



Annual Inspection Report

B.C. COBB GENERATING FACILITY

PONDS 0-8

2017 ANNUAL SURFACE IMPOUNDMENT INSPECTION REPORT

Muskegon, 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 12, 2017

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CERTIFICATION

Professional Engineer Certification Statement [40 CFR 257.83]

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 Ponds 0-8 at the B.C. Cobb Generating Facility (B.C. Cobb) 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. The inspection included the following:

- Review of the available 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

B.C. Cobb is located in Muskegon, Michigan. B.C. Cobb is bordered by Lake Michigan to the west, the Muskegon River to the south, and M-120 highway to the east. Ponds 0-8 at B.C. Cobb served two primary functions:

- Received outflow from the Bottom Ash Pond for secondary detention and settlement of bottom ash
- Received intermittent sluiced fly ash and process water from the generating facility for detention and settlement

Ponds 0-8 are interconnected by a subsurface pipe network that ultimately discharged from Pond 4 to the Site's permitted National Pollutant Discharge Elimination System (NPDES) outfall to Muskegon Lake. B.C. Cobb Ponds 0-8 are currently in the process of being decommissioned and have been dewatered. The NPDES outfall is not currently active.

The existing reports reviewed for the assessment of Ponds 0-8 are summarized Table 1 below.

Table 1: Summary of Background Document Review

Document	Date	Author
Weekly Inspection Reports	June 2016 – May 2017	Varying CEC B.C. Cobb Generating Facility Qualified Persons
B.C. Cobb Generating Facility, Pond 0-8 Structural Stability and Safety Factor Assessment Report (includes information on the 2016 Annual Inspection)	October 2016	Golder Associates Inc.
B.C. Cobb Generating Facility, Pond 0-8 Closure Plan	October 2016	Golder Associates Inc.
B.C. Cobb Ponds 0-8 2015 Initial Annual RCRA CCR Surface Impoundment Inspection	January 2016	Golder Associates Inc.
B.C. Cobb Ash Disposal Area, Triennial Ash Dike Risk Assessment Report – Spring 2014	December 2014	Barr Engineering Company



B.C. Cobb 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
Inspection Report B.C. Cobb Generating Facility Ash Dike Risk Assessment, Muskegon, Michigan	December 2009	AECOM Technical Services, Inc.
B.C. Cobb Generating Facility Ash Dike Risk Assessment, Potential Failure Mode Analysis (PFMA) Report	December 2009	AECOM Technical Services, Inc.



3.0 2017 VISUAL INSPECTION

Golder performed an onsite inspection of Ponds 0-8 on May 17, 2017. Golder inspectors, Tiffany Johnson, P.E. and Samantha Fentress, were accompanied by four CEC representatives, as follows:

- Mr. George McKenzie, CEC System Engineering Department
- Ms. Michelle Marion, CEC Environmental Services Department
- Mr. Harold D. Register, Jr., CEC Environmental Services Department
- Mr. Aaron Davis, CEC Enterprise Project Management

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.
 - Average top of embankment elevation: 590.0 feet above mean sea level (ft-amsl)
 - Average water surface elevation: 580 ft-amsl (based on visual assessment at the time of the inspection)
 - Average pond bottom elevation: 575.0 ft-amsl
- There is currently no instrumentation in place designed to monitor for the structural stability of Ponds 0-8.
 - At the time of the inspection and report, there are no plans for installation of stability monitoring instrumentation due to the planned decommissioning of Ponds 0-8.
- Storage capacity of the impounding structure at the time of inspection.
 - Current storage capacity of Ponds 0-8 combined (CCR only) is approximately 562,000 cubic yards.
- Approximate volume of the impounded water and CCR at the time of inspection.
 - Current volume of CCR in Ponds 0-8 combined is approximately 240,000 cubic yards. Ponds 0-8 were dewatered as part of the planned decommissioning process at the time of the 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.
 - 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 review of previous inspection reports listed in Table 1 compared to conditions noted during the inspection, the following changes were observed:

- Minor erosion and surficial sloughing was present along interior slopes of Ponds 0-8 from dewatering.
- Rodent burrows were present along western interior slopes of Ponds 0-8
- Tall vegetation was present along the eastern downstream slope of Pond 0.



4.0 LIMITATIONS OF ASSESSMENT

Golder has conducted the site inspection and prepared this report for Ponds 0-8 at B.C. Cobb. 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 B.C. Cobb Ponds 0-8 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.

