



Colstrip Steam Electric Station Units 1&2 Coal Ash Ponds

Units 1&2 Integrated Remedy Evaluation Report

November 2020

Introduction

The Montana Department of Environmental Quality (DEQ) is providing this fact sheet on the Units 1&2 Integrated Remedy Evaluation Report as part of a responsiveness summary addressing public comments received by DEQ.



In August 2012, DEQ and Talen Montana entered into an Administrative Order on Consent (AOC) to address ground water contamination from coal ash disposal pond seepage. The AOC is an enforcement action taken by DEQ, and involves a multi-step procedure for determining the remedial measures to be implemented to address the groundwater contamination downgradient of the ash ponds. For purposes of the AOC process, the site has been divided into three areas: the Plant Site area, the Units 1&2 pond disposal area, and the Units 3&4 pond disposal area. For each of the three areas, Talen submits the following four reports to DEQ for approval:

- A Site Characterization Report
- A Cleanup Criteria and Risk Assessment Report
- A Remedy Evaluation Report
- A Remedial Design/Remedial Action Report

This Fact Sheet is intended to summarize the remedial alternatives analyzed by Talen in the Integrated Remedy Evaluation Report for the Units 1&2 Stage I and Stage II Pond Area, and to provide information regarding DEQ's selection of an alternative. The full report can be found at the following link:

<https://deq.mt.gov/DEQAdmin/mfs/ColstripSteamElectricStation>

Summary of Evaluated Alternatives

The Remedy Evaluation Report for the Units 1&2 pond area was split into two parts: the first part (Part One) addressed the existing groundwater contamination from historical pond seepage. DEQ conditionally approved the Part One report in June 2020. The second part (Integrated Report) was submitted to DEQ by Talen in September 2020 and addresses measures to control the source of the contamination (the ponds).

Talen evaluated four alternatives in the Integrated Report. Each alternative includes the components approved in the Part One report (installation of a groundwater capture/freshwater injection system and dewatering ash in three of the Stage II ponds (A Cell, E Cell, and the Old Clearwell)). Following is a brief description of the four alternatives:

- Alternative 6A: Cap the Stage II Ponds in place with a CCR Rule-compliant geosynthetic liner, and construct a new geosynthetic cap on the Stage I Pond.
- Alternative 7C: Cap the Stage II Ponds in place with a CCR Rule-compliant geosynthetic liner, install a gravity drain beneath the Stage II ponds in 2045 to permanently lower the water table in that area, and excavate and relocate the ash in the Stage I Pond to a new, lined CCR Rule-compliant landfill on Talen property.
- Alternative 10: Excavate and relocate all ash in Stage I and Stage II ponds to a new, lined CCR Rule-compliant landfill on Talen property.
- Alternative 11: Excavate all ash in the Stage I and Stage II ponds within five feet of the projected high water table and relocate the ash within the existing footprint of the ponds. Ash in the Stage I pond would be relocated within that pond; Stage II A Cell ash would be relocated within the Stage I pond; Stage II E Cell and the Old Clearwell ash would be relocated to Stage II D Cell and other areas of the existing cells, if needed. The ponds would be closed and capped with CCR Rule-compliant geosynthetic caps.

Talen modeled each of the Alternatives to determine the relative effectiveness of the various remedies. Based on the models and other site data, Talen identified Alternative 11 as their preferred remedy to address the source of the contamination at the Units 1&2 Ponds.

Selected Remedy and Justification

DEQ has selected Alternative 10 as the remedy to address the source of contamination for the Units 1&2 Stage I and Stage II pond area. Alternative 10 is the only alternative that permanently eliminates mass discharge of Constituents of Interest (COIs) from the ash to the groundwater, resulting in a permanent achievement of cleanup criteria at the point of compliance.



DEQ performed a thorough analysis of the Integrated Report and determined that Alternatives 6A, 7C, and 11 would not achieve cleanup criteria permanently for the following reasons:

- Alternative 6A leaves ash in contact with groundwater permanently, resulting in a long-term source of COIs to the aquifers.
- Alternative 7C relies on the successful construction and maintenance of a gravity drain in perpetuity to avoid leaving a source (coal ash) in contact with groundwater. Background water chemistry of the region causes scaling in existing wells, and will result in higher risk and uncertainty of the gravity drain performing long-term without failure.
- Alternative 11 depends on groundwater model projections of future high groundwater levels and does not take into account changes in groundwater elevation resulting from the upgradient Rosebud Mine. When Rosebud Mine dewatering ceases in 2031, water levels in the Units 1&2 Pond area would rise an additional 3-4 ft, resulting in a much larger amount of ash requiring removal and decreasing the area available for ash placement above the water table, creating uncertainty in the feasibility of Alternative 11.
- The groundwater model does not account for removal

of secondary sources (underlying sediments) in alternatives involving excavation; therefore, the model overpredicts plume re-emergence for Alternative 10. DEQ believes Alternative 10 will be more effective in achieving the cleanup criteria at the point of compliance in the long-term than the other proposed alternatives.

Detailed Description of Selected Remedy

Under Alternative 10, the Stage I and Stage II Ponds and the associated dams will be closed by removal to a new landfill. Approximately 6.7 million cubic yards of ash and 2 million cubic yards of dam material will be removed from the Units 1&2 Pond area. The new landfill will be constructed on Talen's property north of the current ponds, and will be approximately 91 acres. Landfill design will comply with Federal CCR Rule requirements, and will be located at least 5 feet above the high groundwater level.

After design and permitting (if necessary) of the new landfill is complete, ash excavation will take place. Additional sediments below the former ponds will be removed if needed (as determined by sample results) and placed in the new landfill. Talen estimates ash and dam removal will take approximately six years, with final capping of the new landfill and reclamation of the footprint of the former Units 1&2 Ponds being complete by 2031.

Alternative 10 also includes the groundwater capture/freshwater flushing system that was conditionally approved in the Part One Report.

Financial Assurance

Approval of the Integrated Report triggers the financial assurance requirement under the AOC. DEQ has estimated that the cost to the State to implement Alternative 10 is \$285 million, using a 3% real discount rate. Talen is required to submit a surety bond(s) in this amount within 60 days of DEQ's approval of the Integrated Report. This amount includes the \$43 million in financial assurance currently held by DEQ from approval of the Closure Plans for the Units 1&2 Ponds in December 2018 and the Part One report in June 2020. Total site-wide financial assurance under the AOC for remediation of the Colstrip ash ponds (Units 1&2 Pond area, Units 3&4 Pond area, and the Plant Site area) is \$485 million.

For more information or to be added to the Colstrip email listserv, please contact:

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