REPORT

J.C. Weadock Generating Facility
Dry Ash Landfill
2019 Landfill Inspection Report

Essexville, Michigan
Pursuant to 40 CFR 257.84 (Landfills)

Submitted to:

Consumers Energy Company
1945 W. Parnall Road Jackson, Michigan, USA 49201

Submitted by:

Golder Associates Inc.
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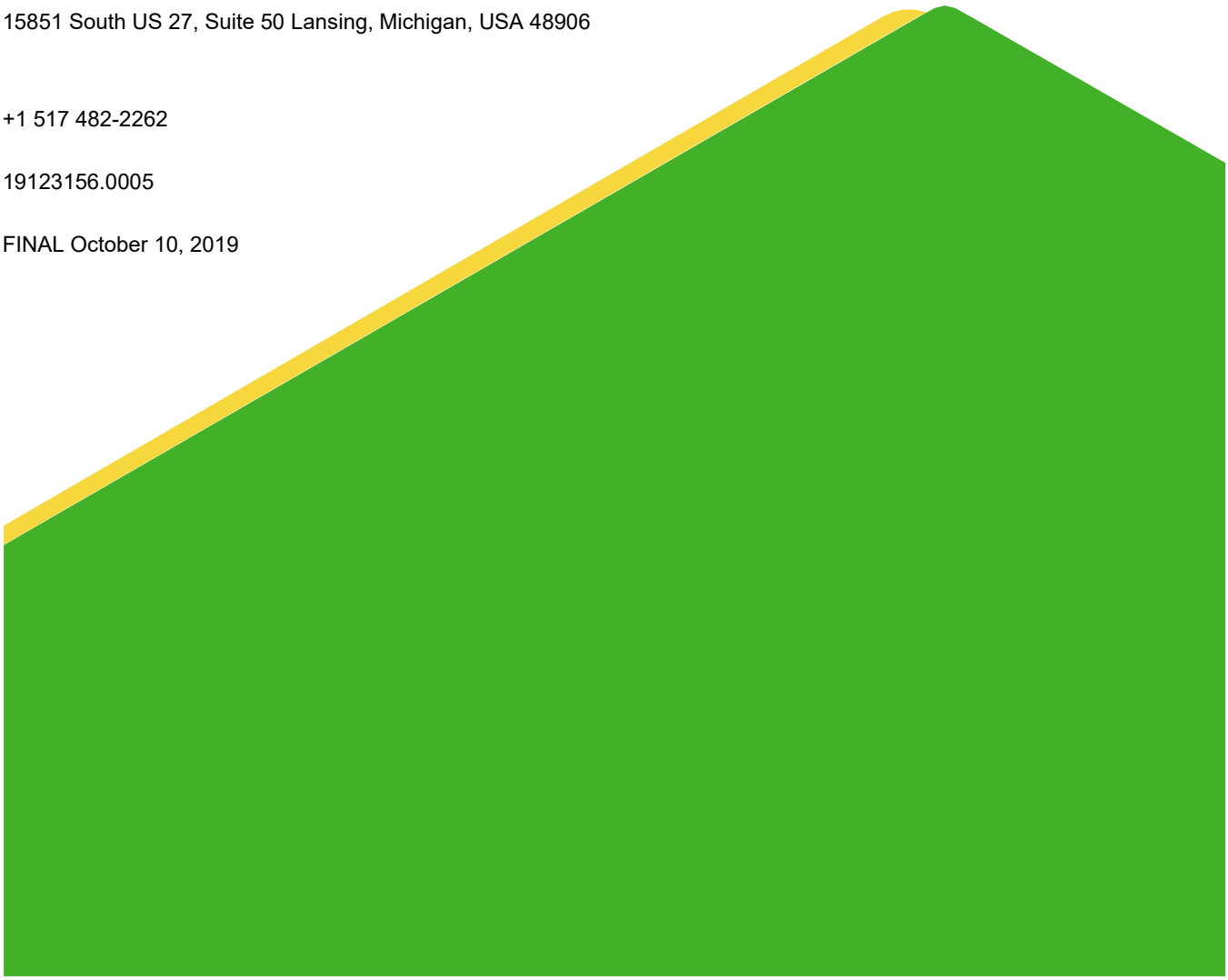
FINAL October 10, 2019



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 Annual 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.

