40 CFR Parts 257

2021 Checklist for P.E. Annual Inspection for CCR Surface Impoundments, § 257.83(b)

Sikeston BMU Sikeston Power Station Fly Ash Surface Impoundment

NOTE – THE FLY ASH POND CEASED RECEIVING WASTE IN 2021.

Annual Inspection

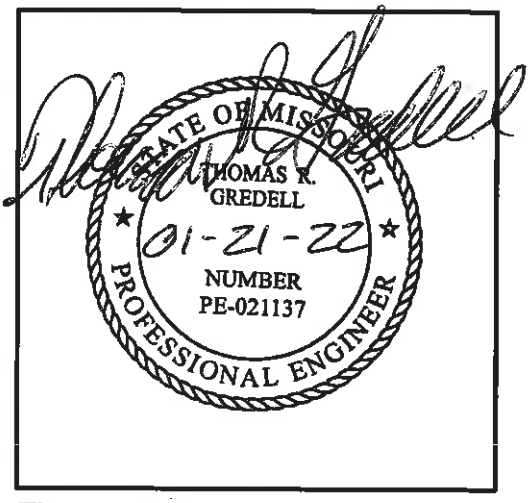
Requirements	Signs of actual or potential structural weakness (257.83(b)(vi))	Disruptions or potential disruption to the operation and safety of the unit (257.83(b)(vi))
CCR Unit and appurtenant structures 257.83(b)(ii)	Potential seepage along southeastern embankment of the Fly Ash Pond noted on past inspection reports but dry in 2021; continue to monitor.	None Observed. Continue to monitor.
CCR Unit and appurtenant structures 257.83(b)(ii)	No Staff Gauge Present. Limited need for staff gauge now that the Fly Ash Pond is inactive	Fly Ash Pond is inactive and currently only received rainfall. Water levels should be watched.

The 2021 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 2021 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: January 20, 2022

SIKESTON POWER STATION – FLY ASH POND
2021 ANNUAL INSPECTION CHECK SHEET

SIKESTON POWER STATION
Fly Ash Pond
Annual Inspection Check Sheet

Date	September 16, ~~2022~~2021
Inspector	Thomas R. Gredell, P.E.
Pool Level	Estimated el. Less than 318
Temperature	High Upper 70°s
Weather	Cloudy, dry

1. Date of Previous Annual Inspection:
    a. December 1, 2020
2. Date of Previous Periodic Inspection:
    a. The date of most recent weekly inspection report reviewed for this Annual Inspection was December 26, 2021.
3. Description of Emergency (EC) or Immediate Maintenance (IM) conditions observed since the last annual inspection:
    a. IM conditions were periodically noted for roadway rutting and potholes on weekly inspection reports by plant personnel throughout the year. Roadways were in generally in good condition during our annual inspection. A short length of the perimeter road between the Fly Ash Pond and the Bottom Ash Pond was observed to be rutted, but did not present an issue regarding berm structural stability. A review of weekly reports for the year indicate that rutting and potholes occasionally occur, but the intermittent nature indicate they 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. Rutting of ramps were often noted at the same time rutting was noted, but there are no ramps adjacent to the Fly Ash Pond. The two ramps that provide vehicle access to the top of the berms are located adjacent to the Bottom Ash Pond.
    b. IM conditions were periodically noted for vegetation height on weekly inspection reports throughout the year. However, as noted in past reports, 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 periodically identified in weekly inspection reports by plant personnel were corrected by grading the road on one or more occasions in 2021 (as evidenced by the intermittent nature of the comments).
    b. In response to the recommendations from the prior Fly Ash Pond Annual Inspection reports, a perimeter ditch had been observed during the 2020 inspection along much of the north, east, and south sides of the Fly Ash Pond. In 2021 these ditches were still open.
    c. 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. In 2021, field conditions were much dryer and the location of or presence of potential berm seepage could not be found.
5. Describe any modifications to the geometry of the impounding structure since the previous annual inspection:
    a. Drainage channels along the inside of portions of the perimeter berms were observed along the entire north embankment, and about 75 percent of the east and south embankments. These improvements were noted in the 2020 inspection report and appear to have been maintained during 2021.

