

40 CFR Parts 257

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

Sikeston BMU Sikeston Power Station Fly Ash Surface Impoundment

Annual Inspection

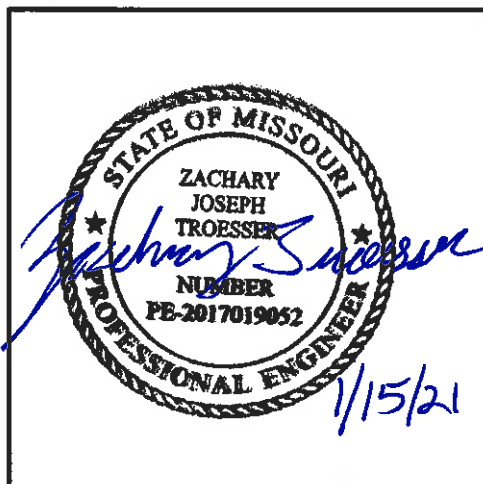
Requirements	Signs of actual or potential structural weakness (257.83(b)(vi))	Disruptions or potential disruption to the operation and safety of the unit (257.83(b)(vi))
CCR Unit and appurtenant structures 257.83(b)(ii)	Potential seepage along southeastern embankment of the Fly Ash Pond.	None Observed. Continue to monitor.
CCR Unit and appurtenant structures 257.83(b)(ii)	None Observed. Install staff gauge and continue to monitor.	Develop earthen spillway or open existing 24-inch spillway pipe to the Process Waste Pond.

The 2020 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 2020 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



Zachary Troesser, P.E.
Missouri License: PE-2017019052
Date: January 15, 2021

SIKESTON POWER STATION – FLY ASH POND
2020 ANNUAL INSPECTION CHECK SHEET

SIKESTON POWER STATION
Fly Ash Pond
Annual Inspection Check Sheet

Date	December 1, 2020
Inspector	Zachary Troesser, P.E.
Pool Level	Estimated el. 318
Temperature	High 30°s
Weather	Sunny, damp

1. Date of Previous Annual Inspection:
 - a. December 4, 2019
2. Date of Previous Periodic Inspection:
 - a. The date of most recent weekly inspection report reviewed for this Annual Inspection was November 29, 2020.
3. Description of Emergency (EC) or Immediate Maintenance (IM) conditions observed since the last annual inspection:
 - a. IM conditions were noted for roadway rutting and potholes on weekly inspection reports by plant personnel on several occasions throughout the year. Roadways were in good condition during our annual inspection. A review of weekly reports for the year indicate that rutting and potholes occasionally occur, but are remedied by routine maintenance (i.e., grading the road and adding gravel). Short-term rutting on top of the berms is not significant if remedied by routine maintenance.
 - b. IM conditions were noted for vegetation height on weekly inspection reports periodically throughout the year. However, it is noted that vegetation height is not currently regulated by the federal CCR rules.
4. Describe any action taken to restore or improve safety and integrity of impounding structure:
 - a. The rutting and potholes were corrected by grading the road on one or more occasions in 2020. In response to the recommendations from the prior Fly Ash Pond Inspection, a perimeter ditch was observed along much of the north, east, and south sides of the fly ash pond. In response to the observation of potential berm seepage, a field investigation and office evaluation was completed in mid-2018 by Reitz & Jens, Inc. as a subconsultant to Gredell Engineering. The conclusion of that evaluation is that the possible seepage did not have a negative impact on the stability of the embankments. Field conditions had changed in 2020.
5. Describe any modifications to the geometry of the impounding structure since the previous annual inspection:
 - a. Perimeter drainage channels along the inside of the berm were observed along the entire north embankment, and about 75 percent of the east and south embankments. These improvements are consistent with the recommendations for improved interior drainage within the impoundment from the 2019 Annual Inspection.
6. Describe any modifications to the operation of the impounding structure since the previous annual inspection:
 - a. None observed or reported in 2020. The ongoing sluicing of dry fly ash into the Fly Ash Pond via wetting heads has been moved further away from the western perimeter berm to decrease the potential for discharge of CCRs outside of the impoundment.
7. List the approximate remaining storage capacity (Cubic Yards) of the impounding structure:
 - a. Estimated available storage is 50,000 CY below el. 320 (allowing 2 feet of freeboard).