10/10/19

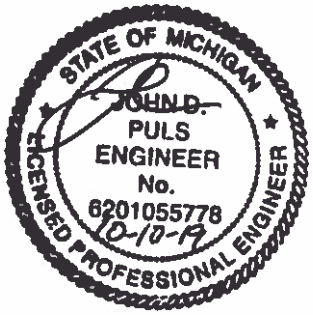
Date of Report Certification

John Puls, P.E.

Name

6201055778

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.

2.0 BACKGROUND AND DOCUMENT REVIEW SUMMARY

JC Weadock is located in Essexville, Michigan and is bounded by the Saginaw River to the west and Saginaw Bay to the north. 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. Total permitted capacity of the landfill is 11,200,000 cubic yards (cys) with approximately 1,543,819 cys reported consumed. 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 trucked from the D.E. Karn facility and placed in active areas of the JC Weadock Dry Ash Landfill. Approximately 21,454 cys of waste has been placed since the previous inspection (CEC, 2018).

In 2008, a soil bentonite slurry wall was constructed within the perimeter clay dike of the landfill and keyed into the underlying hydraulically confining glacial clay till layer. In 2018 a gap or "vent" of the soil bentonite slurry wall was closed.

The applicable available information reviewed for this assessment is summarized in Table 1 below.

Table 1: Summary of Background Document Review

Document	Date	Author
Weekly Inspection Reports	January 2018 – May 2019	Dry Ash Landfill Qualified Personnel
J.C. Weadock Dry Ash Landfill 2018 Annual RCRA CCR Landfill Inspection Report	October 2018	Golder Associates Inc.
Combined Solid Waste Landfill Waste Receipt Report – J.C. Weadock Dry Ash Landfill, WDS No. 395457 (http://www.deq.state.mi.us/wdspi/SolidWaste/AnnualLandfillReports.aspx?w=395457)	2018	Consumers Energy Company
J.C. Weadock Dry Ash Landfill 2017 Annual RCRA CCR Landfill Inspection Report	October 2017	Golder Associates Inc.
J.C. Weadock Dry Ash Landfill 2016 Annual RCRA CCR Landfill Inspection Report	October 2016	Golder Associates Inc.
J.C. Weadock Dry Ash Landfill 2015 Initial Annual RCRA CCR Landfill Inspection Report	January 2016	Golder Associates Inc.
Coal Combustion Waste Impoundment Round 7 - Dam Assessment Report, JC Weadock Fly Ash Dike	April 2011	Dewberry & Davis, LLC, Fairfax, Virginia
J.C. Weadock Revised Closure Plan	December 2011	AECOM Technical Services, Inc.
Surveillance Monitoring Programs (SMPs)	December 2010, Revised 2015	CEC

3.0 2019 VISUAL INSPECTION

The 2019 onsite visual inspection of the Landfill was performed by Golder Associates Inc. (Golder) on May 20, 2019. Golder's inspectors, John Puls, P.E. and Halle Doering, EIT, were accompanied by two Consumers Energy Company (CEC) representatives, as follows:

- Mr. George McKenzie, P.E., CEC Systems Engineering Department
- Mr. Caleb Batts, P.E., CEC Site Environmental Department

Provided in Appendix A is the inspection checklist form that provides both observations and recommendations as a result of the visual inspection and the following information as stipulated in 40 CFR 257.84(b):

- Any changes in geometry of the structure since the previous annual inspection.
  - None were observed

- Approximate volume of Coal Combustion Residuals (CCR) at the time of inspection
  - The volume of CCR at the time of inspection was approximately 1.54 million cubic yards based on information from CEC.
- 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
- Any other change(s) which may have affected the stability or operation of the impounding structure since the previous inspection
  - None were observed

The checklist categorizes observed conditions of the impoundment 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 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.
- Repair: Golder recommends that items identified with a repair designation exhibited conditions that should initiate measures be taken to rectify the area of concern.
  - It should be noted that no items identified for repair were considered a deficiency or release as classified under 40 CFR 257.84(b)(5) requiring immediate action by CEC.

Based on a review of previous inspection reports listed in Table 1 compared to conditions noted during the inspection, the following changes were observed:

- Minor rutting on the north, east, and south roads;
- Minor erosion was observed in areas along the interior slopes;
- High water levels and standing water observed in the toe ditches;
- Areas of erosion and sloughing along the discharge channel were repaired with riprap in April 2018 and addition riprap was being placed at the time of inspection; and
- Golder observed rodent burrows along the north and northeast slopes.