Samantha Fentress
Engineer

Tiffany D. Johnson, P.E.
Associate



6.0 REFERENCES

Document	Date	Author
Weekly Inspection Reports	June 2016 – May 2017	Varying CEC B.C. Cobb Generating Facility Qualified Persons
B.C. Cobb Generating Facility, Pond 0-8 Structural Stability and Safety Factor Assessment Report (includes information on the 2016 Annual Inspection)	October 2016	Golder Associates Inc.
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**APPENDIX A
INSPECTION CHECKLIST FORM**

CCR SURFACE IMPOUNDMENT VISUAL INSPECTION CHECKLIST

Facility Name: B.C. Cobb Ponds 0-8

Owner: Consumers Energy Company (CEC)

Purpose of Facility: Detention and settlement sluiced fly ash and process water

County, State: Muskegon County, Michigan

Inspected By: Tiffany Johnson and Samantha Fentress **Inspection Date:** 05/17/17

Weather: Sunny, 80-degrees F

ITEM					REMARKS
	Acceptable	Monitor/Maintain	Investigate	Repair	
1. General Conditions					
a. Year Minimum Water Elevation					Elevation: See Note 1
b. Year Average Water Elevation					Elevation: See Note 1
c. Year Maximum Water Elevation					Elevation: See Note 1
d. Current water level					Elevation: See Note 1, Ponds 0-8 are dewatered for decommissioning
e. Current storage capacity					Volume: ~ 562,000 CY (See Note 1)
f. Current volume of impounded water and CCR					Volume: ~ 240,000 CY CCR Only (See Note 1)
g. Alterations	X				
h. Development of downstream plain	X				
i. Grass cover	X				
j. Settlement/misalignment/cracks	X				
k. Sudden drops in water level?	X				Water levels have dropped due to intentional dewatering.
2. Inflow Structure					Inflow structure, was decommissioned at the time of the inspection.
a. Settlement	X				None observed.
b. Cracking	X				None observed.
c. Corrosion	X				Inflow structure, was decommissioned at the time of the inspection.
d. Obstacles in inlet	X				None observed.
e. Riprap/erosion control	X				None observed.
3. Outflow Structure					Outflow structure considered as discharge pipe from Pond 8.
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				None observed.
f. Seepage	X				None observed.
4. Upstream slope					Upstream Slope Considered North, South, and East Slopes
a. Erosion		X			Steep interior pond slopes were observed however ponds were decommissioned at the time of the inspection.
b. Rodent burrows		X			Rodent burrow were observed on the western slopes of Ponds 4 and 5, maintain animal control procedures, see note 2.
c. Vegetation		X			Sparse vegetation.
d. Cracks/settlement	X				None observed.
e. Riprap/other erosion protection	X				Riprap is in good condition along north and east slopes
f. Slide, Slough, Scarp		X			Steep interior pond slopes were observed, however ponds were decommissioned at the time of the inspection.
5. Crest					
a. Soil condition	X				Road gravel.
b. Comparable to width from previous inspection	X				Yes comparable.
c. Vegetation		X			Pine trees that remain intended to act as visual screening and dust suppression, maintain vegetation controls. See Note 2.
d. Rodent burrows		X			Small rodent burrows present along upstream pond slopes, maintain animal control procedures. See Note 2.
e. Exposed to heavy traffic	X				None observed.

ITEM	Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
f. Damage from vehicles/machinery	X				None observed.
6. Downstream slope					Downstream slope considered the west slope along the discharge channel.
a. Erosion		X			Erosion observed along west slope of Pond 8 and ash stockpile area where there is no riprap, maintain erosion controls. See Note 2.
b. Vegetation		X			Areas of bare vegetation observed along southwestern slope of Pond 8, maintain vegetation controls. See Note 2.
c. Rodent burrows		X			Several rodent burrows were observed along west slopes of Pond 8 and ash stockpile area, maintain animal control procedures. See Note 2.
d. Slide, Slough, Scarp	X				None observed.
e. Drain conditions	X				None observed.
f. Seepage	X				None observed.
7. Toe					
a. Vegetation	X				
b. Rodent burrows		X			Several rodent burrows were observed along southwestern toes of Pond 8 and ash stockpile area, maintain animal control procedures. See Note 2.
c. Settlement	X				None observed.
d. Drainage conditions	X				None observed.
e. Seepage	X				Apparent seepage near a well on the northeast side of Pond 0 that was observed during the 2015 inspection was not observed during this inspection.

Notes:

- 1) The following elevations were applied to approximate the combined capacity and current volume of Ponds 0-8:
 - Approximate average top of embankment elevation: 590 ft-amsl
 - Approximate average water surface elevation: 580 ft-amsl (ponds are dewatered)
 - Approximate average pond bottom elevation: 575 ft-amsl

- 2) Features observed and documented in this checklist were not considered a deficiency or release as classified under 40 CFR 257.83(b)(5) and required no immediate action beyond periodic inspection in accordance with the SMP and typical maintenance.

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

Date: October 12, 2017

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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