



REPORT

**J.H. Campbell Generating Facility
Dry Ash Landfill
2018 Annual Landfill Inspection Report**

*West Olive, Michigan Pursuant to 40 CFR 257.84
(Landfills)*

Submitted to:

Consumers Energy Company

1945 W. Parnall Road Jackson, Michigan, USA 49201

Submitted by:

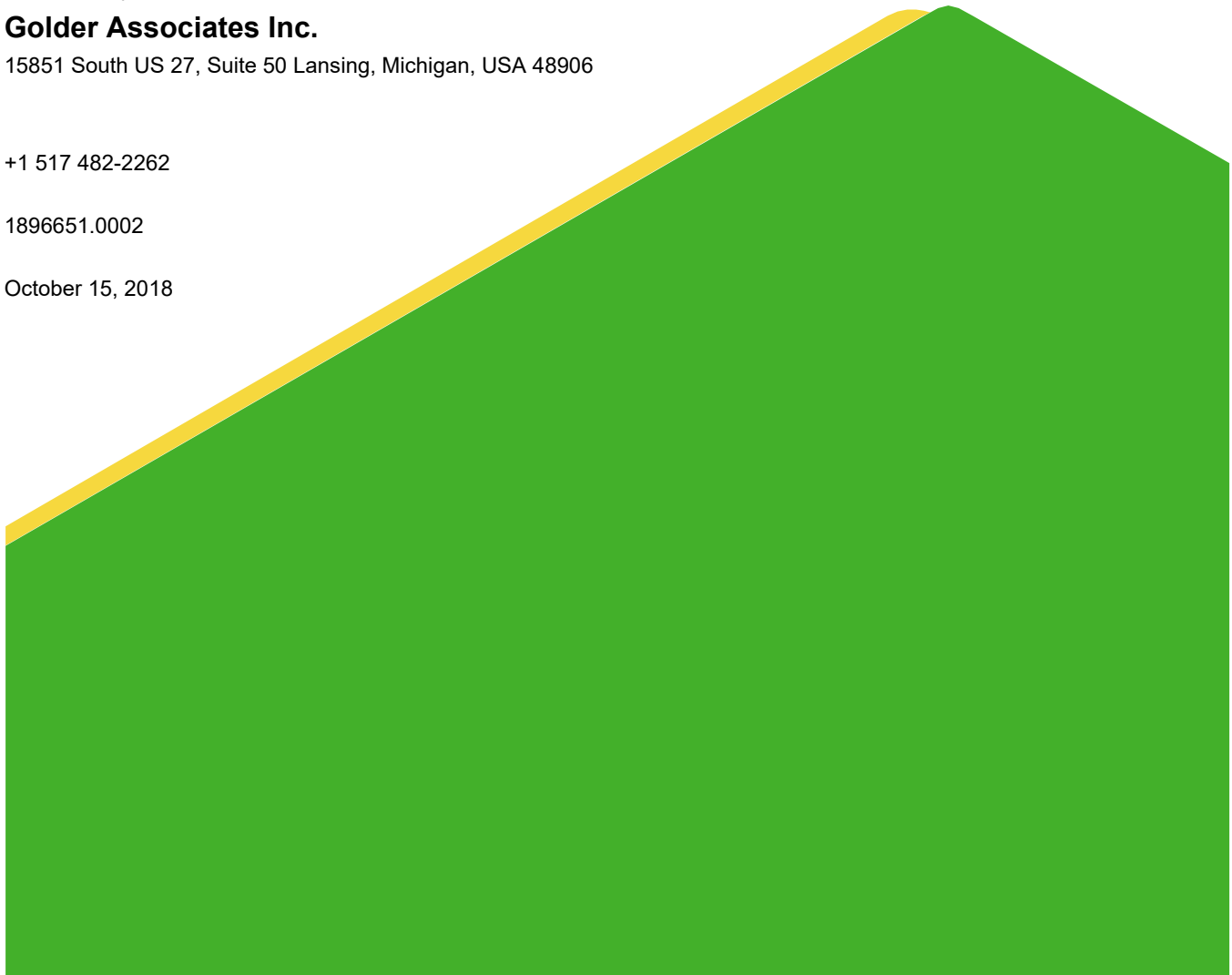
Golder Associates Inc.

15851 South US 27, Suite 50 Lansing, Michigan, USA 48906

+1 517 482-2262

1896651.0002

October 15, 2018



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.

