

# 2016 Annual Inspection Report

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for Compliance with the Coal  
Combustion Residuals Rule  
(40 CFR Part 257)

## **Comanche Station**

*2005 Lime Road  
Pueblo, Colorado 81006*

**January 18, 2017**



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# Certification

## Comanche Station CCR Unit 2016 Annual Inspection for Compliance with the Federal Coal Combustion Residuals Rule

I hereby certify that the Coal Combustion Residuals (CCR) unit (i.e. the landfill) at Comanche Station meets the inspection and operation standards specified in 40 CFR Part 257.84(b) of the Federal CCR Rule. The Comanche Station is owned by the Public Service Company of Colorado (PSCo), an Xcel Energy Company.

I am duly licensed Professional Engineer under the laws of the State of Colorado.



Brian Brown, PE

Colorado PE License 0041644

License renewal date October 31, 2017

# 1 Introduction

On April 17, 2015 the U.S. Environmental Protection Agency (EPA) published regulations under Subtitle D of the Resources Conservation and Control Act (RCRA) meant to control the safe disposal of coal combustion residuals (CCR) generated by coal fired electric utilities. The rule defines a set of requirements for the disposal and handling of CCR within CCR units (defined as either landfills or surface impoundments). As specified in 40 CFR 257.84(b), *“Existing and new CCR landfills and any lateral expansion of a CCR landfill must be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards.”* Comanche Station has one (1) CCR landfill subject to the inspection requirement.

This is the second annual inspection report for the existing Comanche CCR landfill. This report must be completed and placed into the facility operating record no later than January 18, 2017.

The requirements for the annual inspection include:

- A review of available information regarding the status and condition of the CCR unit - §257.84 (B)(1)(i),
- A visual inspection of the CCR unit to identify signs of distress or malfunction - §257.84 (B)(1)(ii),
- An inspection report that includes the following:
  - Changes in geometry since the last inspection - §257.84 (B)(2)(i)
  - Approximate volume of CCR in unit at time of inspection - §257.84 (B)(2)(ii)
  - Appearance of actual or potential structural weakness of the CCR unit - §257.84 (B)(2)(iii)
  - Any other changes which may have affected the stability or operation of the CCR unit since the last inspection - §257.84 (B)(2)(iv)

## 2 Site Inspection

In accordance with §257.84(b)(ii) a site inspection of the Comanche CCR landfill was conducted by an independent Professional Engineer on November 2, 2016. This inspection was performed in advance of the CCR submittal deadline to ensure that the inspection was completed prior to snow covering the ground. The inspection was conducted by Brian Brown, a Colorado Professional Engineer of HDR Engineering Inc. (HDR) and Renee Trujillo, an Xcel Energy Environmental Analyst for the Comanche Station.

The weather during the site visit was sunny with temperatures ranging from 60 to 70 degrees Fahrenheit. The site was free of snow cover.

### 3 Review of Available Information

Numerous documents pertaining to the site operation and structural integrity were reviewed including:

1. On-site hard copy Design and Operation Plan (D&O) (D&O dated August 24, 2005, prepared by Wenk Associates, Inc.). Xcel Energy Environmental Analyst reported no changes to this document in 2016 and Xcel continues to operate following this document. Document not reviewed again since the document is unchanged.
2. Engineering Design and Operation Plan (EDOP) (EDOP dated January 13, 2015, prepared by Tetra Tech). This included an Existing Conditions Plan, Proposed Base Grades, Proposed Final Grades, and intermediate final Operational Grades for each cell. The Existing Conditions Plan was surveyed in August, 2013 by Edward-James Surveying, Inc. and included on a Tetra Tech unsigned drawing dated August 14, 2014. Xcel Energy Environmental Analyst reported no changes to this document in 2016 and Xcel continues to operate following this document. Document not reviewed again since the document is unchanged.
3. Weekly CCR Landfill Inspection Forms (per Section 257.84(a)).

Review of the Weekly Inspection Forms did not contain any indications of operational, safety, or structural concerns regarding the CCR landfill. The Xcel Energy Environmental Analyst was not aware of additional forms or documentation that existed other than what was provided to HDR. Colorado Department of Public Health and Environment (CDPHE) did not perform a site inspection in 2016.

### 4 Visual Inspection

Brian Brown, accompanied by Renee Trujillo and Matt Rohr of HDR, completed a site inspection by walking or driving the entire landfill toe of slope, walking areas of the landfill side slopes, driving the landfill top access road, and driving and walking the top of the active landfill cell. As the CCR Rule pertains only to the CCR landfill itself, this report does not address existing topsoil stockpiles and native earth excavations outside the landfill cell.

The site inspection included an evaluation of the following landfill features:

1. Access roads; and,
2. Active CCR fill area.

The following are the findings of the site inspection:

- The landfill side slopes range from approximately 40 to 60 feet in vertical height from toe to plateau and are a constant grade of approximately 4H:1V without benching.

