

2018 Annual Inspection Report

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

Comanche Station

*2005 Lime Road
Pueblo, Colorado 81006*

January 18, 2019



Table of Contents

Certification	ii
1 Introduction	1
2 Site Inspection	1
3 Review of Available Information	2
4 Visual Inspection.....	2
5 Changes in Geometry.....	2
6 Approximate CCR Volume.....	3
7 Appearance of Structural Weakness	4
8 Changes Affecting Stability or Operation.....	4

Appendices

Appendix A: Landfill Site Map

Certification

Comanche Station CCR Unit 2018 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, 2019

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 fourth 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, 2019.

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 15, 2018. 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 Doug DeCesare, a Colorado Professional Engineer of HDR Engineering Inc. (HDR).

The weather during the site visit was mostly sunny with temperatures ranging from 60 to 65 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. Engineering Design and Operation Plan (EDOP) (EDOP Revised: January 19, 2018, prepared by Tetra Tech). Xcel continues to operate following this document.
2. 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.
3. Colorado Department of Public Health and Environment (CDPHE) Landfill Inspection Compliance Letter, dated November 7, 2018, based on inspection date of August 23, 2018. Findings of letter were that the facility was in substantial compliance with the regulations and EDOP with one minor violation noted at time of inspection, which was promptly corrected.

4 Visual Inspection

Doug DeCesare 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 70 feet to 85 feet in vertical height from toe to plateau and are a constant grade of approximately 4H:1V without benching.
 - The west side slopes of Cell 1 were exposed with little vegetative cover. The slopes have been tracked and dressed in preparation of filling Cell 2 East adjacent to the Cell 1 west slope.
 - The southeast corner of the landfill has been revised to include a drainage rundown structure for future final closure. Additionally this slope area which previously was not uniform in grade and was overly steep has been re-graded during the rundown installation resulting in a flatter more uniform slope consistent with the permit grades. The area has been seeded and included dormant vegetation.

- The south side slopes, with exception of the newly developed top lift, are covered with topsoil and a dense stand of vegetation is established. A three foot to four foot top lift had been placed and was stepped back from the land fill side slope but was not soil covered. The side slope has a uniform grade and showed no signs of operational or functional concerns.
- The east slope exhibited small erosion rills along the southern portion of the slope; no exposed CCR material was observed. The east slope was primarily covered with dormant vegetation with the exception of the northern portion where the slopes have been re-graded to a uniform slope.
- The north side slope had a uniform grade with topsoil and vegetation on the lower half. The upper half of the slope is an active fill area where no topsoil has been placed with limited signs of rill erosion or slope instability. This area will require final grading with topsoil cover and vegetation once permit grades are achieved. 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.
- 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. Water is reportedly routinely used for dust control, and no wind erosion of the CCR was observed during the inspection.
- 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.

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 prior inspection due to continued CCR disposal and soil cover placement. Normal CCR disposal operations have raised the landfill's top plateau height by approximately 10 feet over the southern two-thirds of the fill area. Ash placement also continued in the northern third of the Cell 1 fill area with an additional fill depth of 30 feet. The landfill sides slopes continue to be maintained at approximately a 4H:1V slope. The southeast corner of the landfill was reworked to reduce landfill slopes to match surrounding

slopes. This involved moving the perimeter road in this area to allow for a more gradual slope to tie into the native topography.

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 October of 2017, Xcel estimates the total combined volume of CCR on-site to be 3,148,700 cubic yards (CY). In addition, fly ash and bottom ash disposed in the CCR landfill from November 2017 through December 2018 is estimated to be 452,670 CY. The total CCR volume within the landfill as of the end of December 2018 is estimated to be 3,601,400 CY.

7 Appearance of Structural Weakness

Based on the site inspection and review of available materials, the site showed no signs of operational and structural concern. The concerns of the steeper slopes of the southeast corner of Cell 1 mentioned in prior reports was regraded to lower slopes and constructed with a stormwater rundown channel to minimize structural or erosion concerns in this corner.

8 Changes Affecting Stability or Operation

There were no observed or reported operation changes that are anticipated to negatively 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 in the southeast area, were remedied.

