Amended Written Closure Plan

Comanche Station – CCR Surface Impoundment

Public Service Company of Colorado
Denver, Colorado

October 17, 2016

July 15, 2021 - Revision 1

August 5, 2022 - Revision 2 Approved

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Table of Abbreviations and Acronyms

Abbreviation	Definition
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
PSCo	Public Service Company of Colorado

1.0 General Information

Comanche Station is a 1,450-megawatt coal-fired, steam turbine power plant owned and operated by Public Service Company of Colorado (PSCo), an Xcel Energy company. The plant is located at 2005 Lime Road, Pueblo, Colorado 81006.

In October 2015, the United States Environmental Protection Agency promulgated the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities; Final Rule (40 Code of Federal Regulations [CFR] §257 and 261) (Federal CCR Rule). The Bottom Ash Pond is subject to the requirements of the Federal CCR Rule.

Historically, bottom ash from Units 1 and 2 boiler bottoms was sluiced to the Bottom Ash Pond for dewatering and temporary storage. The bottom ash was sluiced to a concrete dewatering bunker located at the south end of the pond where solids were separated from the water. The bunker collected the larger bottom ash material and discharged water and fines to the impoundment for additional settling. Dewatered bottom ash was removed from the bunker on a regular basis by a wheeled loader/excavator and hauled off site for encapsulated beneficial use or alternatively disposed in the on-site CCR landfill. The Bottom Ash Pond ceased receiving non-CCR waste in January 2021 and CCR waste in June 2021 when construction of an alternative temporary treatment system for bottom ash sluice water was completed.

Figure 1 provides a Site Plan that shows the location of the Bottom Ash Pond and the CCR landfill.

In accordance with 40 CFR §257.102(b), PSCo is required to publish a written closure plan that, *"…describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices."*

Specific to closure by removal of CCR, 40 CFR §257.102(c) states,

> *"An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standards."*

PSCo intends to close the Bottom Ash Pond via removal of CCR and this Closure Plan fulfills the requirements of the Federal CCR Rule.

2.0 Description of Closure Plan – 257.102(b)(1)(i-iii)

The first step in closure of the Bottom Ash Pond is to prepare a notification of intent to close the pond, pursuant to 257.102(g). A notice of intent to close the Bottom Ash Pond was posted to the Comanche Station CCR website in July 2021. The Bottom Ash Pond will be closed pursuant to Section 257.102(c), by removing and decontaminating all areas affected by releases from the CCR, removal of the CCR and decontaminating affected media, typically called a "clean closure."
All liquid and CCR will be removed from the Bottom Ash Pond. Liquid will be pumped to either the existing Wastewater Settling Ponds (decant water) or the bottom ash treatment system for processing (water with potential suspended solids). Effluent from the treatment system will be pumped to the facility wastewater treatment pond and discharged under the facility wastewater permit, as it is now. CCR present in the pond will be removed and dewatered prior to transport for encapsulated beneficial use or disposal in the CCR landfill. Any impacted clay liner or sub-soils will also be removed. The CCR Rule does not define criteria to demonstrate that remaining soil is clean after removal of CCR. Therefore, a Closure Verification Sampling Plan will be created prior to CCR material being removed which will outline the two-step process to be used for closure confirmation.

First, visual inspection will be used to evaluate if all CCR impacted material appear to have been removed. Second after removal is determined to be complete by visual inspection, sub-soils will be sampled and tested to provide chemical validation of complete CCR removal. Soil confirmation samples will be tested for the trace metals listed in Appendix III and IV of the CCR Rule. Results will be statistically compared to site-specific soil background concentrations, EPA Regional Screening Levels (RSL) or Preliminary Remediation Goals (PRGs) as applicable.

The Bottom Ash Pond was constructed with a 3-foot-thick compacted clay liner; no synthetic liner materials are present. Along with the CCR material, any impacted liner material will also be removed and disposed in the on-site CCR landfill. All ancillary equipment within the limits of the impoundment will be removed and disposed of in a permitted off-site landfill unless otherwise repurposed by PSCo or as otherwise indicated herein. Given the pond's location adjacent to the facility's non-CCR process water ponds and related piping and infrastructure, it may be necessary to stabilize the embankment between the ponds and/or manage water that may enter the Bottom Ash Pond from the adjacent ponds. A stability assessment of the embankment has been initiated to evaluate whether specific measures may be required to maintain stability during pond excavation. If bank stabilization is determined to be necessary, the schedule will need to allow for a design/procurement/construction task.

