

### 40 CFR Parts 257

Checklist for P.E. Annual Inspection for CCR Surface Impoundments, § 257.83(b)

#### Sikeston BMU Sikeston Power Station Bottom Ash Surface Impoundment

##### Annual Inspection

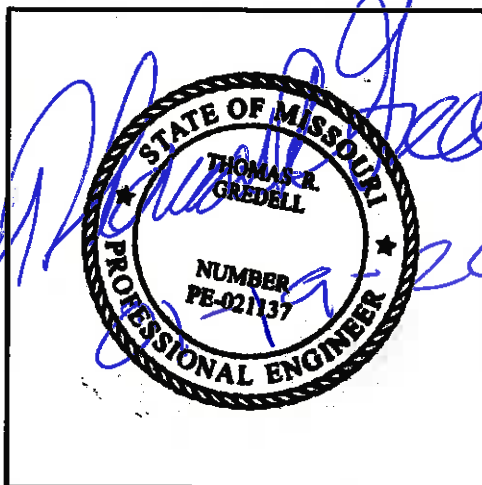
Requirements	Signs of actual or potential structural weakness (257.83(b)(v))	Disruptions or potential disruption to the operation and safety of the unit (257.83(b)(vi))
CCR Unit and appurtenant structures 257.83(b)(ii)	Potential seepage along northern embankment west of the Fly Ash Pond	None Observed. Continue to monitor.
Hydraulic structures underlying the base of the CCR unit 257.83(b)(iii)	None Observed	Grass lined channel at outlet regraded to create a sediment basin. Visual observation indicates some sediment in stormwater culverts have self-cleaned during heavy rains. Separated corrugated metal pipe seams still require repair.

The 2017 Annual Inspection included a review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record in general accordance with 257.83(b)(i).

Minor maintenance items associated with routine upkeep and items that require further investigation and/or corrective action observed during the 2017 Annual Inspection presently do not impact the structural integrity of the embankment. SBMU plans to address these items in a timely manner through normal maintenance.

GREDELL Engineering Resources, Inc.

Engineer's Seal



Thomas R. Gredell, P.E.  
Missouri License: PE-021137  
Date: December 1, 2017

**SIKESTON POWER STATION – BOTTOM ASH POND  
2017 ANNUAL INSPECTION CHECK SHEET**

**SIKESTON POWER STATION**  
Bottom Ash Pond  
Annual Inspection Check Sheet

Date	September 1, 2017
Inspector	Thomas R. Gredell, P.E.
Pool Level	Estimated el. 317.5
Temperature	Lower 70°s
Weather	Mostly Sunny, dry, breezy

Date of Previous Annual Inspection: October 4-6, 2016

Date of Previous Periodic Inspection: August 27, 2017.

Description of Emergency (EC) or Immediate Maintenance (IM) conditions observed since the last annual inspection:

None

Describe any action taken to restore or improve safety and integrity of impounding structure:

None

Describe any modifications to the geometry of the impounding structure since the previous annual inspection:

Small quantity of Fly Ash was slurred in the SE corner of pond. Bottom Ash reclamation stock pile in NW has seen minor changes, but overall volume of the material is the same and maximum height is relatively the same. SBMU staff reported that they had produced ~ 11 tons of Bottom Ash and reclaimed/sold ~ 11 tons.

Describe any modifications to the operation of the impounding structure since the previous annual inspection:

None (Scrubber sludge has not been placed in the Pond since 1998. The Water Recirculation Structure (NE corner) is no longer operational.) The emergency outfall to the Fly Ash Pond is no operational due to impounded fly ash that blocks the outlet side of the structure on the fly ash side.

