

**40 CFR Parts 257**

2022 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**

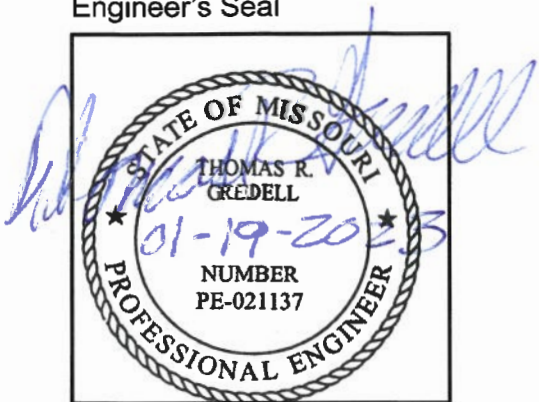
Requirements	Signs of actual or potential structural weakness (257.83(b)(vi))	Disruptions or potential disruption to the operation and safety of the unit (257.83(b)(vi))
CCR Unit and appurtenant structures 257.83(b)(ii)	None Observed. Continue to Monitor.	None Observed. However, potential seepage along the southeastern embankment of the Fly Ash Pond (as noted in past annual inspection reports) and on the northwestern embankment. No evidence of erosion or slope instability. Seepage is minor and vegetation is in very good condition. Continue to monitor.
CCR Unit and appurtenant structures 257.83(b)(ii)	No Staff Gauge Present. Limited need for staff gauges due to the inactive status of the Fly Ash Pond	Fly Ash Pond is inactive and currently only receives direct rainfall. Water levels should be checked after heavy rainfall events. Continue to monitor.

The 2022 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 2022 Annual Inspection presently do not impact the structural integrity of the embankment. SBMU agrees to monitor and 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 19, 2023

**SIKESTON POWER STATION – FLY ASH POND  
2022 ANNUAL INSPECTION CHECK SHEET**

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

Date	October 20, 2022
Inspector	Thomas R. Gredell, P.E.
Pool Level	Estimated el. N/A (No surface water present)
Temperature	Mid 80°s
Weather	Partly cloudy, dry

1. Date of Previous Annual Inspection:
  - a. September 16, 2021
2. Date of Previous Periodic Inspection:
  - a. The date of the most recent weekly inspection report reviewed for this Annual Inspection was December 25, 2022.
3. Description of Emergency Conditions (EC) or Immediate Maintenance (IM) conditions observed since the last annual inspection:
  - a. In past years, IM conditions have been periodically noted for roadway rutting and potholes on weekly inspection reports by plant personnel. A review of weekly reports for the year indicate that rutting and potholes were noted on two reports (one in February and one in May), but neither report noted it as an 'IM' condition. The intermittent reporting indicates the road/berm conditions were remedied by routine maintenance (i.e., grading the road and/or adding gravel). The FAP roadways were generally in good condition during our annual inspection. Short-term rutting on top of the berms is not significant if remedied by routine maintenance and vertical alignment of the top of the berm is maintained.
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 2022 as evidenced by the intermittent nature of the weekly report comments and observations during our annual site inspection.
  - b. In response to the past recommendations made in prior Fly Ash Pond Annual Inspection reports, a partial perimeter ditch was noted during the 2020 inspection along a significant portion of the north, east, and south sides of the Fly Ash Pond. During our 2022 site inspection, these ditches were still open.
  - c. In response to past observations of potential berm seepage in the southeast FAP berm (indicated by the observation of cattails above the toe of the slope), 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 2022, the location of or presence of potential berm seepage was observed along this segment of the berm, as well as the northwest FAP berm, as indicated by areas of green vegetation on the northwest and southeast berms. This observation was aided by dry field conditions caused by a statewide drought that began in mid-2022. No intrusive investigations or evaluations other than visual field observations have been made for these areas since 2018. 2022 field observations found that potential seepage on the northwest and southeast berms have not resulted in evidence of slumping, seepage flow or erosion. Continued monitoring is recommended.
5. Describe any modifications to the geometry of the impounding structure since the previous annual inspection:
  - a. No geometry changes were noted in 2022. The Fly Ash Pond is inactive and no new CCR

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materials were deposited in the pond in 2022. 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 2022 field observations indicate they have been maintained during 2021 and 2022.

