



NUCLA GENERATING STATION

Coal Combustion Residuals Fugitive Dust Control Plan

Submitted To: Tri-State Generation and Transmission Association, Inc.
100 West 116th Avenue
Westminster, CO 80234

Submitted By: Golder Associates Inc.
44 Union Boulevard, Suite 300
Lakewood, CO 80228 USA

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Golder (1 copy)

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1.0 INTRODUCTION

This Coal Combustion Residuals (CCR) Fugitive Dust Control Plan (the Plan) has been prepared for Tri-State Generation and Transmission Association's (Tri-State's) Nucla Generating Station and Ash Disposal Site (the Site). This Plan has been developed in accordance with recognized and generally accepted good engineering practice and the CCR Rule, Criteria for Classification of Solid Waste Disposal Facilities and Practices, Subpart D – Standards for the Disposal of CCRs in Landfills and Surface Impoundments, which was published in the Code of Federal Regulations Title 40 Part 257 (40 CFR 257) on April 17, 2015. This Plan addresses measures to “effectively minimize CCR from becoming airborne at the facility, including CCR fugitive dust originating from CCR units, roads, and other CCR management and material handling activities” (40 CFR 257.80).

This Plan includes identification of the CCR-related fugitive dust sources at the Site; measures to control the fugitive dust; reasons for selecting the dust control measures; procedures to evaluate the effectiveness of the Plan; procedures for documenting citizen complaints; and requirements for recordkeeping and notification. This Plan may be amended from time to time. The most recent Plan will be maintained in the Operating Record.

1.1 Facility Description

The Site is a 110-megawatt coal-fired electric generation facility located near Nucla, Colorado. Coal combustion residuals generated at the Site include fly ash and bottom ash, which are disposed in a CCR landfill (Ash Disposal Site) that is owned and operated by Tri-State and regulated by the Colorado Department of Public Health and Environment (CDPHE). The Ash Disposal Site is located approximately 3.9 miles by public road from the generation facility. This Plan includes fugitive dust control measures for management and/or handling of CCRs at the generation facility, transport of CCRs to the Ash Disposal Site, and placement of CCRs at the Ash Disposal Site.

1.2 Regulatory Requirements

At the Site, fugitive dust (both CCR-related and otherwise) is regulated by CDPHE in accordance with a Title V Operating Permit and Regulation Number 3, Stationary Source Permitting and Air Pollutant Emission Notice Requirements (5 CCR 1001-5). Fugitive dust generated by CCR-related activities at the Site will also be managed in accordance with the CCR Rule, 40 CFR 257. This Plan is limited to addressing the requirements of the CCR Rule. Specific requirements of the Title V Operating Permit are not duplicated in this Plan. The requirements of the CCR Rule pertaining to fugitive dust control are:

- Identify and describe the CCR fugitive dust control measures used at the Site, and explain the reasons for selection of these measures, in the Plan.
- Moisture condition CCRs prior to, during, and/or after placement.



- Provide procedures in the Plan to log citizen complaints regarding CCR fugitive dust at the Site.
- Describe procedures to evaluate the effectiveness of the Plan.
- Prepare the initial Plan, which must be certified by a professional engineer, and place it in the Operating Record by October 19, 2015.
- Prepare an annual report of CCR fugitive dust control activities.
- Maintain the most recent Plan and annual reports for the previous five years in the Operating Record.
- Notify CDPHE when the initial Plan, an amended Plan, or an annual report is placed in the Operating Record.
- Post the current version of the Plan and annual reports for the previous five years on a publically accessible website.



2.0 FUGITIVE DUST CONTROL MEASURES

Fugitive dust may be generated at the Site by CCR loading, transport, and placement operations. The specific locations of these potential CCR fugitive dust sources are as follows:

- Collection and Loading
 - Fly Ash
 - Baghouse to Fly Ash Silo
 - Fly Ash Silo to Haul Trucks
 - Bottom Ash
 - Screw Cooler to Bottom Ash Silo
 - Bottom Ash Silo to Haul Trucks
- Transport
 - Haul Trucks
 - Haul Roads
- Placement and Storage
 - Ash Disposal Site

2.1 Collection and Loading

Fly ash generated at the Site is collected in a baghouse using fabric dust collector filter bags. It is pneumatically conveyed to the Fly Ash Silo. The fly ash is stored in the Fly Ash Silo until it is loaded into haul trucks. The fly ash is moisture conditioned using a paddle wheel mixer immediately before it is loaded into haul trucks.

Bottom ash generated at the Site passes from the boiler into a screw cooler and is handled dry. It is pneumatically conveyed from the screw cooler to the Bottom Ash Silo. The bottom ash is stored in the Bottom Ash Silo until it is loaded into haul trucks.