List the approximate remaining storage capacity (Cubic Yards) of the impounding structure:

Estimated available storage is 380,000 CY below el. 320 (allowing 2 feet of freeboard)

List the approximate maximum, minimum and present depth and elevation of the impounded water since the previous annual inspection:

Estimated from inspection reports for 2017: Max. Elev. 319.7 (Depth 17.7'); Min. Elev. 316.0 (Depth 14.0'); Depth on 12-31-17 = Elev. 319.7 (Depth 17.7')

List the approximate maximum, minimum and present depth and elevation of the impounded CCR since the previous annual inspection:

Estimated from 2016 aerial survey: CCR occupies approximately 60 acres at an approx. Max. Elev. 318.8 (Depth 16.8'). Min. depth is estimated to be less than 5' or Elev. 307 located beneath the surface of the impounded water. Elevation and Depth of impounded CCR do not change rapidly from year to year.

Approximate volume of impounded water and CCR at the time of the inspection:

Estimated Volume CCR 1,164,000 CY (235 Million Gallons, or MG). Estimated Volume of water 220,000 CY (44.5 MG).

Describe any changes to the downstream watershed since the last annual inspection:

No changes to the downstream watershed have occurred since the 2017 Annual Inspection.

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<b>Inlet and Outlet Works</b>		
Item	Condition Code	Comments
Outlet Condition	GC	Concrete intake with stop logs, discharges into buried 10-inch carbon fiber pipe that runs north and then west to Process Waste Pond. (Water Recirculation Structure is no longer operational and the emergency overflow is blocked by impounded fly ash at the emergency overflow outlet.) No change since 2016.
Gate Condition/ Operability	GC	Stop logs originally controlled water level but are not present at the structure and no longer used. A control valve north of the discharge is utilized for flow control. No change since 2016.
Leakage	NE	No leakage observed. No Change since 2016.
Outfall Condition	GC	Discharge pipe is at Process Waster Pond. Approximately 1.5' of the discharge pipe is damaged along the east side of the pipe at the outfall, but does not compromise the operation of the discharge pipe. No change since 2016.
Discharge (color and/or sediment)	NI	Discharge flow was not observed in 2017.
Obstructions	NE	Flow to outlet structure appeared to be obstructed by weeds and dead vegetation. Trim weeds at outlet.
Instrumentation	OB	Water level is measured by staff gauge at the inactive Recycle Water Recirculation Structure. Staff gauge markings are getting worn and will need repainting in the future. The maximum recorded reading of the staff gauge between January 1, 2017 and December 31, 2017 was 3.7 feet or elevation 319.7 feet. Six piezometers installed for initial stability assessment in August 2011 have been dry or very little water.
Inlet Piping Condition	GC	Inlet pipe for bottom ash (estimated 8 to 10-inch iron pipe) is in good condition. Pipe trench sump discharge pipe (4-inch PVC pipe) and plant operations wastewater inlet (12-inch iron pipe) were in good condition. Makeup water pipe (8-inch iron pipe) was in good condition.
Emergency Spillway	Not Operational	A buried 30-inch pipe was designed to convey excess water from the Bottom Ash Pond to the Fly Ash Pond, as needed. The discharge end of the structure in the Fly Ash Pond is blocked by impounded CCR. The swing gate on Bottom Ash Pond inlet side of the structure is closed. Limited inflow water to the Bottom Ash Pond negates the significance of needing an emergency discharge.
Other: Buried Storm Water Box Culvert	OB (overall)	Dual buried box culvert conveys offsite stormwater from the east side of the Bottom Ash Pond (west end of Compress Road) to the west side of the Pond. The inlet was observed to be in good condition. The culverts discharge through corrugated metal culverts into an open channel on the west side. The inlet was dry and the outlet was not directly observed. Remote video inspection of the dual stormwater culverts was conducted in 2016 indicated no signs of deterioration or structural deficiency. There was also no evidence of loss of CCR (subsidence) above the culvert inside the Pond. In 2016, both culverts have sediment build up extending