- The east side slopes, with exception of the top lifts, are covered with topsoil and covered with a dense stand of vegetation. Those lifts that still require final grading with topsoil cover and vegetation show signs of minor rill erosion. The side slope had a uniform grade and showed no signs of operational or functional concerns.
- The southeast corner of the landfill does not have a uniform grade. The perimeter access road cuts into the southeast landfill side slope and forms a very steep grade near the toe of slope. This steep grade area showed no signs of sloughing or movement, but this area should be closely monitored as it is also susceptible to rill erosion. This slope is shown on the Existing Conditions Plan and Proposed Final Grades Plan in the EDOP. Xcel Energy reported that a March 4, 2014 Design Report for construction of a new cell (Cell 2 East) contains plans to reconstruct this corner with a rip rap downslope structure. As of this inspection, this plan remains unchanged. This area has had recent site resurfacing performed to address rill erosion on the steep slopes. This regraded area should be surface roughened and revegetated to help stabilize the slope.
- The south side slopes, with exception of the top lifts, are covered with topsoil and a dense stand of vegetation is established. Those lifts that still require final grading with topsoil cover and vegetation show signs of minor rill erosion. The side slope has a uniform grade and showed no signs of operational or functional concerns.
- The west side slopes, with the exception of the top lifts, are covered with topsoil and a dense stand of vegetation is established. Those lifts that still require final grading with topsoil cover and vegetation show signs of minor rill erosion. The side slope has a uniform grade and showed no signs of operational or functional concerns except for an area of active rill erosion near the top half of the side slope near the center of the west side slope. This area should be monitored by Xcel and redressed if erosion continues or surface vegetation doesn't become established.
- The north side slope had a uniform grade, no topsoil placed, and showed no signs of rill erosion or slope instability. There are areas of exposed CCR without soil cover. Per the EDOP, this material is a Class C ash and does not require daily or intermediate soil cover, assuming the material has adequate moisture for self-cementing. The side slope showed no signs of operational or functional concerns.
- There are stockpiles of bottom ash north of the north landfill side slope that are reportedly temporarily stockpiled for beneficial use off-site. These stockpiles are within the landfill footprint and up-gradient of the contact water pond.
- The top of the landfill unit is graded to a flat plateau and has exposed ash, which is EDOP compliant as long as wind erosion is not an issue. No wind erosion of the CCR was observed during the inspection; which was conducted on a day of slight winds from the west.
- In general, landfill areas recently covered with soil and areas with little vegetation established, showed signs of rill erosion. This is expected due to the slope grades and

lack of vegetation. Rill erosion in these areas posed no apparent operational or structural concerns. These landfill areas are anticipated to stabilize as vegetation is established.

- The contact water pond, immediately north of active Cell 1, appears to be functioning as designed. However, at the time of the inspection, the pond had no standing water due to the area's normal scarce precipitation. The pond showed no signs of stability, functional or operational issues.
- The access road to the top of the landfill showed no signs of operational or structural concern. The sides were vegetated and had minimal rill erosion.
- The perimeter access road at the toe of slope showed no signs of operational or structural concern.
- No ash placement or compaction was observed during the site visit.

## 5 Changes in Geometry

The Federal CCR Rules require that site geometry changes be identified since the last inspection. The site geometry changed since the initial inspection due to continued CCR disposal and soil cover placement. Normal operations have raised the landfill's top plateau height by approximately 15 feet but the footprint of the landfill has not extended past the original permitted Cell 1 boundary. The landfill sides slopes continue to be maintained at approximately a 4H:1V slope.

## 6 Approximate CCR Volume

As reported by Xcel Energy, prior to 1987 the CCR for the Comanche Station was disposed of off-site. From 1987 to 2007, the CCR was predominately utilized off-site for beneficial use. Since 2007, the CCR has been disposed of within the on-site CCR landfill. From 2007 through November of 2015, Xcel estimates the total combined volume of CCR on-site to be 2.5 million cubic yards (CY). In addition, fly ash and bottom ash disposed in the CCR landfill from December 2015 through November 2016 is estimated to be 323,900 CY. The total CCR volume within the landfill as of the end of November 2016 is estimated to be 2,823,900 CY.

## 7 Appearance of Structural Weakness

Based on the site inspection and review of available materials, excepting the southeast toe of slope discussed above in Section 4, the site showed no signs of operational and structural concern. Xcel intends to reconstruct the southeast corner with a rip rap downslope structure to minimize slope instability potential and reduce the occurrence of rill erosion in this steeply sloped area.

## 8 Changes Affecting Stability or Operation

There were no observed or reported operation changes that are anticipated to impact the site's near-term or long-term stability. Areas of potential long-term stability concern noted in the prior inspection, areas of severe rill or gully erosion, were remedied. Excepting the southeast corner of the landfill, which is under a design consideration by Xcel, there are no new stability concerns observed or reported.

## Appendix A – Landfill Site Map