6. Describe any modifications to the operation of the impounding structure since the previous annual inspection:
    a. The Fly Ash Pond ceased accepting waste in early 2021. This is a substantial modification to the operations of the pond and no other operational changes were observed.
7. List the approximate remaining storage capacity (Cubic Yards) of the impounding structure:
    a. Due to the limited amount of CCR that was put into the Fly Ash Pond in early 2021, the estimated available storage remains the same at 50,000 CY below el. 320 (allowing 2 feet of freeboard).
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 has previously been estimated to be elevation 318. At the time of the inspection in September 2021, it was noted that the water impounded within the low spots of the Fly Ash Pond were significantly lower than during past inspections. The primary quantities of low spots and 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). For reasons stated in Item 8 above, these numbers have not changed substantially in 2021. The Fly Ash Pond is now inactive.
10. Approximate volume of impounded water and CCR at the time of the inspection:
    a. A minor amount of CCR was placed in the Fly Ash Pond in early 2021, but use of the Fly Ash Pond for deposition of CCR solids stopped by April 2021. Therefore, CCR volumes are assumed to be the same as estimated at the end of 2020. Estimated Volume CCR 790,000 CY (159 Million Gallons). The estimated maximum volume of water is 24,000 CY (4.8 Million Gallons), although the pond was relatively dry at the time of observation in September 2021. Process water is no longer discharged into the pond.
11. Describe any changes to the downstream watershed since the last annual inspection:
    a. No changes to the downstream watershed have occurred in 2021.

SIKESTON POWER STATION – FLY ASH POND
2021 ANNUAL INSPECTION CHECK SHEET

Inlet and Outlet Works		
Item	Condition Code	Comments
Outlet Condition	OB	The outlet structure is concrete with an open intake that will accept 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. Both pipes are reported to be permanently closed. At the time of inspection, no water was observed in the vicinity of the outlet structure. Regular observation of the presence and height of ponded water should be made during weekly inspections until closure is completed.
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 previously recommended that the gate valve that discharges to the west (toward the Process Waste Pond) be repaired and returned to operable condition. However, due to the inactive status of the Fly Ash Pond and its pending closure, this recommendation is withdrawn.
Leakage	NE	No leakage from the outlet structure was observed.
Outfall Condition	NE	The pond system outfall structure discharge pipes are currently reported to be permanently sealed. See previous comments on the Outlet Condition.
Discharge (color and/or sediment)	NE	No discharge was occurring from the Fly Ash Pond and no discharge was reported in 2021.
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	OB and MM	No instrumentation exists at the outlet of the Fly Ash Pond to track the elevation of water at the outlet structure. It has previously been recommended that a staff gauge be installed and read during the weekly inspections or following heavy rainfall events. A staff gauge at the outlet structure would assist plant personnel conducting weekly inspections in noting the accumulation of stormwater within the pond. 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 reported to be 25 feet, 25 feet, 14.5 feet and 25 feet, respectively. P-3 water levels ranged from 24.15 to 24.42 feet below casing in 2021. P-4 occasionally reported 'dry' and reported water levels ranged from 23.27 to 24.63 feet (dry) below the top of casing in 2021. P-5 water levels ranged from 5.12 to 10.62 feet below casing in 2021. P-9 water levels were very low in 2021 and ranged from 24.48 to

Inlet and Outlet Works		
Item	Condition Code	Comments
		24.81 feet below the top of casing. It was also consistently noted during monthly inspection that P-9's flush mount cover and lock require repair.
Inlet Piping Condition	NE	Fly ash has not routinely been sluiced into the Fly Ash Pond since the CCR rule has been in effect. A buried 30-inch pipe exists that was designed to convey excess water from the Bottom Ash Pond to the Fly Ash Pond or vice versa 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. 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 is closed. With no inflow water coming into the Fly Ash Pond, the significance of this discharge structure being non-functional is negated.
Emergency Spillway	OB	There is no operational emergency spillway in the Fly Ash Pond. Inflow to the Fly Ash Pond is limited to rainfall only. Both CCR solids and process water are no longer discharged into the Fly Ash Pond. Past Annual Inspection Reports determined it would be advantageous to SBMU to construct an emergency spillway. However, the emergency spillway was never constructed. Due to the current operating status of the Fly Ash Pond, the construction of an emergency discharge structure 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	GC / OB (Seepage)	An area along the exterior of the southeastern berm of the Fly Ash Pond was previously 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. During the 2021 inspection, 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). 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 2021. However,