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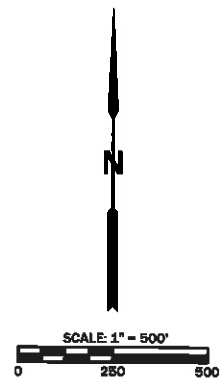
<b>Inlet and Outlet Works</b>		
Item	Condition Code	Comments
	MM (metal culvert seam damage)	<p>approximately 940' from the discharge upstream. The elevation of the open channel at the discharge is higher than the flow line of the stormwater culvert discharge and a sediment basin was dug out below the pipe discharges, increasing the sediment capacity below discharges. This appeared to have increased the flow velocity in the lower 1/3 of the pipe, which increased the ability of the pipe to flush out some quantity of the sediment build up in the culverts during heavy rainfall events. Two tires were observed in new sediment basin below the discharge (note that two tires were observed inside the culverts in 2016). The sediment basin should be observed and cleaned out when it becomes full of solids/debris.</p> <p>The southern corrugated metal culvert has two small areas where the seams are damaged and separated. The bituminous lining in both culverts is degraded in the area of the damage. It is recommended that these two damaged areas be repaired.</p>

<b>Earth Embankment</b>		
Item	Condition Code	Comments
Vertical & Horizontal Alignment of Crest	GC	No visible evidence of deformation of embankment.
Seepage/Wetness / Ponding Areas	MM (Ponding)	Water ponds occasionally in the perimeter flat bottom ditch inside rail loop. This appears to be caused by the flat grade of the railroad bed and does not appear to be seepage. The ponding may cause difficulty at times mowing (maintaining) the ditch, but otherwise is not a concern.
	OB (Northern Berm Seepage)	An area along the northern berm of the Bottom Ash Pond, west of the Fly Ash Pond was identified as an area of potential seepage from the Bottom Ash Pond. No visual observation of erosion of the outer berm soils were observed in 2016 or 2017. 2017 observation indicates the area can be maintained. It is recommended that this area continue to be visually monitored and that further investigation of the wet area be considered.
Erosion/Rutting	MM	Minor rutting in gravel road in NE corner and along NW and NE ramp were noted in the weekly inspections.
Fencing	NI	Fencing is not adjacent to the Bottom Ash Pond.
Vegetation	GC	Vegetation on exterior slopes is generally maintained at less than 6 inches, however this federal CCR rule criteria has been remanded and, therefore, is no longer applicable.
Sloughs/Slides/ Cracks	GC	No evidence.
Animal Control	GC	No evidence of animal burrows or holes.



**NOTES**

1. MINOR MAINTENANCE ITEMS INCLUDE CLEARING VEGETATION FROM SURFACE IMPOUNDMENT DISCHARGE.
2. ITEMS REQUIRING FURTHER OBSERVATION, INVESTIGATION OR CORRECTIVE ACTION INCLUDE:
  - a. SATURATED BERM SOIL ALONG NORTHERN BERM, WEST OF THE INACTIVE FLY ASH POND. (SAME AS 2016)
  - b. SEPARATED CORRUGATED METAL PIPE SEAMS AT THE DISCHARGE OF THE SOUTHERN STORMWATER CULVERT PASSING BENEATH THE BOTTOM ASH POND. (SAME AS 2016. REPORTED NOT REPAIRED)
  - c. GRASS LINED CHANNEL AT THE DISCHARGE OF THE STORMWATER AT THE OUTLET OF THE STORMWATER CULVERTS PASSING BENEATH THE BOTTOM ASH POND FROM EAST TO WEST HAS BEEN CLEARED OF BRUSH AND EXCAVATED TO CREATE A SEDIMENT BASIN. BASIN PARTIALLY FILLED WITH SEDIMENT AND DEBRIS (2 TIRES). RE-EXCAVATED AS NEEDED.
3. ITEMS IDENTIFIED DURING THE ANNUAL INSPECTION WHICH DO NOT REQUIRE MAINTENANCE INCLUDE:
  - a. THE IMPEDED OVERFLOW STRUCTURE BETWEEN THE BOTTOM ASH POND AND THE INACTIVE FLY ASH POND.



**2017 ANNUAL P.E. INSPECTION  
BOTTOM ASH POND  
SIKESTON POWER STATION**

**GREDELL Engineering Resources, Inc.**

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**FIGURE 1**

DATE	SCALE	PROJECT NAME	REVISION
01/2018	AS NOTED	SIKESTON	
DRAWN AJK	APPROVED TG	FILE NAME 2017 PE INSPECTION	SHEET # 1 OF 1