Big Rivers
ELECTRIC CORPORATION

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Green CCR Surface Impoundment

Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule
CCR Impoundment 2017 Annual Inspection Report

January 11, 2018

Prepared By:

ASSOCIATED ENGINEERS, INC.
2740 North Main St. • Madisonville, KY 42431
Phone: (270) 821-7732 • Fax: (270) 821-7789

Project ID: 170138A

Big Rivers Electric Corporation
Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule
CCR Impoundment 2017 Annual Inspection Report

CCR Surface Impoundment Information

Name:	Green CCR Surface Impoundment
Operator:	Sebree Generating Station
Address:	9000 Highway 2096 Robards, Kentucky 42452

Qualified Professional Engineer

Name:	David A. Lamb
Company:	Associated Engineers, Inc.
Kentucky P.E. Number:	17822

Regulatory Applicability

Per 40 CFR §257.83(b), annual inspections by a qualified professional engineer must ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards.

Annual inspections of any CCR surface impoundment must include, at a minimum: (1) a review of all previously generated information regarding the status and condition of the CCR unit, including, but not limited to, all operating records and publicly accessible internet site entries, design and construction drawings and other documentation; (2) a thorough visual inspection to identify indications of distress, unusual or adverse behavior, or malfunction of the CCR unit and appurtenant structures; and (3) a thorough visual inspection of hydraulic structures underlying the base of the CCR unit and passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.

Additionally, following each annual inspection, the qualified professional engineer must prepare an inspection report which documents the following: (1) any changes in geometry of the impounding structure since the previous annual inspection; (2) the location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection; (3) the approximate maximum, minimum, and present depth and elevation of the impounded water and CCR since the previous annual inspection; (4) the storage capacity of the impounding structure at the time of inspection; (5) the approximate volume of the impounded water and CCR at the time of the inspection; (6) any 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; and (7) any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.

Inspection Description

This is the third annual inspection report for the Green CCR Surface Impoundment pursuant to the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule which became effective April 17, 2015. The inspection was conducted on December 5, 2017 by David Lamb, P.E. of Associated Engineers, Inc. of Madisonville, Kentucky. Weekly (7-day) inspections conducted by Big Rivers Electric Corporation are kept in the facility operating record.

The inspection consisted of a visual assessment of the surface impoundment, embankments and discharge; and began at the southwest corner of the impoundment on the embankment crest access road. The crest access road and the upstream embankment slope were adequately rocked and maintained. A small isolated low area was observed on the crest access road. The downstream slope at the southwest corner of the impoundment was sparsely vegetated except for areas of thick vegetation adjacent to the discharge pipe outlets (no discharge observed at the time of inspection). The south embankment downstream slope was generally well vegetated and mowed. Small animal burrows and disturbed ground were observed on the mid-slope and lower downstream slope of the central portion and east end of the south embankment. Damage from mowers was observed on the east end of the south embankment downstream slope. Moderate erosion was observed on the south east groin of the downstream embankment slope. Standing water and thick stands of vegetation were observed in the ditch located adjacent to the south embankment toe that directs drainage east towards the Green River.

The east side of the impoundment interior contains CCR material at or above the current pool elevation. Active management of CCR material was observed where stored above the pool elevation and previously placed dewatering bags were observed on adjacent area. A dredge was actively working in the north end of the impoundment. The east crest access road is not well separated from interior CCR storage areas, and drainage control for these areas was observed not to be effective. Drainage control ditches are absent or poorly drained and contain excess vegetation. Areas of exposed CCR material and erosion were observed on the east embankment downstream slope.

The northeast, north and northwest portions of the impoundment are incised and the upstream slopes were observed to be thickly vegetated with stands of phragmites that extend approximately 30 feet into the impoundment and obstructing view. An inflow pipe that is located at the north end of the impoundment was observed to be in poor condition and contains debris.

