

# 2015 Initial 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, 2016**



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# Certification

## **Comanche Station CCR Unit 2015 Initial 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). Comanche Station has one CCR unit: a landfill. 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.”* As this is a new requirement for CCR landfills, the initial inspection report for existing CCR landfills must be completed no later than January 19, 2016. Subsequent inspections and reports must be must filed on an annual basis.

The requirements of 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 unit was conducted by a Professional Engineer on November 24<sup>th</sup>, 2015. This site 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 professional engineer with HDR; and Renee Trujillo, an Xcel Energy Environmental Analyst.

The weather during the site visit was sunny with temperatures ranging from 50 to 60 degrees Fahrenheit. Strong consistent winds were prevalent throughout the site visit. 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.).
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.
3. Available Weekly CCR Landfill Inspection Forms (per Section 257.84(a)).
4. Colorado Department of Public Health and Environment (CDPHE) Solid Waste Disposal Site and Facility Inspection forms from inspection dates August 23, 2012 and June 20, 2013.

Review of the above documents did not contain any indications of operation, safety, or structural concerns regarding the CCR landfill. The Xcel Energy Environmental Analyst was not aware of further documentation that existed other than what was available during the site visit or made available to HDR in an electronic format.

### 4 Visual Inspection

Brian Brown, accompanied by Renee Trujillo, 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. north side bottom ash piles;
2. access roads; and,
3. active CCR fill area.

The following are the findings of the site inspection:

- The landfill side slopes approximately range from 30 feet to 50 feet in vertical height from toe to plateau and are a constant grade of approximately 4H:1V without benching.

- The east side slopes, excepting the top lifts that have not been covered with topsoil and seeded, are covered with a dense stand of vegetation. Those lifts that still require final grading with topsoil cover and seeding for revegetation show signs of minor rill erosion. The side slope had a uniform grade and showed no signs of operational or functional concerns.
- The south side slopes, excepting the top lifts that have not been covered with topsoil and seeded, are covered with a dense stand of vegetation. Those lifts that still require final grading with topsoil cover and seeding for revegetation show signs of minor rill erosion. The side slope has 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. 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.
- The west side slopes, excepting the top lifts that have not been covered with topsoil and seeded, are covered with a dense stand of vegetation. Those lifts that still require final grading with topsoil cover and seeding for revegetation show signs of minor rill erosion. The side slope has a uniform grade and showed no signs of operational or functional concerns.
- 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 should be reviewed for handling per the EDOP. 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 strong continuous winds.
- 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. Once the topsoil is placed and the areas seeded, the bank faces 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 typical 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 Rule requires that site geometry changes be identified since the last inspection. Since this is the initial annual inspection, the geometry changes will be addressed in subsequent annual inspections. The site geometry was noted during this initial annual inspection and will be used as a basis for subsequent inspections.

## 6 Approximate CCR Volume

As reported by Xcel Energy, the CCR for this site was disposed of off-site prior to 1987. From 1987 – 2007, the CCR was predominately utilized as a beneficial use. Since 2007, the CCR has been disposed of on-site at the CCR landfill. Xcel estimates that the total combined volume of CCR on-site at the time of this inspection to be 2.5 million cubic yards.