6. Describe any modifications to the operation of the impounding structure since the previous annual inspection:
  - a. No change in 2022. The Fly Ash Pond is inactive and no new CCR materials were deposited in the pond in 2022. The Fly Ash Pond ceased accepting waste in early 2021.
7. List the approximate remaining storage capacity (Cubic Yards) of the impounding structure:
  - a. Due to the inactive status of the Fly Ash Pond, no CCR has been placed into the Fly Ash Pond since early 2021. Therefore, the estimated available storage remains the same at 50,000 CY below el. 320 (allowing a minimum 2.0 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. At the time of the inspection in October 2022, there was no water impounded within the low spots of the Fly Ash Pond due to statewide drought conditions. In preparation for the Fly Ash Pond closure design, in August 2022 Gredell Engineering installed 8 shallow piezometers within the ponded CCR materials to determine saturation levels. The results indicate that the piezometric level (or level of free liquids) within the CCR materials in the Fly Ash Pond varies throughout the pond from about 3 to 10 feet in thickness.
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'). Historically, minimum depth has been estimated to be 16' or less (approx. Elev. 318 located in areas that impound water, when present). For reasons stated above, these numbers are not relevant in 2022 because there was no surface water present within the pond. The Fly Ash Pond has been inactive since early 2021 and receives only direct rainfall.
10. Approximate volume of impounded water and CCR at the time of the inspection:
  - a. No CCR materials were placed in the Fly Ash Pond in 2022. Therefore, CCR volumes are assumed to be the same as estimated at the end of 2021. At that time, the estimated Volume CCR 790,000 CY (159 Million Gallons). The estimated potential maximum volume of ponded surface water was 24,000 CY (4.8 Million Gallons). As previously noted, the pond was dry at the time of site observations in October 2022. 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 2022.

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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 have been reported as permanently closed since 2016. At the time of inspection, no water was observed in the pond nor 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 no longer present nor used. Two gate valves originally provide flow control. Both discharges have been reported as 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 was previously 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 during the October 2022 site inspection and no discharge was reported in 2022.
Obstructions	NE	The Surface Impoundment is near 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 could be extended to provide drainage around the entire Fly Ash Pond and to the outlet structure in the northwest corner of the pond. The pond system outfall structure discharge pipes are currently reported to be permanently sealed, but this area could be used as a temporary sump from which to pump surface water to the process water pond.
Instrumentation	OB and MM	<p>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 could assist plant personnel conducting weekly inspections to provide them a basis for estimating the accumulation of stormwater within the pond. However, this recommendation is not considered an IM condition due to the inactive status of the Fly Ash Pond.</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. The total depths of each piezometer are reported to be 25 feet, 25 feet, 14.5 feet and 25 feet,</p>

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<b>Inlet and Outlet Works</b>		
Item	Condition Code	Comments
		<p>respectively. Water levels in P-3, P-4, and P-9 were very low throughout 2022, presumably due to the statewide drought condition. P-3 water levels ranged from 20.3 to 25.17 feet below the top of casing in 2022. P-4 water levels ranged from 23.25 to 24.98 feet below the top of casing in 2022. P-5 water levels ranged from 5.3 to 13.8 feet below casing in 2022. P-9 water levels ranged from 24.27 to 24.56 feet below the top of casing.</p> <p>Eight (8) additional piezometers were installed in the interior of the ash pond in August (2022). These eight (8) piezometers are numbered FAP-1 through FAP-8. Water column heights in these piezometers reflect the piezometric level in CCR materials within the Fly Ash Pond. The 2022 piezometric level measurements range from about 3 to 10 feet above the bottom of the pond.</p>
Inlet Piping Condition	NE	<p>Fly ash has not routinely been sluiced into the Fly Ash Pond since the CCR rule has been in effect.</p> <p>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 structure is no longer in use and 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 and secured with bolts. With no water inflow being discharged into the Fly Ash Pond, the fact that this discharge structure is inoperable is insignificant to the operation of the pond.</p>
Emergency Spillway	OB	<p>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 and planned closure of the Fly Ash Pond and the net zero CCR quantity increase, the construction of an emergency discharge structure is not considered critical.</p>
Other:		NONE

<b>Earth Embankment</b>		
Item	Condition Code	Comments
Vertical & Horizontal Alignment of Crest	GC	No visible evidence of deformation of embankment has been observed. Potholes and ruts have been repaired when needed throughout 2022.