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8. List the approximate maximum, minimum and present depth and elevation of the impounded water since the previous annual inspection:
 - a. The weekly inspection reports do not indicate an elevation of impounded water due to the lack of a staff gauge at the Fly Ash Pond outlet structure. Only direct precipitation enters the Fly Ash Pond. The depth of water in the pond is estimated to be elevation 318. The primary quantities of ponded water are in the interior of the Fly Ash Pond in the approximate center.
9. List the approximate maximum, minimum and present depth and elevation of the impounded CCR since the previous annual inspection:
 - a. Estimated from 2016 aerial survey: CCR occupies approximately 30 acres at an approx. Max. Elev. 320 (Depth 18'). Min. depth is estimated to be 13' or less (approx. Elev. 315 located beneath the surface of the impounded water).
10. Approximate volume of impounded water and CCR at the time of the inspection:
 - a. Estimated Volume CCR 790,000 CY (159 Million Gallons). Estimated Volume of water 24,000 CY (4.8 Million Gallons). A minor amount of CCR was placed in the Fly Ash Pond in 2020.
11. Describe any changes to the downstream watershed since the last annual inspection:
 - a. No changes to the downstream watershed have occurred in 2020.

SIKESTON POWER STATION – FLY ASH POND
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Inlet and Outlet Works		
Item	Condition Code	Comments
Outlet Condition	NE	The outlet structure has a concrete intake with stop logs. No stop logs were in place. The outlet structure discharges into one of two buried 24-inch pipes: one pipe discharges north and offsite the property; and one pipe discharges west and then follows an open channel swale to Process Waste Pond.
Gate Condition/ Operability	NE	Stop logs originally controlled water level, but are not in place and no longer used. Two gate valves originally provide flow control. Both discharges are reported to be permanently sealed. Gredell Engineering has recommended that the gate valve that discharges to the west (toward the Process Waste Pond) be repaired and returned to operable condition. The gate valve could be left sealed if an emergency spillway is constructed.
Leakage	NE	No leakage from the outlet structure was observed.
Outfall Condition	MM	The pond system outfall structure discharge pipes are currently reported to be permanently sealed. Gredell Engineering has recommended that the gate valve that discharges to the west into the Process Waste Pond be returned to operable condition. The gate valve could be left sealed if an emergency spillway is constructed.
Discharge (color and/or sediment)	NE	No discharge was occurring from the Fly Ash Pond and no discharge was reported in 2020.
Obstructions	NE	The Surface Impoundment is nearing full capacity with CCR solids. Influent water consists solely of precipitation. An interior perimeter ditch has been constructed along part of the north, east, and south sides of the Fly Ash Pond but needs to be extended to provide drainage to the outlet structure around the entire Fly Ash Pond. The pond system outfall structure discharge pipes are currently reported to be permanently sealed.
Instrumentation	MM	<p>No instrumentation exists at the outlet of the Fly Ash Pond to track the elevation of water at the outlet structure. It is recommended that a staff gauge be installed and read during the weekly inspections or following heavy rainfall events.</p> <p>There are four (4) piezometers (installed ~ 2011) constructed within the Fly Ash Pond perimeter berms that serve to monitor water or saturation within the pond berms. These are identified as P-3, P-4, P-5 and P-9. Total depths are approximately 25 feet, 25 feet, 14.5 feet and 25 feet, respectively. P-3 water levels ranged from 22.55 to 24.52 feet below casing in 2020. P-4 occasionally had no reportable water level, and reported water levels ranged from 21.61 to 23.98 feet below the top of casing in 2020. P-5 water levels ranged from 4.88 to 9.79 feet below casing in 2020. P-9 occasionally had no reportable water level and water levels reported ranged from 22.97 to 24.56 feet below the top of casing in 2020.</p>
Inlet Piping Condition	Not Operational	Fly ash is no longer directly sluiced into the Fly Ash Pond. A buried 30-inch pipe exists that was designed to convey excess water from the Bottom Ash Pond to the Fly Ash Pond as an emergency spillway. This is no longer in use because sedimented CCR blocks the influent side of the pipe into the Fly Ash Pond.

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Inlet and Outlet Works		
Item	Condition Code	Comments
		The condition of the discharge pipe in the Fly Ash Pond was not determined because it is covered with CCR. The swing gate on the Bottom Ash Pond side (the inlet) is closed. Limited inflow water negates the significance of the emergency discharge structure from the Bottom Ash Pond.
Emergency Spillway	MM	There is no operational emergency spillway in the Fly Ash Pond at this time. Inflow to the Fly Ash Pond is limited to rainfall only. Process water is no longer discharged into the Fly Ash Pond. As a result of the required <i>Inflow Design Flood Control System Plan</i> completed by Gredell Engineering in April 2018, it was determined to be advantageous to SBMU to construct an emergency spillway. Upon request from SBMU, Gredell Engineering designed an emergency spillway consisting of a shallow, broad-crested weir to be constructed along the western berm of the Fly Ash Pond. SBMU indicated that the emergency spillway will be put out to bid in 2021. If the outlet structure discharge pipe to the Process Waste Pond is opened, the construction of an emergency spillway is not considered critical.
Other:		NONE

