



Annual Inspection Report

J.C. WEADOCK GENERATING FACILITY

DRY ASH LANDFILL 2016 CCR LANDFILL INSPECTION REPORT

Essexville, Michigan

Pursuant to 40 CFR 257.84

Submitted To: Consumers Energy Company
1945 W. Parnall Road
Jackson, Michigan 49201

Submitted By: Golder Associates Inc.
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October 2016

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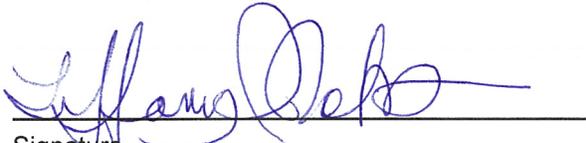


CERTIFICATIONS

Professional Engineer Certification Statement [40 CFR 257.84]

I hereby certify that, having reviewed the attached documentation and being familiar with the provisions of Title 40 of the Code of Federal Regulations Section 257.84 (40 CFR Part 257.84), I attest that this 2016 CCR Landfill Inspection Report is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of 40 CFR Part 257.84.

Golder Associates Inc.


Signature

October 14, 2016
Date of Report Certification

Tiffany Johnson, PE
Name

6201049160
Professional Engineer Certification Number

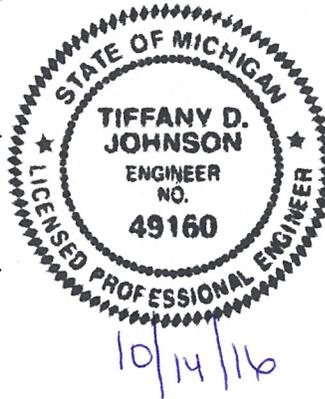




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1.0 INTRODUCTION

On April 17, 2015, the United States Environmental Protection Agency (EPA) issued the Coal Combustion Residual (CCR) Resource Conservation and Recovery Act (RCRA) Rule (40 CFR 257 Subpart D) (“CCR RCRA Rule”) to regulate the beneficial use and disposal of CCR materials generated at coal-fired electrical power generating complexes. The CCR Rule requires owners or operators of existing CCR landfills to have those units inspected on an annual basis by a qualified professional engineer in accordance with 40 CFR 257.84(b). The annual qualified professional engineer inspections are required to be completed and the results documented in an inspection report.

Golder Associates Inc. (Golder) was retained by Consumers Energy Company (CEC) to perform the annual inspection of the Dry Ash Landfill (Landfill) at the J.C. Weadock Generating Facility (JC Weadock). The intent of the inspection is to document, to the extent reasonable based on information provided by CEC and the limits of the visual inspection, that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. Golder reviewed available information regarding the status and condition of the CCR unit and performed a visual onsite inspection to identify signs of distress or malfunction of the CCR unit. The inspection included the following:

- Any changes in geometry of the structure since the previous annual inspection.
- Approximate volume of CCR contained in the unit at the time of inspection.
- Appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.
- Any other change(s) which may have affected the stability or operation of the Landfill since the previous inspection.

1.1 BACKGROUND AND DOCUMENT REVIEW SUMMARY

The Landfill serves as the facility’s primary disposal of dry ash and consists of two fill areas, the West Fill Area and East Fill Area, as depicted on the 2011 Final Closure plans by AECOM. Dry ash is blown to a silo and conditioned to a desired moisture content to prevent fugitive dust and to aid in compaction. The dry ash from the silos is then trucked and placed in active areas of the Landfill. At the time of the inspection, the East Fill Area was being regraded and prepared for dry ash placement.

The applicable available information reviewed for this assessment is summarized in Table 2.1.1 below.