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Earth Embankment		
Item	Condition Code	Comments
Seepage/Wetness / Ponding Areas	GC / OB (Seepage)	<p>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 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 2022 inspection, cattails were not observed, nor were signs of erosion of the outer berm soils during our annual inspection. However, the October 2022 site visit was conducted during drought conditions and significant areas of green vegetation were noted on the exterior southeastern slope of the Fly Ash Pond in the vicinity of the prior potential seepage area. In addition, an area on the northeastern exterior slopes was noted to have green vegetation. Due to the drought conditions and the condition of surrounding vegetation, the green areas indicate potential berm seepage. But no signs of erosion, sloughing, flow or other failure were noted on the exterior berm surfaces.</p> <p>Therefore, it is recommended that these areas be visually monitored to note any change in conditions. Future remediation of the previously identified wet areas will be considered during closure design.</p>
Erosion/Rutting	NE	No evidence of erosion or rutting on the outside slopes of the berms was observed in 2022. While two weekly inspections (one in February and one in May) noted that rutting and potholes existed in the road surfaces located on top of the Fly Ash Pond berms, the lack of additional inspection notes indicate that they were adequately prepared in a timely manner. Future rutting should be corrected to maintain a consistent vertical height of the perimeter berms.
Fencing	GC	Fencing is only adjacent to the Fly Ash Surface Impoundment on the north perimeter. The fencing is 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 2022 as evidenced by Gredell Engineering's inspection and weekly inspection reports by plant personnel. Keeping the exterior berm vegetation cut allows better visual observation of potential future erosion or slumping (although this has not been noted since 2016).
Sloughs/Slides/ Cracks	NE	No evidence was observed in 2022.
Animal Control	OB	no evidence of burrowing animals was noted in 2022 weekly and monthly inspection reports nor was any observed during the site inspection in October 2022. SBMU staff should continue to monitor for burrowing animals and attempt to remove such animals from the area.
Other	NONE	

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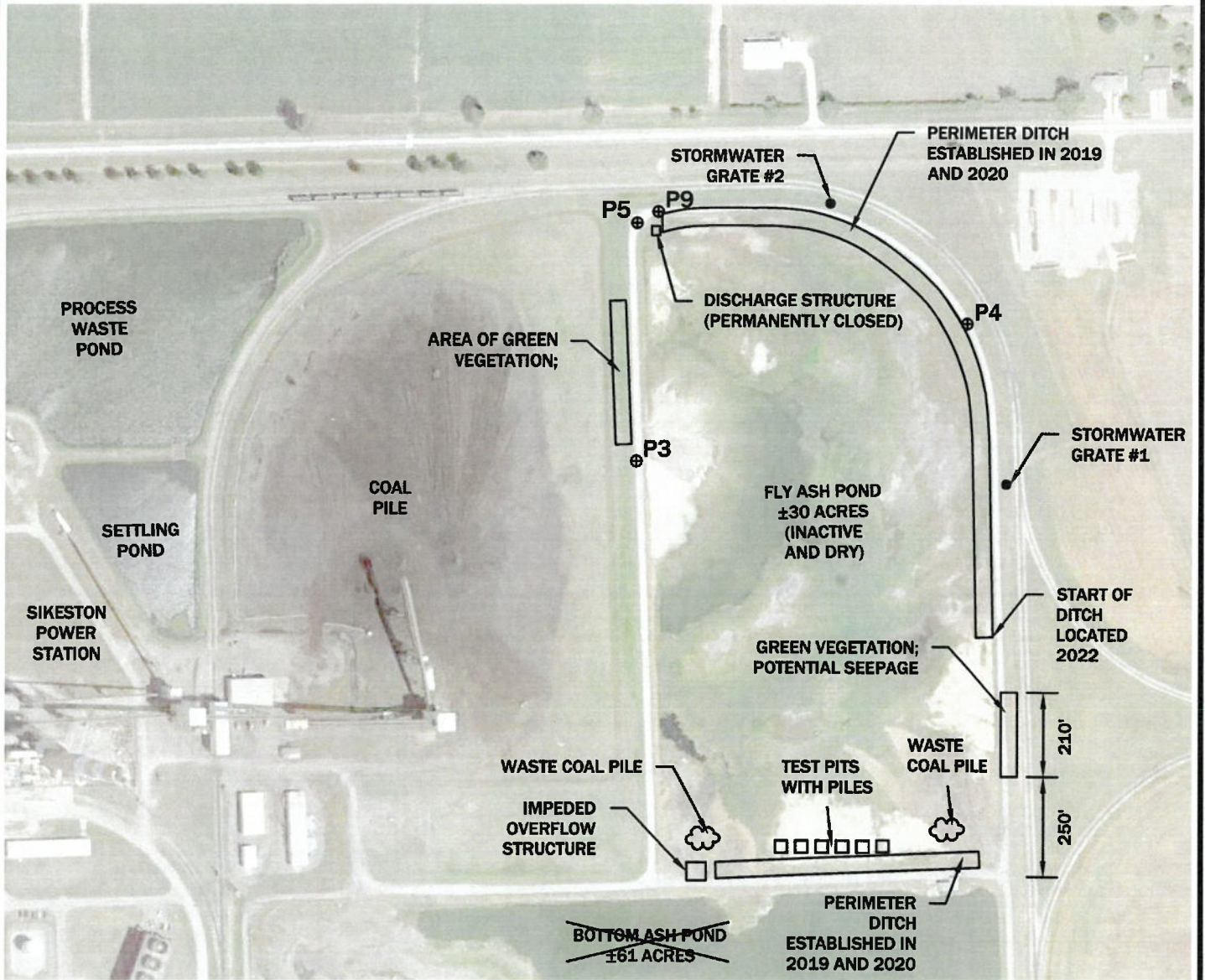
Condition Codes: EC Emergency Condition – a serious safety condition exists that requires immediate action.  
IM Immediate Maintenance – an item that requires maintenance within about 30 days to ensure safety or operation.  
MM Minor Maintenance – item needing minor maintenance or repair within 6 months.  
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).