4.0 LIMITATIONS OF ASSESSMENT

Golder has conducted the site inspection and prepared this report for the Dry Ash Landfill at J.C Weadock. The factual data, assessment, interpretations, and recommendations provided herein are based on the results of field observations from site inspections performed by Golder and review of previous site inspection reports provided to

Golder by CEC and pertain to the specific project as described in this report and are not applicable to any other project or site location.

Golder has prepared this report in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering and science professions currently practicing under similar conditions and has characterized the site conditions within the limitations of the scope of services as defined by CEC and subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied, is made. Any change of site conditions, purpose, development plans, or operation may alter the validity of this report. Golder cannot be responsible for use of this report, or portions thereof, unless Golder is requested to review and, if necessary, revise the report.

5.0 CLOSING

This report has been prepared in general accordance with normally accepted civil engineering practices to fulfill the Resource Conservation and Recovery Act (RCRA) reporting requirements in accordance with 40 CFR 257.84(b)(2). Golder has reviewed the available information on the JC Weadock 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.

6.0 REFERENCES

Document	Date	Author
Weekly Inspection Reports	January 2018 – May 2019	Dry Ash Landfill Qualified Personnel
J.C. Weadock Dry Ash Landfill 2018 Annual RCRA CCR Landfill Inspection Report	October 2018	Golder Associates Inc.
Combined Solid Waste Landfill Waste Receipt Report – J.C. Weadock Dry Ash Landfill, WDS No. 395457 (http://www.deq.state.mi.us/wdspi/SolidWaste/AnnualLandfillReports.aspx?w=395457)	2018	Consumers Energy Company
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Signature Page

Golder Associates Inc.

Halle Doering
Project Engineer

John Puls, P.E.
Senior Engineer

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: John Puls and Halle Doering ***Inspection Date: May 20, 2019***

Weather: Overcast, 50 ºF

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
1. General Conditions					
a. Current volume of CCR					Volume: Approximately 1,543,819 CY (See Note 1)
b. Alterations	X				Slope sloughing on northern discharge channel side were repaired in April 2018.
c. Grass cover	X				
d. Settlement/misalignment/cracks	X				Steep slopes along discharge channel, areas repaired in April 2018.
e. Leachate Collection					NA – No leachate collection system exists.
2. Landfill Slope					
a. Erosion – liner exposed		X			No liner system exists. Minor erosion observed on northern and eastern slopes, maintain erosion controls, see note 2.
b. Rodent burrows	X				None observed.
c. Vegetation		X			Areas of bare vegetation on the exterior landfill slopes. Along the northern side slope, near the end of the discharge channel, there were areas of bare vegetation, maintain vegetation controls. See Note 2.
d. Cracks/settlement	X				
e. Riprap/other erosion protection		X			Riprap on north slope of discharge channel looks good.
f. Slide, Slough, Scarp	X				
g. Benches	X				
h. Final Cover	X				
i. Downchutes					N/A
3. Crest					
a. Soil condition	X				Gravel roads, minor rutting on south road.
b. Comparable to design width or previous inspection	X				
c. Vegetation					N/A – gravel

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
d. Rodent burrows		X			Observed several animal burrows between road and toe ditch surrounding landfill, maintain animal control procedures. See Note 2.
e. Exposed to heavy traffic	X				Exposed to heavy traffic, but no observed damage.
f. Damage from vehicles/machinery	X				None observed.
4. Toe					Dead vegetation observed in some of the toe ditches along with standing water. High water levels, some of the culverts more than half full or over full. See Note 2.
a. Vegetation		X			Phragmites and heavy vegetation at toe, dead vegetation collecting in some of the toe ditches and standing water. High water levels and many toe ditch culverts flowing full. See Note 2.
b. Rodent burrows		X			Observed several animal burrows between road and toe ditch surrounding landfill, maintain animal control procedures. See Note 2.
c. Settlement	X				
d. Drainage conditions	X				
e. Seepage	X				None observed.

Notes:

1) 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 (2018 Annual Landfill Report submitted to EGLE's WDS site number 395547) at the time of the inspection, an additional 21,454 cys was placed since the last inspection in May 2018 (CEC, 2018). The resulting utilized airspace and CCR volume is approximately 1,543,819 cubic yards.

2) 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: John Puls, P.E.

Date: October 10, 2019

Engineering Firm: Golder Associates Inc.

golder.com