**Table 2.1.1 - Summary of Background Document Review**

Document	Date	Author
J.C. Weadock Dry Ash Landfill Initial Annual Inspection	January 2016	Golder Associates Inc.
Weekly inspections performed by Consumers Energy Company (CEC)	December 2015 – May 2016	Varying CEC J.C. Weadock Generating Facility Qualified Persons
J.C. Weadock Ash Disposal Area, Triennial Ash Dike Risk Assessment Report – Spring 2014	December 2014	Barr Engineering Company
J.C. Weadock Ash Disposal Area, 2012 Ash Dike Risk Assessment Final Inspection Report	August 2012	AECOM Technical Services, Inc.
J.C. Weadock Revised Closure Plan	December 2011	AECOM Technical Services, Inc.
Surveillance Monitoring Programs (SMPs)	December 2010, Revised 2015	CEC
J.C. Weadock Generating Facility Ash Dike Risk Assessment, Potential Failure Mode Analysis (PFMA) Report	November 2009	AECOM Technical Services, Inc.



2.0 2016 VISUAL INSPECTION

The 2016 onsite visual inspection of the Landfill was performed by Golder on May 18, 2016.

Golder's inspector (Ms. Tiffany Johnson) was accompanied by three CEC representatives, as follows:

- Mr. George McKenzie, CEC Engineering Services Department
- Mr. Harold D. Register, Jr., CEC Environmental Services Department
- Mr. Sean Looman, CEC Engineering Services Department

The inspection checklist form is provided in Appendix A. The inspection checklist form includes observations and recommendations as a result of the visual inspection and also includes the following information as stipulated in 40 CFR 257.84(b):

- Any changes in geometry of the structure since the previous annual inspection.
 - East Fill Area was in the process of being regraded.
- Approximate volume of CCR contained in the unit at the time of inspection.
 - The volume of CCR at the time of inspection was approximately 1,499,100 cubic yards.
- Appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.
 - None were observed or noted.
- Any other change(s) which may have affected the stability or operation of the Landfill since the previous inspection.
 - None were observed or noted.

The checklist categorizes observed conditions of the Landfill or appurtenant structures as either acceptable, monitor/maintain, investigate, or repair, which are defined as follows:

- **Acceptable:** The condition was visually documented to be acceptable, requiring no action beyond periodic inspection in accordance with the Surveillance Monitoring Programs (SMP) and typical maintenance.
- **Monitor/Maintain:** The condition was visually identified to exhibit the potential for or show existing degeneration that should either be monitored or maintained as detailed in the checklist.
 - Items identified in this category are not considered a deficiency or release as classified under 40 CFR 257.84(b)(5) requiring immediate action by CEC.
- **Investigate:** The limitations of the visual inspection did not allow for an opinion to be made on the condition of the item observed, and Golder recommends additional investigation to categorize the item.
 - No items for investigation were identified during the inspection.
- **Repair:** The condition was visually identified to exhibit the potential for or show existing degeneration that merits initiation of measures to rectify the area of concern.



- No items for repair were identified during the inspection.

After the 2016 annual inspection was completed, Golder compared the 2016 annual inspection conditions noted to conditions documented during CEC inspections conducted in 2015. The comparison identified the following three changes:

- Rodent burrows have been filled in with gravel; however, Golder observed additional rodent burrows in different locations.
- Portions of the East Fill Area were being regraded to provide drainage to eliminate ponding of water and for preparation for dry ash placement.
- Vegetation removal was completed along the north dike.



3.0 CLOSING

This report has been prepared in general accordance with normally accepted civil engineering practices to fulfill the RCRA reporting requirements in accordance with 40 CFR 257.84(b)(2). Golder has reviewed the available information on the Dry Ash Landfill and performed an onsite visual inspection. Golder's assessment is limited to the information provided by CEC and to the aspects that could be inspected visually in a safe manner. Golder cannot attest to the condition of subsurface or submerged structures.

GOLDER ASSOCIATES INC.

A handwritten signature in blue ink, appearing to read "Jeff Piaskowski".

Jeff Piaskowski, P.E.
Project Engineer

A handwritten signature in blue ink, appearing to read "Tiffany Johnson".

Tiffany Johnson, P.E.
Senior Consultant



4.0 REFERENCES

AECOM Technical Services, Inc., 2009 Potential Failure Modes Analysis Report. J.C. Weadock Generating Facility, Ash Dike Risk Assessment.

AECOM Technical Services, Inc., 2012. J.C. Weadock Ash Disposal Area. 2012 Ash Dike Risk Assessment Inspection Report.