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**NOTES:**

1. MINOR MAINTENANCE ITEMS INCLUDE:
  - a. MAINTAIN EXCAVATED INTERIOR STORMWATER CHANNEL AT 2 FEET DEPTH ALONG POND PERIMETER (WHERE IT EXISTS OR IS REQUIRED)
2. ITEMS RECOMMENDED FOR CONTINUED OBSERVATION INCLUDE:
  - a. GREEN VEGETATION IN THE AREAS ALONG THE SOUTHEAST BERM AND NORTHWEST BERM INDICATES POSSIBLE SEEPAGE. CONTINUED OBSERVATION RECOMMENDED.
  - b. NOTE ACCUMULATION OF PONDED RAINFALL IN LOW AREAS, STORMWATER CHANNELS AND AT THE NORTHWEST OUTLET STRUCTURE DURING WEEKLY INSPECTIONS.
  - c. PRESENCE OF BURROWING ANIMALS DURING MONTHLY INSPECTIONS. REMOVE AND REPAIR AS NEEDED.
  - d. PERIODIC WATER LEVEL READINGS IN THE EIGHT (8) PIEZOMETERS INSTALLED WITHIN THE POND IN CCR MATERIALS. (PIEZOMETER LOCATIONS NOT SHOWN ON FIGURE)
3. ITEMS IDENTIFIED DURING THE ANNUAL INSPECTION WHICH DO NOT REQUIRE MAINTENANCE:
  - a. THE IMPEPED OVERFLOW STRUCTURE BETWEEN THE BOTTOM ASH POND AND THE FLY ASH POND.
  - b. PERMANENTLY CLOSED DISCHARGE STRUCTURE.

**LEGEND:**

- PIEZOMETER      ⊕ P5
- STORMWATER GRATE      ●
- TEST PIT      □



**FIGURE 1  
2022 ANNUAL INSPECTION  
FLY ASH POND**

**SIKESTON POWER STATION**

**GREDELL Engineering Resources, Inc.**

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DATE 01/2023	SCALE 1" = 400'	PROJECT NAME SIKESTON	REVISION N/A
DRAWN WE	APPROVED TG	FILE NAME 2022 Inspection FAP	SHEET # 1 OF 1