling at AVS follows.

Bottom ash from the main boiler, pyrite rejected from the pulverizers, and ash discharged from the economizer hoppers are hydraulically conveyed to one of two dewatering bins at AVS. When one dewatering bin is full, the ash slurry is diverted to the other dewatering bin and the water from the full bin is decanted. The ash is then transported to the landfill in haul trucks. All water from the dewatering bins is recycled; however, some is lost with the ash. Typically, a range of 15 to 25 percent moisture content is expected with the bottom ash when transported to the landfill.

The method of controlling sulfur dioxide (SO₂) and particulate emissions from AVS is dry scrubbing. The system has five spray dryers followed by two parallel, fabric filter baghouses. Each spray dryer utilizes a rotary atomizer to disperse a fine mist into the flue gas as it enters the spray dryer.

Lime slurry and a portion of the recycled ash product is mixed to create the feed slurry which goes into the atomizers. A very rapid chemical reaction occurs removing SO₂ from the flue gas. At the same time, thermal energy from the flue gas evaporates the water in the droplets to form a dry powder consisting of calcium sulfite and sulfate, unreacted lime, and fly ash. Some of the product is removed in the conical bottom of the spray dryer. The remainder is suspended in the flue gas which is collected in the baghouse. Particulate matter collects in the hoppers at the bottom of the baghouse compartment. From there, it is pneumatically conveyed to one of two storage silos.

Typically, the spray dryer product is essentially dry, with less than 2 percent moisture. Twin Paddle Mixers mix water (typically 10 to 20% by weight) with the dry ash to minimize dusting and discharge the conditioned ash into ash trucks.

The moisture-conditioned CCR is then transported by haul truck approximately 2.3 miles to the AVS CCR landfill, where the CCRs are dumped, spread and compacted.

Identification of Sources

CCR loading, hauling and landfill operations present the greatest potential as sources of CCR fugitive dust emissions.

Description and Justification of Controls

Fugitive dust from loading operations is controlled by the moisture conditioning of materials (described in previous section). Bottom ash is a relatively coarse-grained material, and as indicated earlier, contains 15 to 25 percent moisture when loaded into haul trucks. These factors (grain-size and moisture content) greatly reduce the probability of fugitive dust emissions of this CCR.

The combined fly ash FGD material is relatively fine-grained, and if excessively dry, the material has potential for becoming airborne during loading operations. As described earlier, twin-paddle mixers, mix water (typically 10 to 20% by weight) with the dry ash to minimize dusting, and discharge the conditioned ash into haul trucks. Dust suppressing agents may also be utilized in conjunction with water. To further minimize the potential for dusting, CCRs are loaded into haul trucks in a partial enclosure.

The primary means of controlling fugitive dust during CCR hauling operations is by moisture conditioning the materials (described earlier) before transport. Dust suppressant agents may also be utilized in conjunction with water for increased fugitive dust minimization. The haul road speed limit is set at 30 mph, further limiting the probability of dusting. In addition, hauling may be suspended if wind speeds are greater than 40 mph (dependent on other mitigating conditions such as rain, freezing temperatures, etc.) Waste material that is spilled in waste loading or handling areas, haul roads, access ramps, or other areas out of the immediate disposal area will be cleaned up and returned to the transport vehicle or to the disposal area.

North Dakota Administrative Code Chapter 33-15-17-03 (2) (f) requires that waste disposal sites be operated and constructed as to prevent particulate matter from being airborne. As with loading and hauling operations, the primary means of controlling fugitive dust during landfill operations is the CCR moisture conditioning that occurs before the materials are loaded into haul trucks. Since the distance from the CCR loading to the landfill is relatively small, moisture-conditioned CCRs arrive at the landfill with essentially the same moisture content as when initially loaded. Landfill operations may be temporarily suspended if wind speeds are greater than 40 mph, again, dependent on other mitigating conditions (rain, freezing temperatures, etc.) On areas where fly ash/FGD will not be immediately placed or on areas subject to equipment traffic, bottom ash will spread to seal the area, minimizing fugitive dust. Water may be spread on the landfill if needed for additional dust suppression. Finally, the practice of partial sequential closure will be incorporated at this facility. As areas of the landfill are brought to grade, the final cover system will be installed, effectively eliminating the possibility of CCR fugitive dust emission from these capped and revegetated areas.

Statement of Moisture Conditioning

Before CCRs are loaded into truck for transport to the landfill, ash/FGD material is moisture-conditioned to 10 to 20% moisture content. This moisture content effectively minimizes ash/FGD from becoming airborne. Bottom ash typically contains 15 to 25 percent moisture content when loaded into haul trucks.

Establish Log for Complaints

To date, Basin Electric has not received any complaints due to CCR dust emissions from this facility. A log for recording citizen complaints is attached (Attachment 1). Log entries include data and time of complaint, name and telephone number of person making complaint, location of reported fugitive dusting event, corrective measures taken, and current weather condition parameter estimates (including wind speed and direction, temperature, relative humidity, etc.)

Periodic Assessments and Amendment of Plan

The facility environmental coordinator or other qualified person will include observations for fugitive dust emissions while performing weekly and monthly inspections required by the CCR Rule 40 CFR Parts 257.83 and/or 257.84. If fugitive dust is observed, additional controls will be implemented to correct the situation. Basin Electric will amend the written plan whenever there is a change in conditions that would substantially affect the written plan currently in effect, such as the construction and operation of a new CCR unit.

Annual Fugitive Dust Report

Basin Electric will prepare an annual CCR fugitive dust control report (to be completed and posted to Basin Electric's CCR Public website by December 1st of each year) that includes a description of the actions taken by the owner or operator to control CCR fugitive dust, a record of all citizen complaints, and a summary of any corrective measures taken.

Certification Statement

I certify that this Fugitive Dust Control Plan meets the requirements of 40 CFR §257.80 specifying Air Criteria in the *Standards for the Disposal of Coal Combustion Residuals in Landfills and Impoundments*.



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