For CCR collection and loading, fugitive dust emissions may be controlled by:

- Operating the baghouse in accordance with the Title V Operating Permit.
- Using pneumatic conveyance for dry CCRs.
- Using a filtered vent for air displaced from the Fly Ash Silo.
- Using a telescopic chute for loading from the Fly Ash Silo into haul trucks.
- Moisture conditioning fly ash to limit dust emissions.
- Limiting the handling of unconditioned fly ash to the extent possible.
- Using a filtered vent for air displaced from the Bottom Ash Silo.
- Using a telescopic chute for loading from the Bottom Ash Silo into haul trucks.
- Covering haul truck beds with a lid or tarp after loading.
- Reducing or halting haul truck loading operations during high winds.



2.2 Transport

The roads between the generation facility and the Ash Disposal Site are paved. At the Ash Disposal Site, the entrance road is gravel-surfaced and the other haul roads are dirt roads. Fugitive dust emissions from CCR transport may be controlled by:

- Posting speed limit signs indicating speed restrictions on unpaved and haul roads at 30 miles per hour (mph).
- Covering haul truck beds with a lid or tarp during CCR transport.
- Maintaining a gravel surface on the entrance road.
- Watering unpaved roads as needed to limit fugitive dust generation.
- Keeping paved roads clean of tracked-out CCRs. Tracked-out CCRs will be removed daily if observed. If needed, paved roads will be watered.

2.3 Placement and Storage

Fly ash and bottom ash are placed and stored at the Ash Disposal Site. Fugitive dust at the Ash Disposal Site may be created by truck unloading operations, landfill maintenance operations, and/or wind. Fugitive emissions from these operations may be controlled by:

- Commingling fly ash and bottom ash during placement.
- Limiting the fall distance from haul trucks.
- Adding moisture to CCRs with a water truck after placement to limit generation of fugitive dust.
- Compacting CCRs after placement. Compaction may be achieved by blading or by making a pass over spread materials with a haul truck, motor grader, or other heavy equipment.
- Adjusting, reducing, or halting placement operations during high winds.
- Applying a dust suppressant (chemical stabilization substance) if moisture conditioning and compaction are not sufficient to appropriately limit fugitive dust generation.
- Limiting the active placement area and applying cover soil and vegetation to inactive areas that will no longer receive CCRs.

2.4 Control Measures Selection

This section provides the explanation and reasoning behind the selection of CCR fugitive dust control measures for the Site:

- Operating the Baghouse in Accordance with the Title V Operating Permit – The baghouse at the Site is designed to collect fine particulates. Operation of the baghouse in accordance with the Title V Operating Permit helps assure that recognized and generally accepted good engineering practice is followed for collection of fly ash.
- Using Pneumatic Conveyance for Dry CCRs – Dry CCRs are enclosed during pneumatic conveyance, limiting the potential for fugitive dust generation.



- Using Filtered Vents – Filtered vents are designed to control fugitive dust emissions when air is displaced during filling of a silo, like those used for CCR storage at the Site.
- Using Telescopic Chutes – Telescopic chutes decrease the fall distance, which reduces the energy and radius of dispersal.
- Adding Moisture to CCRs During Collection and Loading – Adding moisture to CCRs is an effective strategy for controlling fugitive dust generation. Particles joined by moisture have increased mass and require more energy to become airborne.
- Limiting the Handling of Dry CCRs – Avoiding disturbance of dry CCRs to the extent possible limits the potential for fugitive dust emissions as a result of such disturbance.
- Covering Haul Truck Beds – Covering haul truck beds limits the potential for CCRs to become airborne during transport.
- Adjusting, Reducing, or Halting Operations in High Winds – Adjusting, reducing, or halting operations during periods of high wind reduces the potential for CCRs to become airborne. Sustained winds over 25 miles per hour (mph) or wind gusts over 40 mph merit taking additional measures to control fugitive dust, such as increasing water application. Operations will be halted when sustained winds over 40 mph, or wind gusts over 55 mph, are expected to persist for one hour or longer, in accordance with CDPHE's Regulations Pertaining to Solid Waste Sites and Facilities, 6 CCR 1007-2, Part 1.
- Establishing Speed Limits – Limiting haul truck speeds during CCR transport results in reduced wind dispersal.
- Using Gravel Surfacing – Gravel surfacing limits fugitive dust generation due to the relatively large particle size and is also effective for track-out control.
- Watering Roads – Watering is an effective method for limiting fugitive dust emissions from roadways, particularly unpaved roads. For paved roads, the use of watering, flushing, or sweeping is effective in removing potential fugitive dust, thereby minimizing mechanical interaction between tires or blowing wind and dust on roads.
- Commingling Fly Ash and Bottom Ash – Bottom ash generated at the Site is relatively coarse and contains free lime. Commingling fly ash with bottom ash during placement results in binding of the two materials, with enhanced suppression of the finer fly ash particles.
- Limiting Fall Distance – Limiting the fall distance at the drop point helps to contain the flow of material into a confined area, reducing the energy and radius of dispersal.
- Adding Moisture to CCRs During Placement – Adding moisture to CCRs with water or other permitted liquid to achieve a moisture content that will limit wind dispersal, but will not result in free liquids (40 CFR 257.80(b)(2)), is an effective strategy for controlling fugitive dust. In addition to providing dust suppression, moisture conditioning takes advantage of the pozzolanic (i.e. cementing) properties of fly ash by binding particles together and creating a crust at the ground surface.
- Compacting CCRs After Placement - Compaction helps establish a crust at the ground surface, which can be effective for limiting the generation of fugitive dust.
- Using a Dust Suppressant – Dust suppressants bind with CCRs to form a layer at the ground surface that is resistant to wind dispersal.
- Applying Soil Cover and Vegetation – Limiting the lateral extent of active CCR placement reduces the exposed area that can contribute to fugitive dust generation. Applying soil cover and establishing vegetation prevents CCRs from becoming airborne.



