



Annual Inspection Report

J.H. CAMPBELL GENERATING FACILITY

POND A

2017 ANNUAL SURFACE IMPOUNDMENT INSPECTION REPORT

West Olive, Michigan

Pursuant to 40 CFR 257.83

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

Submitted By: Golder Associates Inc.
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Lansing, MI 48906 USA

October 2017

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CERTIFICATIONS

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 257.83 (40 CFR Part 257.83), 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 257.83.

Golder Associates Inc.

October 12, 2017

Date of Report Certification

Tiffany D. Johnson, P.E.

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”). The CCR RCRA Rule requires owners or operators of existing CCR surface impoundments to have those units inspected on an annual basis by a qualified professional engineer (QPE) in accordance with 40 CFR 257.83(b). The annual qualified professional engineer inspections are required to be completed and the results documented in inspection reports (per 40 CFR 257.83(b)(2) for Existing CCR Surface Impoundments. These inspections are focused primarily on the structural stability of the unit and must ensure that the operation and maintenance of the unit is in accordance with recognized and generally accepted good engineering standards. Each inspection must be conducted and certified by a QPE.

Golder Associates Inc. (Golder) was retained by Consumers Energy Company (CEC) to perform the annual inspection of Pond A at the J.H. Campbell Generating Facility (Site) to document, to the extent reasonable based on the 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. The inspection included the following:

- Review of applicable information regarding the status and condition of the CCR unit
- A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit and appurtenant structures
- A visual inspection of hydraulic structures underlying the base of the CCR unit or passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation



2.0 BACKGROUND AND DOCUMENT REVIEW SUMMARY

J.H. Campbell is an active coal generating facility. The Facility is located in West Olive, Michigan and is bounded Lake Michigan to the west, Pigeon Lake to the south, and Lakeshore Drive to the east. J.H. Campbell Pond A is a hydraulically active CCR surface impoundment which is currently receiving water from Bottom Ash Ponds 1&2 and 3 South and storm water run-off from Ponds B through K. The existing reports reviewed for this assessment are summarized in Table 1 below.

Table 1: Summary of Background Document Review

Document	Date	Author
Weekly Inspection Reports	June 2016 – May 2017	Varying CEC J.H. Campbell Generating Facility Qualified Person
J.H. Campbell Generating Facility, Pond A Structural Stability and Safety Factor Assessment Report	October 2016	Golder Associates Inc.
J.H. Campbell Generating Facility, Pond A Closure Plan	October 2016	Golder Associates Inc.
J.H. Campbell Pond A 2015 Initial Annual RCRA CCR Surface Impoundment Inspection Report	January 2016	Golder Associates Inc.
J.H. Campbell Ash Disposal Area, Triennial Ash Dike Risk Assessment Report – Spring 2014	December 2014	Barr Engineering Company
J.H. Campbell Ash Disposal Area, 2012 Ash Dike Risk Assessment Final Inspection Report	July 2012	AECOM Technical Services, Inc.
Surveillance Monitoring Programs (SMPs)	December 2010, Revised 2015	CEC
J.H. Campbell Generating Facility Ash Dike Risk Assessment, Potential Failure Mode Analysis (PFMA) Report	November 2009	AECOM Technical Services, Inc.



3.0 2017 VISUAL INSPECTION

Golder performed an onsite inspection of Pond A on May 17, 2017. Golder inspectors, Tiffany Johnson, P.E. and Samantha Fentress, were accompanied by three CEC representatives, as follows:

- Mr. George McKenzie, CEC Systems Engineering Department
- Ms. Bethany Swanberg, CEC Environmental Services Department
- Mr. Bradley Runkel, CEC Environmental Services Department

The inspection checklist form (see Appendix A) provides both observations and recommendations as a result of the visual inspection and the following information as stipulated in 40 CFR 257.83(b):

- Any changes in geometry of the impounding structure since the previous annual inspection.
 - None were observed.
- Approximate minimum, maximum, and present depth and elevation of the impounded water and Coal Combustion Residuals (CCR) since the previous annual inspection.
 - Approximate minimum water surface elevation: 614 feet above mean sea level (ft-amsl), this is the elevation of the outlet weir for Pond A.
 - Approximate average water surface elevation: 614 ft-amsl, this is the elevation of the outlet weir for Pond A.
 - Approximate maximum water surface elevation: 614 ft-amsl, this is the elevation of the outlet weir for Pond A.
- Any instrumentation in place designed to monitor the structural stability of Pond A.
 - At the time of the inspection and report, there are no plans for installation of stability monitoring instrumentation for Pond A.
- Storage capacity of the impounding structure at the time of inspection.
 - Current storage capacity of Pond A is approximately 142,000 cubic yards, based on the outlet weir elevation of 614 ft-amsl.
- Approximate volume of the impounded water and CCR at the time of inspection.
 - Approximately 142,000 cubic yards based on the outlet weir elevation of 614 ft-amsl.
- 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 annual 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 257.83(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 257.83(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:

- Pond A was receiving Bottom Ash for future stabilization at the time of the inspection.
- Minor erosion and sloughing along the northern and southern upstream and downstream slopes of Pond A were observed.



4.0 LIMITATIONS OF ASSESSMENT

Golder has conducted the site inspection and prepared this report for the J.H. Campbell Generating Facility. 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 257.83(b)(2). Golder has reviewed the available information on the J.H. Campbell Pond A and performed an onsite visual inspection. Golder's assessment is limited to the information provided by CEC and to the features 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 black ink, appearing to read "Samantha Fentress".