Based on its location, the former CCR pond footprint has the potential to be repurposed after clean closure to service other facility needs. Therefore, upon completion of clean closure, the pond footprint may be left in its current open and stable configuration. The stormwater that collects within the clean native soil footprint will either infiltrate or can be pumped to the adjacent polishing pond for discharge under the facility's existing discharge permit. Alternatively, the former pond footprint may be re-graded using clean soil from the pond embankment, or other on-site or off-site borrow sources, and seeded with appropriate grass species, as needed. Groundwater monitoring will continue until the criteria in 40 CFR §257.102(c) and 257.95(h) (as applicable) are met.

All closure work described in this plan will be conducted under the supervision of a registered Professional Engineer who will be responsible for certification of closure. Upon completion of

closure activities, a notification of completion of closure will be completed per §257.102(h) and §257.105(i)(8). The notification will document that all requirements and conditions of the Closure Plan were achieved. The report will be signed and sealed by a Colorado registered Professional Engineer.

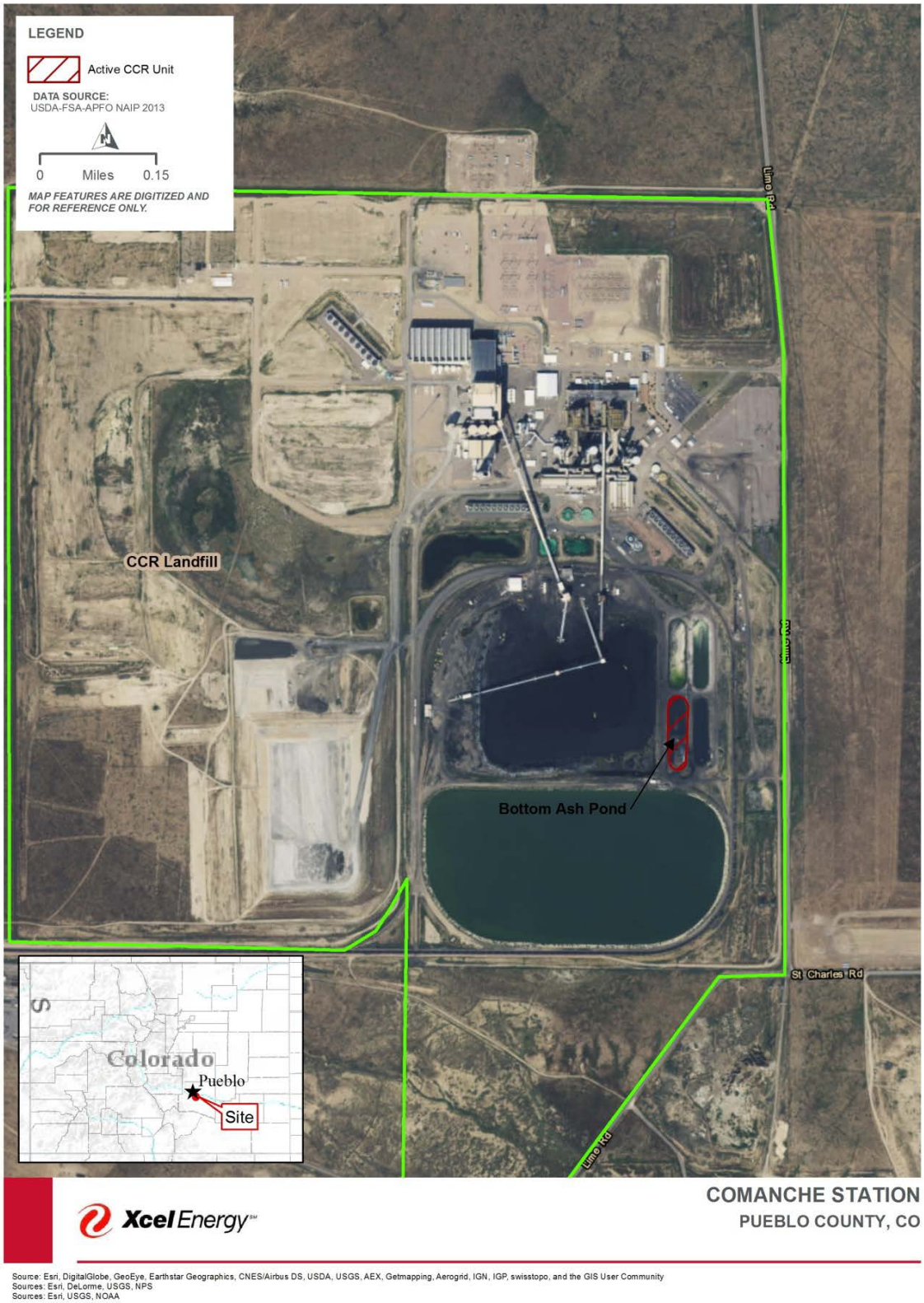

Figure 1. Site Plan

3.0 Inventory Estimate – 257.102(b)(1)(iv)

In accordance with 40 CFR §257.102(b)(1)(iv) an estimate of the maximum inventory of CCR ever on-site over the active life of the CCR impoundment must be provided.

Historically, the dewatering bunker has processed approximately 29,000 tons (23,000 cubic yards) of bottom ash annually. The separated ash was removed from the bunker on a regular basis, and only finer particles were discharged to the pond, which was also routinely cleaned out. The impoundment is approximately 505 feet long by 140 feet wide and 20 feet deep. The impoundment has a surface area of approximately 1.6 acres. Therefore, the impoundment has a maximum volume of approximately 28,500 cubic yards. However, based on the operating and regular ash removal activities, the actual maximum inventory on-site at the Bottom Ash Pond would have been much less than this.

4.0 Area Requiring Final Cover – 257.102(b)1(v)

Section 257.102(b)(1)(v) is not applicable as the closure will be completed by removing the CCR and decontaminating the liner area resulting in a “clean-closure.” The need for a final cover is eliminated when the owner closes the CCR unit via the clean closure option and all CCR is removed and confirmed with soil confirmation sampling results. Similarly, a deed notice per Section 257.102(h)(i) will not be required.

