2016 Annual Inspection Report

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

Valmont Station

1800 North 63rd Street
Boulder, Colorado 80301

January 18, 2017

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Appendices

Certification

Valmont 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 Valmont Station meets the inspection and operation standards specified in 40 CFR Part 257.84(b) of the Federal CCR Rule. The Valmont 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 JAMES BROWN
41644
1/18/2017

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."* Valmont Station has one (1) CCR landfill subject to the inspection requirements.

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

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 Valmont CCR Landfill was conducted by an independent Professional Engineer on November 12, 2016. The inspection was conducted by Brian Brown, a Colorado Professional Engineer of HDR Engineering Inc. (HDR) and Jeff Krause, an Xcel Energy Environmental Analyst for the Valmont Station. 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 weather during the site visit was sunny with temperatures ranging from 50 to 60 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), Revision January, 2009 by Xcel Energy. Xcel Energy Environmental Analyst reported no change in document and still operating under this document. Document not reviewed again since the document is unchanged.

2. Jennifer Reynolds, Andy Todd, and Justin LaBoe of the Colorado Department of Public Health and Environment (CDPHE) performed a site visit on August 3, 2016. A follow up letter was sent from the CDPHE to Xcel on August 5th, 2016 stating that the "Valmont Station is in compliance with the Regulations." The site inspection form noted the impact of the adjacent prairie dog community and that one stormwater drainage area could use a "bit of maintenance…". Xcel Energy reported that there was no discussion in person or in the letter regarding landfill safety or structural concerns.
3. Available Weekly CCR Landfill Inspection Forms (per Section 257.84(a)).
4. Nine (9) Monthly Ash Disposal Inspection forms dated from 1/15/2016 to 9/2/2016 by John Pierce of Xcel Energy.

5. Area maps/surveys:

   a. Topographic Map with Soil Boring Locations: Locations of Exploratory Borings on East End of Landfill, Plot Stamp date August 15, 2008, developed by Kumar & Associates.
6. Monthly ash disposal invoicing, with disposal tonnage, from McDonald Farms from November 1, 2015 to November 30, 2016.

Review of the above documents did not contain any indications of continuing operational, safety, or structural concerns regarding the CCR landfill.

4 Visual Inspection

Brian Brown, accompanied by Jeff Krause, completed a site inspection, walking or driving the entire perimeter of the landfill, the interior access road, and numerous intermediate elevations along the exterior fill embankment.

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

1. landfill side slope toe of slope;

2. Landfill side slope benches;

3. Riprapped stormwater drainage conveyance channels on southwest side (Areas Q-1 and A-3) of landfill and east end (Area B-1) of landfill; and

4. Active CCR fill areas (CCR disposal, spreading, and compaction).

The following are the findings of the site inspection:

The landfill side slopes showed no signs of operational or functional concerns. Areas of erosion are noted below:

- The landfill side slopes along the southwest and west side of Area Q-1 have minimal vegetation cover. Despite the presence of regular benches to slow the stormwater flow, these areas show signs of rill and some gulley erosion. These areas require continued monitoring and may require additional topsoil cover and revegetation to minimize future rill erosion.
- The western side slopes of the landfill also had numerous prairie dog burrows. These burrows should continue to be monitored as they can impact local slope stability and become conduits for stormwater flow. Xcel Energy reported that it is implementing a program to fill prairie dog burrows in the soil cover.
- The riprap downchute on the southwestern slope (Area Q-1) was reconstructed to eliminate gully erosion on the sides of the riprap run down. No further erosion in the area was noted and the area has been covered with an erosion control blanket.
- The southern slopes of Area Q-1 had some apparently inactive rill erosion near the top of the slope that should be monitored.
- The inactive southeastern and eastern side slopes have a continuous grade that generally ranges from approximately 2 horizontal to 1 vertical (2H:1V) to 3H:1V with some steeper sections, no benches, and a dense stand of vegetation.
  - There is a riprap run down on the east slope (Area B-1) with no visible erosion or stability concerns.
  - The south slope is an area where sloughing and localized instability is visible about one quarter down from the top plateau (against a degraded line of straw bales). This area is heavily vegetated but should be monitored for future sloughing or movement. The straw bales may be channeling surface water toward the impacted area; further analysis is warranted to determine the cause of the sloughing. No additional movement or sloughing was observed since the prior annual inspection.
- The interior access road leading to the active landfill fill area has steep soil embankments. The level of erosion observed during the inspection indicates that the access road embankments do not receive enough surface water run-on flow to create excessive rill or gulley erosion. The roadway embankments should be monitored for localized or general sloughing, though none was observed.
- The eastern half of the northern side slopes (Area B-3) are graded to a uniform slope. This slope does not have benches but does have a dense cover of vegetation. No erosion or sloughing was noted.

- The active fill area (Area D-1) was observed to have minimal areas of exposed ash. The recently soil covered CCR landfill work areas on the western side of Area D-1 appeared to have adequate soil cover. The transition between the soil covered western side of D-1 and the eastern fill of Area D-1 had a limited amount of exposed ash. Side slopes for the cell excavation between the two fill areas were steep but showed no signs of instability or erosion.
- No ash disposal or compaction was observed during the site visit.
- There was no standing water observed in the active ash fill area.

5 Changes in Geometry

The Federal CCR Rules require that site geometry changes be identified since the last inspection. The site footprint remains the same since the prior site visit. The top elevation of Area D-1 was increased due to the continued CCR disposal and soil cover.

No structural or safety concerns were observed due the continued site geometric filling. Fill is expected to continue in a similar manner for 2017.