Samantha Fentress
Engineer

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

Tiffany D. Johnson, P.E.
Associate



6.0 REFERENCES

Document	Date	Author
Weekly Inspection Reports	June 2016 – May 2017	Varying CEC J.H. Campbell Generating Facility Qualified Person
J.H. Campbell Generating Facility, Pond A Structural Stability and Safety Factor Assessment Report	October 2016	Golder Associates Inc.
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**APPENDIX A
INSPECTION CHECKLIST FORM**

CCR SURFACE IMPOUNDMENT VISUAL INSPECTION CHECKLIST

Facility Name: J.H. Campbell Pond A

Owner: Consumers Energy Company

Purpose of Facility: Detention of process water from the generating facility

County, State: Ottawa County, Michigan

Inspected By: Tiffany Johnson and Samantha Fentress **Inspection Date:** 5/18/17

Weather: Cloudy, 70-degrees F

ITEM					REMARKS
	Acceptable	Monitor/Maintain	Investigate	Repair	
1. General Conditions					
a. Year Minimum Water Elevation					614 feet NGVD
b. Year Average Water Elevation					614 feet NGVD
c. Year Maximum Water Elevation					614 feet NGVD
d. Current water level					614 feet NGVD
e. Current storage capacity					Volume: ~142,000 CY (See Note 1)
f. Current volume of impounded water and CCR					Volume: ~142,000 CY (See Note 1)
g. Alterations	X				Pond A was receiving Bottom Ash for future stabilization at the time of the inspection.
h. Development of downstream plain	X				None observed.
i. Grass cover	X				
j. Settlement/misalignment/cracks	X				None observed.
k. Sudden drops in water level?					No drop in water level observed.
2. Inflow Structure					See Note 2 below.
a. Settlement	X				None observed.
b. Cracking	X				None observed.
c. Corrosion	X				None observed.
d. Obstacles in inlet	X				None observed.
e. Riprap/erosion control		X			Observed minor erosion and missing riprap under inlet, maintain erosion controls. See Note 5.
3. Outflow Structure					See Note 3 below.
a. Settlement	X				None observed.
b. Cracking	X				None observed.
c. Corrosion	X				None observed.
d. Obstacles in outlet	X				None observed.
e. Riprap/erosion control	X				
f. Seepage	X				None observed.
4. Upstream slope					Upstream slope is considered the northern, eastern, and western slopes that are bounded by the inactive landfill.
a. Erosion		X			Minor erosion rills were observed along the southern slopes, maintain erosion control procedures. See Note 5.
b. Rodent burrows	X				No new burrows noted during inspection.
c. Vegetation		X			Areas of sparse vegetation on northwest corner. See Note 5.
d. Cracks/settlement	X				
e. Riprap/other erosion protection		X			Minor erosion gullies on southern and northern upstream slopes, maintain erosion control procedures. See Note 5.
f. Slide, Slough, Scarp		X			Minor sloughing on southern and northern upstream slopes, maintain erosion control procedures. See Note 5.
5. Crest					
a. Soil condition	X				Gravel road
b. Comparable to width from previous inspection	X				
c. Vegetation	X				
d. Rodent burrows	X				No new burrows noted during inspection.
e. Exposed to heavy traffic	X				Heavy traffic is minimized across Pond A crest.

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
f. Damage from vehicles/machinery	X				
6. Downstream slope					Downstream slope is considered the southern slope of Pond A.
a. Erosion		X			Observed erosion on areas of sparse vegetation, maintain vegetation and erosion controls. See Note 3.
b. Vegetation		X			Observed erosion on areas of sparse vegetation, maintain vegetation and erosion controls. See Note 3.
c. Rodent burrows	X				No new burrows noted during inspection. See Note 5.
d. Slide, Slough, Scarp		X			Observed minor sloughing along steep southern slopes, maintain erosion controls. See Note 4.
e. Drain conditions	X				
f. Seepage	X				No active or historical seeps observed during inspection. See Note 5.
7. Toe					
a. Vegetation	X				
b. Rodent burrows	X				No new burrows noted during inspection. See Note 5.
c. Settlement	X				
d. Drainage conditions	X				
e. Seepage	X				No active or historical seeps observed during inspection. See Note 5.

Notes:

- Current storage capacity is based on an approximate bottom elevation of 600.0 feet NGVD29 and two feet of freeboard measured from a topographic survey collected in May of 2016. Volume of impounded water and CCR are based on an approximate bottom elevation of 600.0 feet NGVD29 and pond operating level (614 feet NGVD29) based on a topographic survey collected in May of 2016.
- One inflow structure for Pond A is located in southwest corner and consists of a 24-inch HDPE pipe.
Action: Golder recommends that the 24-inch HDPE inlet be visually inspected during storm events, per the approved SMP to verify that the hydraulic structure is flowing properly, see note 6.
- The outflow structure for Pond A is a 24-inch CMP and includes a 90-degree bend and was inspected with a camera in 2014 up to the bend. Given the material type and bend, CEC should monitor the outflow pipe weekly, as per the SMP.
Action: Golder recommends routine inspections to be conducted during storm events per the approved SMP on the remaining portion of the structure that conveys flows from the southeast corner of the pond to the outlet pipe.
- Surficial erosion was observed along the south slope of Pond A due to sparse vegetation. CEC should monitor areas, per the SMP, and maintain erosion and vegetation controls. This is not a deficiency or release as classified under 40 CFR 257.83(b)(5).
- A historic slough was observed on the south slope of Pond A. Location was documented by CEC personnel and will be monitored weekly, as per the SMP. This is not a deficiency or release as classified under 40 CFR 257.83(b)(5).
- Items 2 and 3 observed and documented in this checklist are not considered a deficiency or release as classified under 40 CFR 257.83(b)(5).

Name of Engineer: Tiffany D. Johnson, P.E.

Date: 10-12-17

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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