Earth Embankment		
Item	Condition Code	Comments
Vertical & Horizontal Alignment of Crest	GC	No visible evidence of deformation of embankment has been observed.
Seepage/Wetness / Ponding Areas	OB (Seepage)	An area along the exterior of the southeastern berm of the Fly Ash Pond was identified as an area of potential seepage from the Fly Ash Pond. The wet area was previously identified as an area of potential seepage based on the presence of a small number of cattails a few feet up the slope from the perimeter stormwater ditch inside of the railroad loop. Cattails were not observed, nor were signs of erosion of the outer berm soils during our annual inspection. The area was able to be maintained (the vegetation had been recently cut). In mid-2018, Gredell Engineering subcontracted to Reitz & Jens, Inc. (St. Louis) to complete an evaluation of a small localized area of the southeast embankment of the Fly Ash Pond. The report stated that the possible seepage did not have a negative impact on the stability of the embankments. Therefore, it is recommended that this area continue to be visually monitored to note any change in conditions. Future remediation of the wet area may be appropriate at a future date based on regulatory or other considerations.
Erosion/Rutting	NE	No evidence of erosion or rutting on the outside slopes of the berms were observed in 2020. However, weekly inspections note that rutting and potholes periodically existed in the road surfaces located on top of the Fly Ash Pond berms. A few small potholes were observed along the roadway berms during the

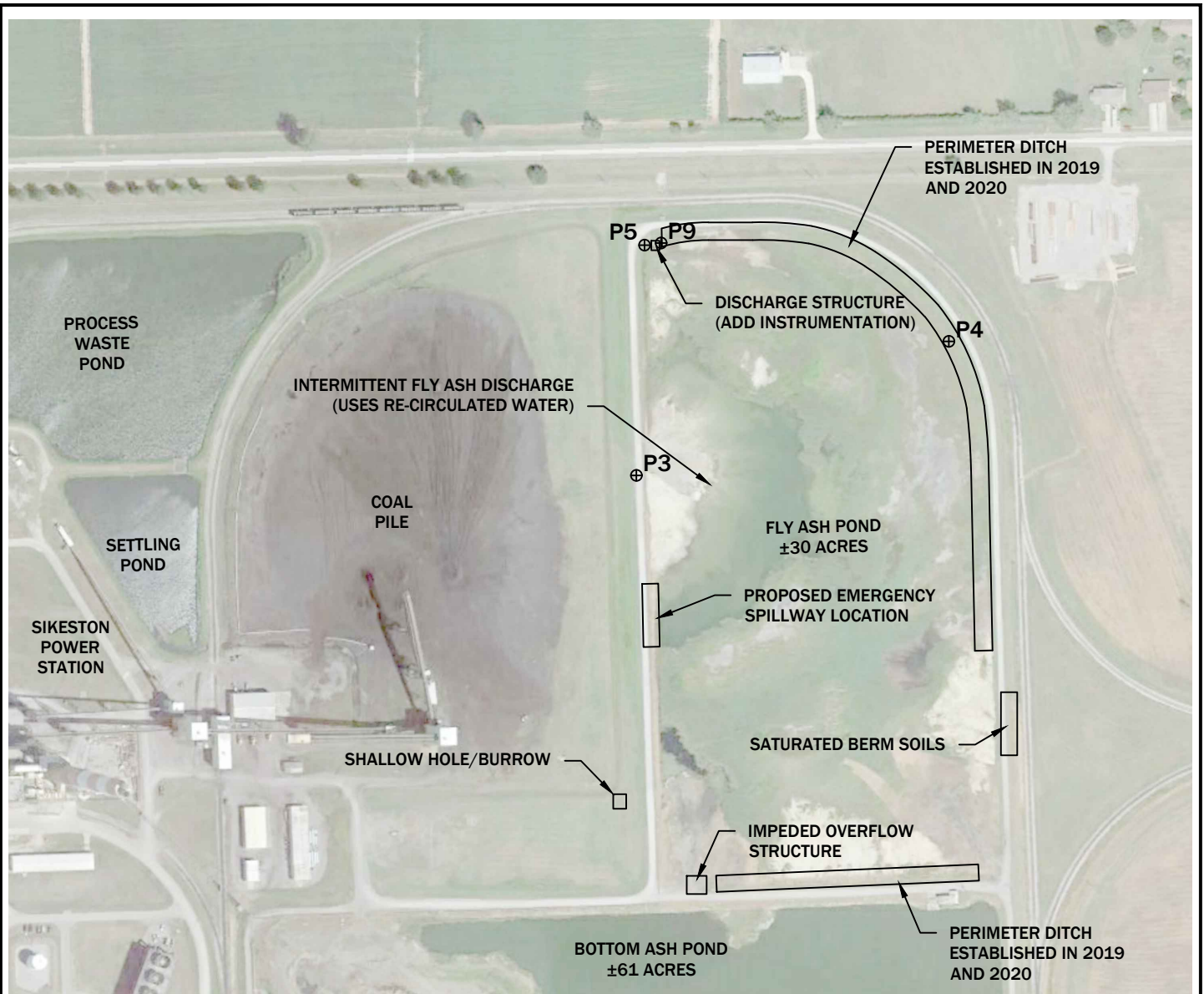
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		annual inspection. The rutting appears to be caused by heavy truck traffic during periods of wet weather, and should be corrected to maintain a consistent vertical height of the perimeter berms. SBMU staff periodically remediated the conditions noted by grading the road surfaces.
Fencing	GC	Fencing is only adjacent to the Fly Ash Surface Impoundment on the north perimeter. The fencing is a not located on the toe of the berms. The fencing is in very good condition.
Vegetation	GC	Vegetation on exterior slopes was periodically cut and maintained during 2020 as evidenced by Gredell Engineering’s inspection and weekly inspection reports by plant personnel. However, the portion of the rule that requires vegetation to be kept at 6 inches or less has been remanded.
Sloughs/Slides/ Cracks	NE	No evidence was observed in 2020.
Animal Control	OB	A small, shallow hole was observed in the west embankment, just north of the Bottom Ash Pond. A weekly inspection report indicated a coyote was observed near the ash pond. The small hole did not appear to be a burrow and may have been dug by the coyote or other animal. Evidence of burrowing animals was not observed. SBMU staff should continue to monitor for burrowing animals and attempt to remove such animals from the area.
Other	NONE	