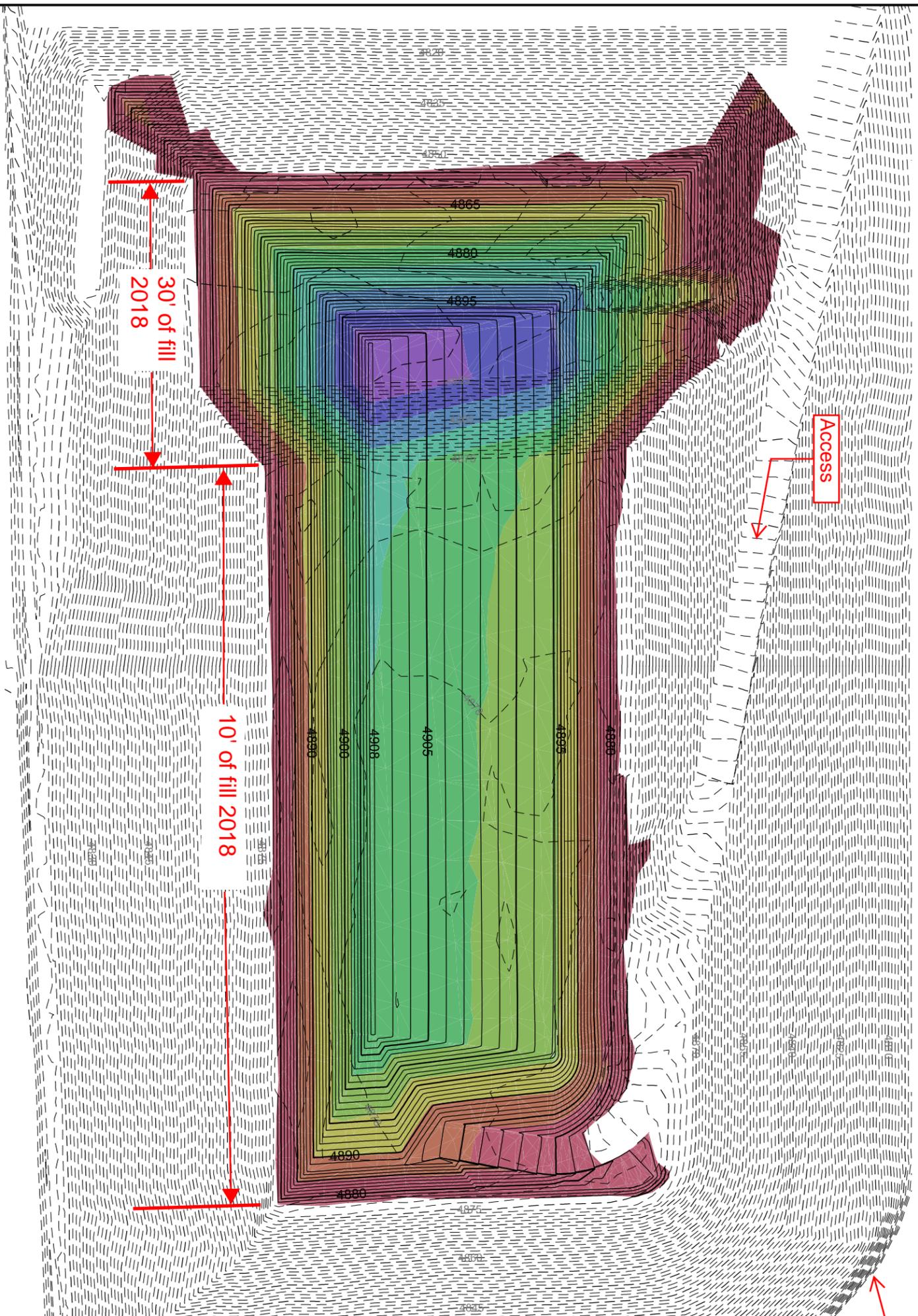
Appendix A – Landfill Site Map

Note: A 2018 topographic survey drawing had not been completed at the time of this report therefore the 8/15/2017 Edward – James landfill survey will be used to demonstrate site work areas.

COMANCHE ASH LANDFILL

APPROXIMATE REMAINING VOLUME

AS OF SURVEY DATE: 8/15/2017



SE embankment corner with toe cut modified in 2018. Slope reworked to match surrounding grades. Topography shown does not reflect new grades.

FIELD SURVEY DATE FOR EXISTING TOPOGRAPHY
AUGUST 15, 2017

SURVEYOR
DIEGO MINNICH

BASE SURFACE
EXISTING CELL 1 AS OF 08-15-2017

COMPARISON SURFACE
BOUNDED CELL 1 ASH (2' BELOW FINISHED GRADES SHOWN ON SHEET D17803-EPD0L00002 SH.5 DATED 8-14-14)

FILL
453,050 CY

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-0.5	6.0	Red
2	6.0	12.0	Orange
3	12.0	18.0	Yellow
4	18.0	24.0	Light Green
5	24.0	30.0	Green
6	30.0	36.0	Teal
7	36.0	42.0	Blue
8	42.0	48.0	Dark Blue
9	48.0	53.0	Purple

Notes added in red by HDR Engineering for CCR Annual Inspection Report, January 2019.