SIKESTON POWER STATION – FLY ASH POND
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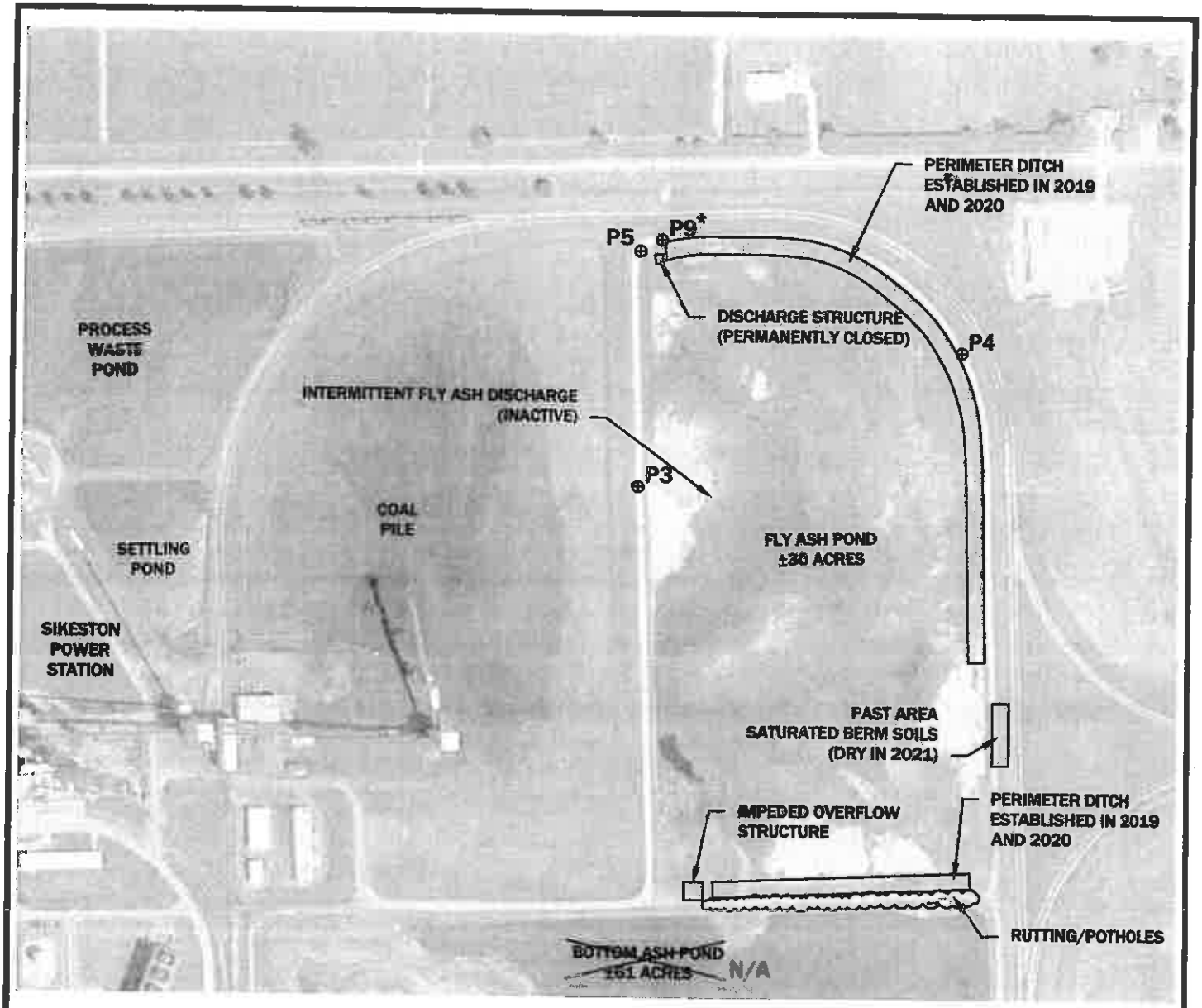
Earth Embankment		
Item	Condition Code	Comments
		weekly inspections note that rutting and potholes periodically existed in the road surfaces located on top of the Fly Ash Pond berms. Potholes were observed in a short length of road surface between the Fly Ash Pond and the Bottom Ash Pond during the 2021annual 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 these type of conditions 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 2021 as evidenced by Gredell Engineering's inspection and weekly inspection reports by plant personnel. While some weekly inspection reports noted longer vegetation heights, it is noted that 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 2021.
Animal Control	OB	The 2020 inspections have identified a small, shallow hole in the west embankment, just north of the Bottom Ash Pond. A weekly inspection report indicated a coyote was observed near the 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 in 2021. 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. EXCAVATE INTERIOR STORMWATER CHANNEL 2 FEET DEEP ALONG POND PERIMETER (WHERE REQUIRED)
   b. REPAIR FLUSH MOUNT COVER AND LOCK FOR PIEZOMETER 9.*
2. REQUIRING FURTHER OBSERVATION INCLUDE:
   a. SATURATED BERM SOIL ALONG SOUTHEAST BERM.
   b. MONITOR ACCUMULATION OF PONDED RAINFALL DURING WEEKLY INSPECTIONS.
   c. 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.
   b. PERMANENTLY CLOSED DISCHARGE STRUCTURE.

LEGEND:

PIEZOMETER ⊕ P5

N

SCALE: 1" = 400'

0 200 400

FIGURE 1
2021 ANNUAL P.E. INSPECTION
FLY ASH POND

SIKESTON POWER STATION

GREDELL Engineering Resources, Inc.

ENVIRONMENTAL ENGINEERING LAND - AIR - WATER

1505 East High Street
Jefferson City, Missouri

Telephone: (573) 659-9078
Facsimile: (573) 659-9079

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

DATE	SCALE	PROJECT NAME	REVISION
01/2022	1" = 400'	SIKESTON	N/A
DRAWN	APPROVED	FILE NAME	SHEET #
CM	TG	2021 PE Inspection	1 OF 1

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