5.0 Schedule of Closure Activities – 257.102(b)1(vi)

Closure of the Bottom Ash Pond will be initiated and completed within the timeframes defined in the Federal CCR Rule at 257.102(e)(1)(ii) and 257.102(f)(1)(ii), respectively. Closure will be completed as soon as practical, and no later than 5 years after initiation of closure activities. The impoundment ceased receiving CCR and non-CCR waste streams by June 2021. Table 1 details the schedule of closure activities related to this rule.

Table 1. Schedule of Closure Activities

Plans	**Initial**	**Revised**
Written Closure Plan	October 17, 2016	July 15, 2021
Amended Written Closure Plan, Rev. 2	July 15, 2021	June 20, 2022
Task	**Start Date**	**Finish Date**
Last Receipt of non-CCR and CCR waste	January 31, 2021	June 18, 2021
Impoundment Closure	2021	2025
• Notice of Intent to Close	July 2021	
• Dewatering, GW eval and CCR removal	2021	2023
• Closure Verification and Soil Sampling	2023	2023
• Bank stabilization/water management	2023	2025
• Post CCR removal GW sampling	2023	2026*
• Grading and stabilization if needed	2025	2025
• EPA Approval of Closure Completion	2026	2026
• Closure Completion Notification	2026	2026

*estimated timeframe to meet criteria within 40 CFR Section 257.102(c) and Section 257.95(h), as applicable

6.0 Certification – §257.102(b)(4)

In accordance with §257.102(b)(4), the owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the initial and any amendment of the written closure plan meets the requirements of this section.

I, Brent J. Learch, being a registered Professional Engineer, in accordance with the Colorado State Board of Licensure for Architects, Professional Engineers, and Professional Land Surveyors, do hereby certify to the best of my knowledge, information, and belief, that the information contained in this written Closure Plan dated June 20, 2022, was conducted in accordance with the requirements of 40 CFR §257.102(b)(4), is true and correct, and was prepared in accordance with recognized and generally accepted good engineering practices.

Signature:

Colorado PE 0056841

Date: August 5, 2022

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Quinn V. Kilty

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Quinn V. Kilty
Manager, Environmental Services