Barr Engineering Company, 2014. J.C. Weadock Ash Disposal Area. Triennial Ash Dike Risk Assessment Report. Spring 2014.

Consumers Energy Company, 2010. Fossil Fuel Generation Solid Waste Disposal Area Surveillance Monitoring Programs (SMPs).

**APPENDIX A
INSPECTION CHECKLIST FORM**

CCR LANDFILL VISUAL INSPECTION CHECKLIST

Facility Name: J.C. Weadock Dry Ash Landfill

Owner: Consumers Energy Company (CEC)

Purpose of Facility: Dry Ash Disposal

County, State: Bay County, Michigan

Inspected By: Tiffany Johnson

Inspection Date: May 18, 2016

Weather: Cloudy, 65-degrees F

ITEM					REMARKS
	Acceptable	Monitor/Maintain	Investigate	Repair	
1. General Conditions					
a. Current volume of CCR					Volume: 1,499,100 CY (See Note 1)
b. Alterations	X				
c. Grass cover		X			See 2c, 3c and 4a.
d. Settlement/misalignment/cracks	X				
e. Leachate Collection					NA – No leachate collection system exists.
2. Landfill Slope					
a. Erosion – liner exposed	X				
b. Rodent burrows		X			Several large animal burrows observed along southeast, south, east and north sides of the landfill perimeter slopes, maintain animal control procedures. See Note 2.
c. Vegetation		X			Along the northern sideslope, near the end of the discharge channel, there were areas of vegetation in the riprap, maintain vegetation controls. See Note 2.
d. Cracks/settlement		X			Observed deterioration of a stump along north slope, maintain erosion and vegetation controls. See Note 2.
e. Riprap/other erosion protection					
f. Slide, Slough, Scarp		X			Minor sloughing observed along north slope, no signs of movement since previous inspection. See Note 2.
g. Benches	X				
h. Final Cover	X				Final cover is currently in place only on southern half of the eastern side of the landfill.
i. Downchutes	X				Downchutes on eastern portion of the landfill were observed and in good condition.
3. Crest					
a. Soil condition	X				
b. Comparable to design width or previous inspection	X				
c. Vegetation		X			Crest was predominantly gravel road, observed minor rutting and erosion along crest, maintain erosion and grading controls. See Note 2.
d. Rodent burrows		X			Observed several small animal burrows on southern and eastern sides of the crest, maintain animal control procedures. See Note 2.
e. Exposed to heavy traffic	X				
f. Damage from vehicles/machinery	X				
4. Toe					
a. Vegetation	X				
b. Rodent burrows		X			Observed intermittent rodent burrows, maintain animal control procedures. See Note 2.
c. Settlement		X			Observed minor erosion along toe of north dike along discharge channel, maintain erosion controls. See Note 2.
d. Drainage conditions	X				
e. Seepage	X				

Notes:

- The base of the permitted portion of the landfill is assumed to be near the embankment crest at approximately elevation 590 ft., and the Revised Closure Plan (AECOM, 2011) indicates the expansion will raise the fill by a maximum of 58.6 ft. Based on information provided by CEC at the time of the inspection, it is estimated that approximately 9,700,900 cubic yards airspace remains from the 11,200,000 cubic yard of airspace permitted. The resulting utilized airspace and CCR volume is 1,499,100 cubic yards.
- Features observed and documented in this checklist were not considered a deficiency or release as classified under 40 CFR 257.84(b)(5) and required no immediate action beyond periodic inspection in accordance with the SMP and typical maintenance.

Name of Engineer: Tiffany Johnson, P.E.

Date: October 14, 2016

Engineering Firm: Golder Associates Inc.

Signature: 

Established in 1960, Golder Associates is a global, employee-owned organization that helps clients find sustainable solutions to the challenges of finite resources, energy and water supply and management, waste management, urbanization, and climate change. We provide a wide range of independent consulting, design, and construction services in our specialist areas of earth, environment, and energy. By building strong relationships and meeting the needs of clients, our people have created one of the most trusted professional services organizations in the world.

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