October 15, 2018
Date of Report Certification

Tiffany D. Johnson, P.E.
Name

6201049160
Professional Engineer Certification Number

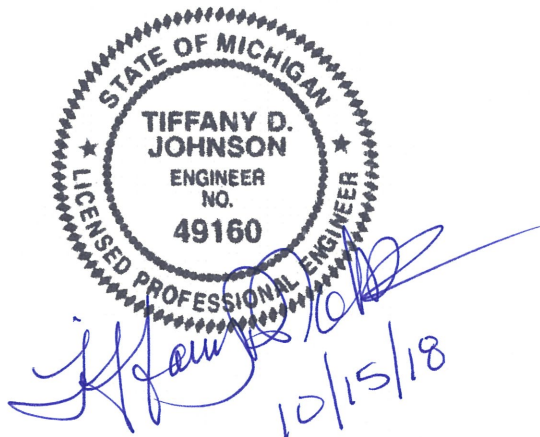


Table of Contents

1.0 INTRODUCTION	4
2.0 BACKGROUND AND DOCUMENT REVIEW SUMMARY	4
3.0 2018 VISUAL INSPECTION	5
4.0 LIMITATIONS OF ASSESSMENT.....	6
5.0 CLOSING	7
6.0 REFERENCES.....	7
CCR LANDFILL VISUAL INSPECTION CHECKLIST	10

List of Tables

Table 1 Summary of Background Document Review

List of Appendices

Appendix A Inspection Checklist Form

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”). The CCR RCRA Rule requires owners or operators of existing CCR landfills to have those units inspected on an annual basis by a qualified professional engineer (QPE) in accordance with 40 CFR 257.84(b). The annual QPE inspections are required to be completed and the results documented in inspection reports per CFR 257.84(b)(2) for landfills.

Golder Associates Inc. (Golder) was retained by Consumers Energy Company (CEC) to perform the QPE annual inspection of the Dry Ash Landfill at the J.H. Campbell Generating Facility (JH Campbell) 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 for 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 an onsite visual inspection to identify signs of distress or malfunction of the CCR unit and visible leachate collection system features.

2.0 BACKGROUND AND DOCUMENT REVIEW SUMMARY

The Dry Ash Landfill serves as the facility’s primary disposal area for dry ash and currently consists of four dual lined landfill cells and two leachate storage ponds with an additional cell under construction in 2018. Total permitted capacity of the landfill is 9,500,000 cubic yards (cys) with approximately 4,879,950 cys reported consumed as of August 2018, per the annual waste receipts information provided by CEC and airspace evaluation completed by Engineering & Environmental Solutions, LLC. It should be noted that the total permitted volume capacity will be achieved once the remaining permitted cells have been constructed and filled.

At the time of the 2018 inspection; Cells 1, 2, 3, and 4 had been constructed with active filling occurring in uncapped portions of Cell 4. A final cover system was in place on the eastern portion of Cell 3, the north and east slopes of Cell 2, and the north and west slope of Cell 1. Cell 5 was undergoing the initial phases of construction as well, with estimated completion for fall of 2018.

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 inspections performed by Consumers Energy Company (CEC)	January 2017 – January 2018	Dry Ash Landfill Qualified Personnel
Annual Airspace Evaluation	August 2018	Engineering & Environmental Solutions (EES) August 2018 Survey Compared to July 2017
J.H. Campbell Dry Ash Landfill Construction Permit Upgrade Request Cells 5 through 9	March 2018	Golder Associates Inc.
J.H. Campbell Dry Ash Landfill 2017 Annual RCRA CCR Landfill Inspection Report	October 2017	Golder Associates Inc.
J.H. Campbell Dry Ash Landfill 2016 Annual RCRA CCR Landfill Inspection Report	October 2016	Golder Associates Inc.
J.H. Campbell Dry Ash Landfill 2015 Initial Annual RCRA CCR Landfill Inspection Report	January 2016	Golder Associates Inc.
Surveillance Monitoring Programs (SMPs)	December 2010, Revised 2015	CEC
J.H. Campbell Ash Storage Facility Expansion	November, 1993	STS Consultants Ltd.

3.0 2018 VISUAL INSPECTION

Golder performed an onsite inspection of the Dry Ash Landfill on May 9, 2018. Golder inspectors, Tiffany Johnson, P.E. and Halle Doering, EIT, were accompanied by two CEC representatives, as follows:

- Mr. George McKenzie, CEC System Engineering Department
- Mr. Kevin Starcken, CEC J.H. Campbell Environmental & Technical Support Department

The inspection checklist form is provided in Appendix A. The checklist 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.
 - None were observed or noted. At the time of inspection, the southern portion of the landfill (Cells 4) was undergoing active filling.
- Approximate volume of CCR at the time of inspection.

- The volume of CCR at the time of inspection was approximately 4,879,950 cys (EES, 2018).
- 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 CCR unit since the previous inspection.
 - None were observed or noted.