6 Approximate CCR Volume

The CCR within the disposal area was estimated by Xcel Energy based on volume estimates that utilized topographic surveys, disposal records, ash generation volumes, and extrapolation of generation volumes. Xcel estimates that the total combined volume of CCR on-site as of November 2015 was 1.3 million cubic yards. The addition CCR deposited from November 1, 2015 through November 30, 2016 is estimated to be 44,200 CY, assuming one cubic yard of CCR material equates to one ton. The total CCR volume in the landfill as of November 30, 2016 is estimated to be 1,344,200 CY.

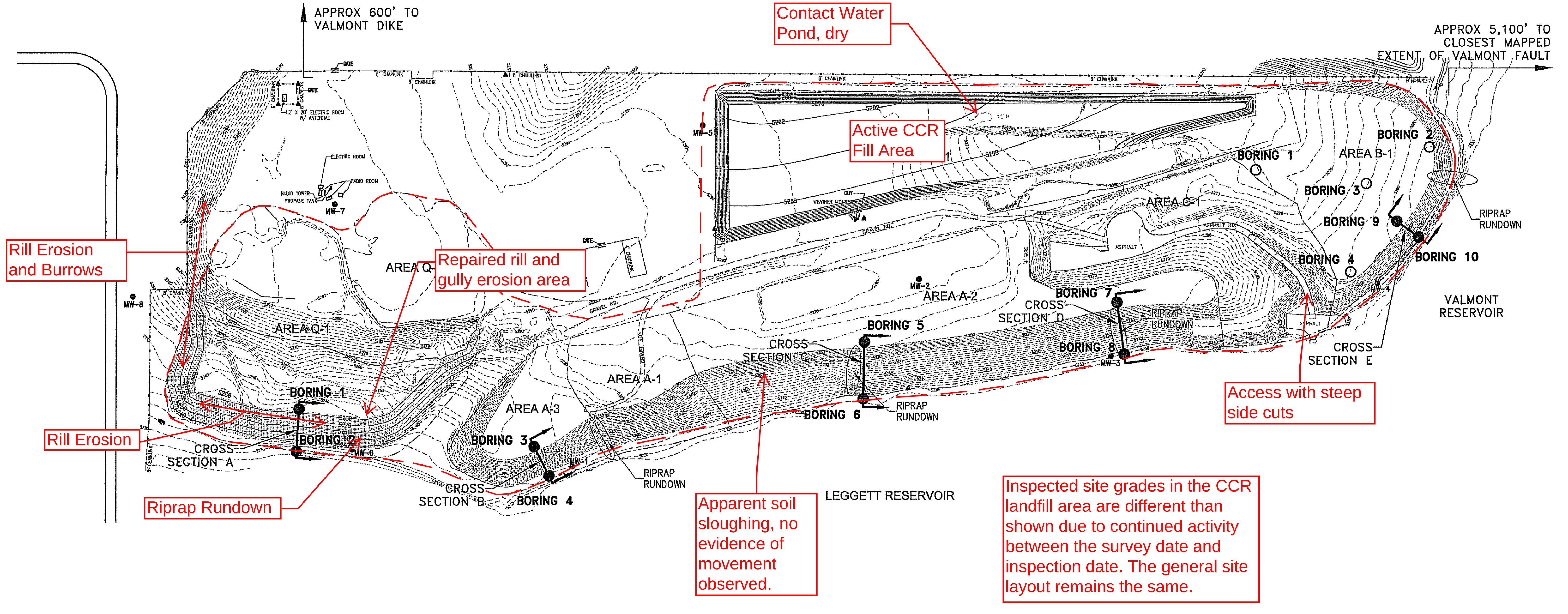
7 Appearance of Structural Weakness

Based on the site inspection, no apparent or potential structural weaknesses were observed. Per Section 4 above, continued monitoring and minor repairs should be considered to address rill erosion and prairie burrows before these issues become a structural landfill weakness. Much of the site's exterior rill erosion will be addressed as the recent lifts are covered in topsoil, seeded, and vegetation is established. Further erosion impacted areas may require additional mitigation measures.

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 the last annual inspection, there were no observed nor reported operational changes or site conditions that indicate issues of stability or safety.

Appendix A – Landfill Site Map



Inspected site grades in the CCR landfill area are different than shown due to continued activity between the survey date and inspection date. The general site layout remains the same.

LEGEND:

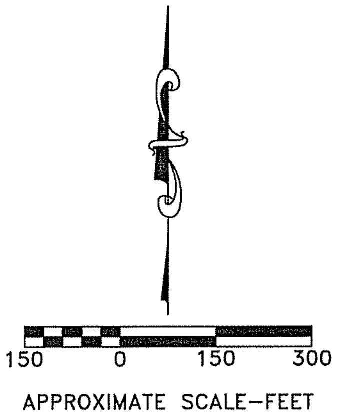
● MW-1 MONITORING WELL INSTALLED BY OTHERS. NOT PART OF THIS PROJECT.

○ BORING 1 EXPLORATORY BORING DRILLED FOR OUR PREVIOUS PROJECT NO. 08-1-357, DATED AUGUST 15,2008.

● BORING 4 EXPLORATORY BORING DRILLED FOR THIS PROJECT.

—— General Landfill Boundary

Notes in red added by HDR Engineering for CCR Annual Inspection Report, January 2017



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Kumar & Associates
ASH DISPOSAL FACILITY, VALMONT STATION
LOCATION OF EXPLORATORY BORINGS AND PITS
Fig. 1