3.0 EVALUATION OF PLAN EFFECTIVENESS

As specified in the preamble to the CCR Rule, performance standards will be employed to evaluate the effectiveness of the Plan instead of quantitative standards, because quantitative standards are “potentially redundant [to the States’ Implementation Plans (SIPs) or the Title V Operating Permits] and challenging-to-implement” for fugitive dust (40 CFR 257 page 21387). Environmental and site staff trained in making visual emission observations will perform routine functions and observations to assure that CCR fugitive dust at the Site is adequately controlled. Descriptions of these activities follow:

- Routine observations will be conducted to determine whether dust is becoming airborne in such quantities and concentrations that it remains visible in the ambient air beyond the premises where it originates or visible plumes cross the property boundary. Corrective action will be taken if visible emissions approach the property boundary.
- The fabric dust collectors are monitored continuously during operations using the Site’s distributed control system (DCS) under the Title V Operating Permit.
- Weather conditions are monitored each day of operation. If high winds exist or are predicted to occur in the area, operations staff will be notified and extra measures will be taken to mitigate CCR fugitive dust emission potential. Extra measures may include further restricting speeds on the haul road and/or providing additional road wetting, and applying additional moisture during CCR placement. If CCR fugitive dust emissions cannot be controlled due to high winds, then CCR loading, hauling, and/or placement operations will cease until wind speeds have reduced such that CCR fugitive dust emissions can again be controlled.

The observations and routine functions listed above are standard practice at the Site. Visual emissions are observed daily during operations to assure that fugitive dust at the site is controlled. Personnel involved in CCR handling and placement are instructed on an annual basis in specific procedures to ensure compliance with the permits, facility plans, and appropriate regulations. When conditions are not in line with the site standards for fugitive dust emissions, corrective action is taken as needed and designated facility environmental personnel or Tri-State’s environmental services department may be notified.



4.0 CITIZEN COMPLAINTS LOG

Documenting citizen complaints and implementing corrective action will be in accordance with Tri-State's environmental services procedure: *Documenting Fugitive Dust Event Citizen Complaints per CCR Rule*. In summary, this procedure requires that the cause of the complaint will be investigated, and corrective action will be taken if warranted. The complaint will be incorporated into the annual report, along with a summary of the corrective measure(s) taken to address the complaint.



5.0 REPORTING

The recordkeeping, notification, and posting of information to a publicly accessible website required for this Plan are described in the following sections.

5.1 Fugitive Dust Control Plan

The initial Plan will be placed in the Operating Record on or before October 19, 2015. The CDPHE will be notified before the close of business on the day the Plan is placed in the Operating Record. Within 30 days of placement in the Operating Record, the initial Plan will be posted to a publicly accessible website. Certification by a professional engineer registered in Colorado is provided in Section 6.0.

The Plan may be amended from time to time, and the most recent Plan will be maintained in the Operating Record. Notification will be provided before the close of business on the day an amended Plan is placed in the Operating Record. Within 30 days of placement in the Operating Record, the most recent Plan will be posted to a publicly accessible website. The amended Plan will be certified by a professional engineer registered in Colorado.

5.2 Annual Report

The following items will be addressed in each annual report:

- Descriptions of actions taken to control CCR fugitive dust at the Site during the previous year.
- A record of citizen complaints received during the previous year.
- A summary of corrective measures taken during the previous year to address citizen complaints.

The first annual report will be placed in the Operating Record within 14 months of placement of the Plan in the Operating Record. Subsequent reports will be placed in the Operating Record within one year of placement of the previous annual report in the Operating Record.

The CDPHE will be notified before the close of business on the day an annual report is placed in the Operating Record. Within 30 days of placement in the Operating Record, the annual report will be posted to a publicly accessible website. At least the five most recent annual reports will be retained in the Operating Record and posted to the website.



6.0 CERTIFICATION

The fugitive dust control measures selected for controlling CCR fugitive dust at the Site, as described in this Plan, represent recognized and generally accepted good engineering practice, are applicable and appropriate for site conditions, and are expected to effectively limit the amount of CCR that becomes airborne at the Site. Inquiries may be directed to:

Tri-State Generation and Transmission Association, Inc.
Nucla Station
30739 DD 30 Road
Nucla, CO 81424



Engineer's Stamp