



REPORT

## B.C. COBB PONDS 0-8

Annual RCRA CCR Surface Impoundment Inspection  
Report – January 2016

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

**Submitted By:** Golder Associates Inc.  
15851 South US 27, Suite 50  
Lansing, MI 48906 USA

January 2016

1539461





## CERTIFICATIONS

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Michigan.

January 15, 2016

Date





## EXECUTIVE SUMMARY

The United States Environmental Protection Agency (EPA) promulgated the Resource Conservation and Recovery Act (RCRA) Coal Combustion Residuals (CCR) Rule (Rule) on April 17, 2015. The Rule requires owners or operators of existing CCR surface impoundments to have those units inspected on an annual basis by a qualified professional engineer in accordance with 40 CFR 257.83(b). The initial 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.

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 (Site) 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



---

## Table of Contents

CERTIFICATIONS ..... C-1

Executive Summary ..... ES-1

1.0 BACKGROUND AND DOCUMENT REVIEW SUMMARY ..... 1

2.0 2015 VISUAL INSPECTION ..... 2

3.0 CLOSING ..... 4

4.0 REFERENCES..... 5

### List of Tables

Table 1 Summary of Background Document Review

### List of Appendices

Appendix A Inspection Checklist Form



## 1.0 BACKGROUND AND DOCUMENT REVIEW SUMMARY

Ponds 0-8 at the B.C. Cobb Generating Facility serve two primary functions:

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

A three-inch diameter high-density polyethylene (HDPE) forcemain pipe discharges to Ponds 0-8 from closed landfill Cells 4 and 4A (groundwater gradient control system). This flow is relatively minor but was still considered as an inflow for the inspection.

Ponds 0-8 are interconnected by a subsurface pipe network that discharge from Pond 4 to the Site's permitted National Pollutant Discharge Elimination System (NPDES) outfall. The ponds can be isolated by a series of valves, and drained and cleaned out to maintain capacity. The B.C. Cobb Generating Facility and Ponds 0-8 are scheduled to begin the process of decommissioning in 2016.

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)	June 2012 – December 2015	Varying CEC B.C. Cobb Generating Facility Qualified Persons
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
B.C. Cobb Generating Facility Ash Dike Risk Assessment, Potential Failure Mode Analysis (PFMA) Report	November 2009	AECOM Technical Services, Inc.



## 2.0 2015 VISUAL INSPECTION

The 2015 onsite visual inspection of Ponds 0-8 was performed by Golder Associates Inc. (Golder) on October 14, 2015.

Golder's inspectors (Mr. John Puls and Ms. Tiffany Johnson) were accompanied by two Consumers Energy Company (CEC) representatives, as follows:

- Mr. George McKenzie, CEC Engineering Services Department
- Ms. Michelle Marion, CEC Engineering 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. Since this is the first annual inspection, changes in geometry will be incorporated in the report for the next annual inspection.
- Approximate minimum, maximum, and present depth and elevation of the impounded water and Coal Combustion Residuals (CCR) since the previous annual inspection. Since this is the first annual inspection, a placeholder has been provided for this data. Note that the ponds are currently scheduled to begin decommissioning in 2016.
- 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 future planned decommissioning of Ponds 0-8.
- Storage capacity of the impounding structure at the time of inspection.
- Approximate volume of the impounded water and CCR 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 impounding structure since the previous annual inspection.

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:

- Woody vegetation removal was completed along the southern slopes of Ponds 4 and 8.
- The northeastern diagonal slopes of Ponds 0 and 5 and the western slopes of Ponds 0 through 4 have been armored with stone, and all vegetation has been removed.
- No active seeping was observed.
- Road grading improvements and maintenance of road erosion was completed.



### 3.0 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 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.

John Puls, P.E.  
Senior Engineer

JDP

Tiffany Johnson, P.E.  
Senior Engineer



## 4.0 REFERENCES

Barr Engineering Company, 2014. B.C. Cobb Ash Disposal Area: Triennial Ash Dike Risk Assessment Report – Spring 2014.

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

AECOM Technical Services, Inc., 2012. B.C. Cobb Ash Disposal Area: 2012 Ash Dike Risk Assessment Inspection Report.