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:

- Observed areas of minor erosion on east, west, and north slopes of the closed portions of the Dry Ash Landfill.
- Observed mower equipment damage to the irrigation sprinkler heads along northern slopes of Cells 1 and 2 of the Dry Ash Landfill.
- Small animal burrows noted along west, north and east sides of the Dry Ash Landfill interior slopes along the storm water berms and toe.
- Observed grout weathering and animal damage at the northeast corner down chute at the Dry Ash Landfill, unchanged from 2017 inspection.

4.0 LIMITATIONS OF ASSESSMENT

Golder has conducted the site inspection and prepared this report for the Dry Ash Landfill at J.H. Campbell. 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 J.H. Campbell 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 inspections performed by Consumers Energy Company (CEC)	January 2017 – January 2018	Dry Ash Landfill Qualified Personnel
J.H. Campbell Dry Ash Landfill Construction Permit Upgrade Request Cells 5 through 9	March 2018	Golder Associates Inc.
J.H. Campbell Dry Ash Landfill 2017 Annual RCRA CCR Landfill Inspection Report	October 2017	Golder Associates Inc.
2017 Airspace Evaluation	July 2017	Engineering & Environmental Solutions, LLC (E&ES)
J.H. Campbell Dry Ash Landfill 2016 Annual RCRA CCR Landfill Inspection Report	October 2016	Golder Associates Inc.
J.H. Campbell Dry Ash Landfill 2015 Initial Annual RCRA CCR Landfill Inspection Report	January 2016	Golder Associates Inc.
2015 Airspace Evaluation	October 2015	Engineering & Environmental Solutions, LLC

Document	Date	Author
2015 Fill Progression Plan	February 2015	Engineering & Environmental Solutions, LLC
Surveillance Monitoring Programs (SMPs)	December 2010, Revised 2015	CEC
J.H. Campbell Ash Storage Facility Expansion	November, 1993	STS Consultants Ltd.

Signature Page

Golder Associates Inc.



Halle Doering
Staff Engineer



Tiffany D. Johnson, P.E.
Associate

Golder and the G logo are trademarks of Golder Associates Corporation

APPENDIX A - INSPECTION CHECKLIST FORM

CCR LANDFILL VISUAL INSPECTION CHECKLIST

Facility Name: J.H. Campbell Dry Ash Landfill

Owner: Consumers Energy Company (CEC)

Purpose of Facility: Dry Ash Disposal

County, State: Ottawa County, Michigan

Inspected By: Tiffany Johnson and Halle Doering

Inspection Date: May 09, 2018

Weather: 64°F Overcast

ITEM					REMARKS
	Acceptable	Monitor/Maintain	Investigate	Repair	
1. General Conditions					
a. Current volume of CCR					Volume: ~4,879,950 cys (based on August 2018 EES survey)
b. Alterations	X				None.
c. Grass cover	X				
d. Settlement/misalignment/cracks	X				
e. Leachate Collection					See Note 1.
2. Landfill Slope					
a. Erosion – liner exposed?		X			Observed areas of minor erosion on west, north and east slope. Erosion on north upslope from sprinkler damage. Erosion observed on the eastern downstream slope, and Cell 4 interior slope near the sump. Maintain erosion controls. See Notes 2 and 3.
b. Rodent burrows		X			Observed burrows located along Cell 2 downchutes, maintain animal control procedures. Small animal burrows observed on stormwater berms on north, east, and west slopes. See Note 3.
c. Vegetation	X				
d. Cracks/settlement	X				
e. Riprap/other erosion protection		X			Observed animal damage, vegetation and soil erosion at the Cell 2 downchute. See Note 2.
f. Slide, Slough, Scarp	X				
g. Benches		X			Erosion from animal burrows along stormwater berms. See note 2.
h. Final Cover	X				
i. Downchutes		X			Observed grout weathering and animal damage on Cell 2 downchute riprap, maintain erosion and animal controls in this area. See Note 2.

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
3. Crest					
a. Soil condition	X				Gravel, good condition.
b. Comparable to design width or previous inspection	X				
c. Vegetation	X				
d. Rodent burrows	X				
e. Exposed to heavy traffic	X				
f. Damage from vehicles/machinery	X				
4. Toe					
a. Vegetation		X			Observed erosion from animal burrows near the north, east and west toe. See Note 2.
b. Rodent burrows		X			Animal burrows noted along north, east and west sides of the landfill bottom and toe slopes, maintain animal control procedures. See Note 3.
c. Settlement	X				
d. Drainage conditions	X				
e. Seepage	X				

Notes:


- 1) Leachate collection system inspection was limited by visual observation of surficial components of the system, i.e. condition of riser pipes.
- 2) Maintain erosion controls per the SMP and monitor the condition of the grouted riprap along the down chutes as well as erosion along the diversion berms invert on the northern and southeastern slopes. This is not a deficiency or release as classified under 40 CFR 257.84(b)(5).
- 3) 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 15, 2018

Engineering Firm: Golder Associates Inc.

Signature:





golder.com