- Condition Codes:
- EC Emergency Condition – a serious safety condition exists that requires immediate action.
 - IM Immediate Maintenance – an item that requires maintenance within about 30 days to ensure safety or operation.
 - MM Minor Maintenance – item needing minor maintenance or repair within 6 months.
 - OB Observation – condition requires regular observation to ensure that the condition does not become worse.
 - GC Good Condition.
 - NE No Evidence of a problem.
 - NI Not Inspected. State reason in comments.

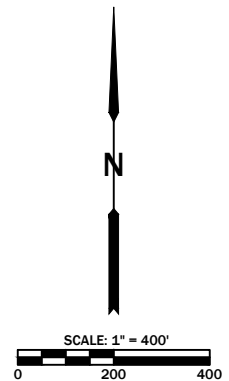
Additional Notes:

1. The location of observations on attached plan sheet (Figure 1).



NOTES

1. MINOR MAINTENANCE ITEMS INCLUDE:
 - a. CLEAN SEDIMENT AND VEGETATION FROM DISCHARGE STRUCTURE.
 - b. ADD INSTRUMENTATION (STAFF GAUGE).
 - c. REPAIR INOPERABLE GATE VALVE TO THE PROCESS WATER POND OR DEVELOP AN EMERGENCY SPILLWAY.
 - d. EXCAVATE INTERIOR STORMWATER CHANNEL 2 FEET DEEP ALONG POND PERIMETER (WHERE REQUIRED)
2. REQUIRING FURTHER OBSERVATION INCLUDE:
 - a. SATURATED BERM SOIL ALONG SOUTHEAST BERM.
 - b. MONITOR FOR BURROWING ANIMALS AND REMOVE THEM AS NEEDED.
3. ITEMS IDENTIFIED DURING THE ANNUAL INSPECTION WHICH DO NOT REQUIRE MAINTENANCE:
 - a. THE IMPEDED OVERFLOW STRUCTURE BETWEEN THE BOTTOM ASH POND AND THE FLY ASH POND.



**2020 ANNUAL P.E. INSPECTION
FLY ASH POND
SIKESTON POWER STATION**

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MO CORP. ENGINEERING LICENSE NO. E-2001001669-D

FIGURE 1

DATE 1/2021	SCALE AS NOTED	PROJECT NAME SIKESTON	REVISION
DRAWN CP	APPROVED ZT	FILE NAME 2020 PE INSPECTION	SHEET # 1 OF 1