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

**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:** John Puls / Tiffany Johnson

**Inspection Date:** 10/14/2015

**Weather:** Sunny, 50-degrees F

ITEM					REMARKS
	Acceptable	Monitor/Maintain	Investigate	Repair	
1. General Conditions					
a. Year Minimum Water Elevation					Elevation: NA - This is the first RCRA Annual Inspection
b. Year Average Water Elevation					Elevation: NA - This is the first RCRA Annual Inspection
c. Year Maximum Water Elevation					Elevation: NA - This is the first RCRA Annual Inspection
d. Current water level					Elevation: See Note 1
e. Current storage capacity					Volume: ~ 562,000 CY (See Note 2)
f. Current volume of impounded water and CCR					Volume: ~ 480,700 CY (See Note 2)
g. Alterations	X				
h. Development of downstream plain	X				
i. Grass cover		X			Intermittent areas of bare soil observed along slope, maintain vegetation controls, see Item 6a below. See Note 3.
j. Settlement/misalignment/cracks	X				
k. Sudden drops in water level?					NA – No drop in water level observed.
2. Inflow Structure					Inflow structure considered as inflow pipes to Ponds 8, 6, and 5 and forcemain pipe into eastern concrete box vault.
a. Settlement	X				
b. Cracking	X				
c. Corrosion		X			Observed corrosion on pipe, continue maintenance controls. See Note 3.
d. Obstacles in inlet		X			Observed fly ash in Pond 8 inlet, maintain pond cleaning controls. Observed corrosion on pipe, continue maintenance controls. See Note 3.
e. Riprap/erosion control		X			Monitor steep slope around inflow structure, maintain as per grading controls. See Note 3.
3. Outflow Structure					Outflow structure considered as NPDES pipe from Pond 4.
a. Settlement	X				
b. Cracking				X	End section of emergency overflow pipe inlet was damaged likely due to vegetation removal equipment. Remove/repair end section. See Note 3.
c. Corrosion	X				
d. Obstacles in outlet	X				
e. Riprap/erosion control	X				
f. Seepage	X				
4. Upstream slope					Upstream Slope Considered North, South, and East Slopes
a. Erosion		X			Steep interior pond slopes were observed likely due to the dewatering and sediment removal from the ponds, maintain erosion and grading controls during pond cleaning. See Note 3.
b. Rodent burrows	X				
c. Vegetation	X				
d. Cracks/settlement	X				
e. Riprap/other erosion protection	X				
f. Slide, Slough, Scarp	X				
5. Crest					
a. Soil condition	X				
b. Comparable to width from previous inspection		X			Wave action appears to be eroding the inside slopes of Pond 0, primarily on the eastern interior slopes, maintain erosion and grading controls for interior slopes. See Note 3.
c. Vegetation		X			Pine trees that remain intended to act as visual screening and dust suppression, maintain vegetation controls. See Note 3.
d. Rodent burrows		X			Small rodent burrows present along interior pond slopes, maintain animal control procedures. See Note 3.
e. Exposed to heavy traffic		X			Truck traffic is present along the crest, maintain erosion controls. See Note 3.
f. Damage from vehicles/machinery		X			Minor rutting was observed along interior pond roads, maintain grading controls. See Note 3.
6. Downstream slope					Downstream slope considered the west slope along the discharge channel.
a. Erosion		X			Erosion observed along west slope of Pond 4, maintain erosion controls. See Note 3.
b. Vegetation		X			Areas of bare vegetation observed along west slope of Pond 4, maintain vegetation controls. See Note 3.
c. Rodent burrows	X				
d. Slide, Slough, Scarp	X				

ITEM		Acceptable	Monitor/Maintain	Investigate	Repair	REMARKS
e.	Drain conditions	X				
f.	Seepage	X				
7.	Toe					
a.	Vegetation	X				
b.	Rodent burrows	X				
c.	Settlement	X				
d.	Drainage conditions	X				
e.	Seepage	X				

**Notes:**

- 1) Pond water surface elevations (amsl) surveyed in October 2015 are as follows:
  - Pond 0: 587.3
  - Pond 1: 587.3
  - Pond 2: 587.2
  - Pond 3: 586.7
  - Pond 4: 585.8
  - Pond 5: 587.5
  - Pond 6: 588.0
  - Pond 7: 592.0
  - Pond 8: 592.0
- 2) The following elevations were applied to approximate the combined capacity and current volume of Ponds 0-8:
  - Average top of embankment elevation: 590.0
  - Average water surface elevation: 588.2
  - Average pond bottom elevation: 575.0
- 3) 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:** John Puls, P.E.

**Date:** 1/15/2016

**Engineering Firm:** Golder Associates Inc.

**Signature:** 



PROFESSIONAL ENGINEER SEAL

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.

Africa	+ 27 11 254 4800
Asia	+ 852 2562 3658
Australasia	+ 61 3 8862 3500
Europe	+ 356 21 42 30 20
North America	+ 1 800 275 3281
South America	+ 56 2 2616 2000

[solutions@golder.com](mailto:solutions@golder.com)  
[www.golder.com](http://www.golder.com)

**Golder Associates Inc.**  
**15851 South US 27, Suite 50**  
**Lansing, MI 48906 USA**  
**Tel: (517) 482-2262**  
**Fax: (517) 482-2460**



**Engineering Earth's Development, Preserving Earth's Integrity**

Golder, Golder Associates and the GA globe design are trademarks of Golder Associates Corporation