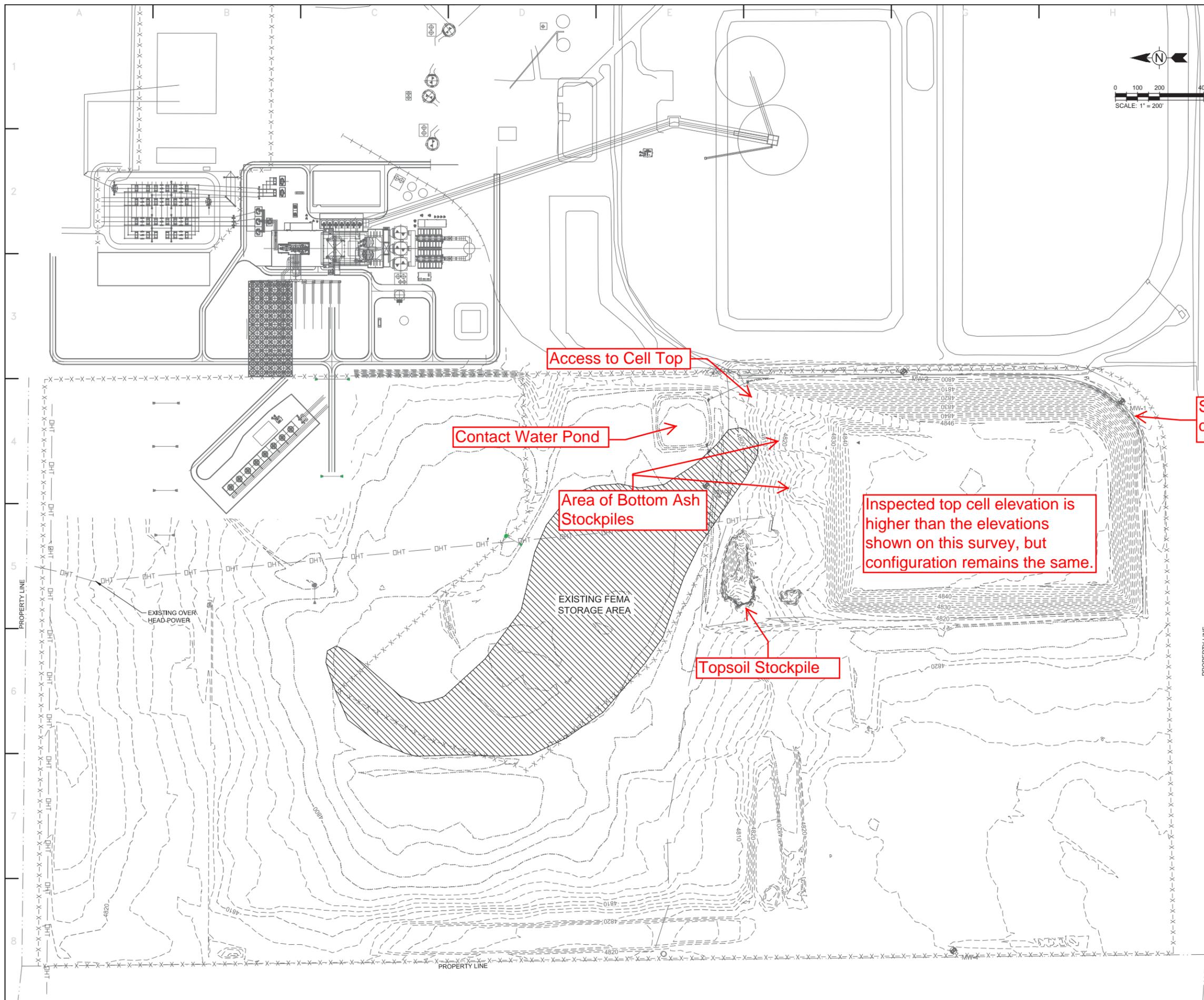
## 7 Appearance of Structural Weakness

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. It is assumed that the current practice of installing topsoil and establishing vegetation will continue as lift side slopes reach final grades. This practice should address the rill erosion observed on the upper lifts.

## 8 Changes Affecting Stability or Operation

The Federal CCR Rule requires that changes that affect site stability or operation be identified since the last inspection. Since this is the initial annual inspection, no comparison can be made to previous conditions. Reported, observed, or suspected changes that have impacts on site stability or operations will be addressed in subsequent annual inspections.

## Appendix A – Landfill Site Map



REFERENCE DRAWINGS		
DWG. NO.	MANUFACTURER	DRAWING TITLE
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**SURVEY NOTES:**

1. SURVEY CONDUCTED AUGUST, 2013, BY:  
EDWARD-JAMES SURVEYING, INC.  
4732 EAGLERIDGE CIRCLE  
PUEBLO, CO 81008  
(719) 545-6240
2. PROJECT BENCHMARK: COMANCHE STATION CONTROL POINT 6,  
ELEVATION 4801.52' (NAVD88).

**LEGEND**

- EXISTING MAJOR CONTOUR
- - - EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- - - PROPOSED MINOR CONTOUR
- CELL BOUNDARY
- |||| RAILROAD
- X- FENCE
- · - · - PROPOSED SWALE
- == PROPOSED DOWNSLOPE STRUCTURE
- ROAD
- ▭ STRUCTURE
- ⊕ MW-1 MONITORING WELL
- X DETAIL NUMBER
- XX SHEET NUMBER WHERE DETAIL IS LOCATED

Access to Cell Top

Contact Water Pond

Area of Bottom Ash Stockpiles

Topsoil Stockpile

Inspected top cell elevation is higher than the elevations shown on this survey, but configuration remains the same.

SE Embankment corner with Cut Toe

Notes in red added by HDR Engineering for CCR Annual Inspection Report, January 2016



NO	REVISION	ZONE	DATE	BY	CHK	ENG

**COMANCHE - COMMON**  
ASH LANDFILL  
DESIGN & OPERATIONS PLAN  
EXISTING CONDITIONS

**Xcel Energy**  
PUBLIC SERVICE COMPANY OF COLORADO

DWN: SEF	DATE: 8-14-14	CHK: JMS	DATE: 8-14-14	PROJ. NO: 0000000
ENG: JMS	DATE: 8-14-14	CHK: DHB	DATE: 8-14-14	SCALE:
PM: JRE	DATE: 8-14-14	D17803-EPDOL00002 SH.2		
APVD:	DATE:	SHEET	REV	
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