The northern portion of the west embankment crest and upstream slope was generally observed to be adequately rocked and the downstream slope adequately vegetated. Minor small animal burrows and areas of sparse vegetation were observed on the embankment crest adjacent to the rocked upstream slope and vegetated downstream slope. A very flat ditch runs along the majority of the west downstream slope toe where vegetation is sparse to absent because of ponded water. A minor slump was observed on the upstream slope approximately 300 feet north of the west access road to the crest. The southern portion of the west embankment upstream slope and the south embankment upstream slope were observed to be adequately rocked and clear of vegetation.

The south embankment contains the discharge structure (two corrugated steel discharge pipes; each 30 inches in diameter). The upstream end of the discharge structure has a concrete common headwall with variable height steel debris deflectors that should be removed. Thick vegetation was present around the spillway pipe outlets. The pipe conveyances were inspected on October 27, 2017 by Envision Contractors, LLC using a remote camera and found to be in acceptable operating condition.

Inspection Report Specifications

(i) CCR Surface Impoundment Geometry

The Green CCR Surface Impoundment is a combined incised/earthen embankment structure. The immediate watershed that drains to the CCR surface impoundment, and in which the CCR surface impoundment is considered to be located, is unnamed and 54.13 acres in size. Embankments form the west, south and east sides of the impoundment and the north side is incised. The original terrain on which the impoundment was constructed consisted of small stream valleys draining eastward to the Green River. Most of the central portion of the south dike was constructed on a subdued ridge and the toe of the outboard slope intersected a lower drainage area. The Green River is located approximately 400 feet east of the structure. The west dike is generally less than five feet in height and the south dike reaches a maximum height of 19.5 feet. The east dike reaches a maximum height of approximately eight feet and is buttressed with a secondary parallel embankment that serves as a 40-foot wide roadway. Bottom ash has been placed above the normal pool along the inboard side, essentially creating reclaimed land.

There have been no significant changes to the geometry of the impounding structure since the previous (2016) annual inspection. Placement of additional CCR material in the impoundment is ongoing.

(ii) CCR Surface Impoundment Instrumentation

There are five piezometers and one water level indicator associated with the Green CCR Surface Impoundment.

(ii) a – Piezometers

*Maximum elevation above mean sea level (AMSL) measured at each piezometer since the 2016 annual inspection report:

Piezometer ID	Northing	Easting	Top of Casing Elevation (AMSL)	Depth to Static Water Level	Static Water Elevation* (AMSL)
P-1A	480202.55	1492104.21	396.17	12.33 feet	383.84
P-2A	480186.48	1492464.48	395.98	13.17 feet	382.81
P-3A	480175.11	1492692.75	395.91	13.75 feet	382.16
P-6	480122.51	1492462.58	379.33	1.40 foot	377.93
P-7	480137.28	1492099.00	380.26	1.32 foot	378.95

(ii) b – Water Surface Level Indicator

The maximum water surface elevation since the 2016 annual inspection report is 391.92 feet above mean sea level as measured at a water level indicator located in the southwest corner of the impoundment.

(iii) CCR Surface Impoundment Contents Depths and Elevations

The Green CCR Surface Impoundment contents depths and elevations are provided below. They are based on: 1) available measured water surface elevations, 2) October 2017 flight derived topographic contours and bathymetric survey data, and 3) best available as-built design data for the impoundment prior to placement of CCR material (i.e. the Burns and Roe, Inc. Engineering and Consultants June 30, 1978 design plans provided by Big Rivers Electric Corporation).

Elevations are provided as feet above mean sea level and depths are provided as height in feet above the impoundment's design bottom prior to placement of CCR material. All values are rounded off to the nearest tenth of foot.

Minimum depth of impounded water = Not available[1]
Minimum elevation of impounded water = 391.5

Minimum depth of CCR material = 19.1
Minimum elevation of CCR material = 379.8

Maximum depth of impounded water = Not available[1]
Maximum elevation of impounded water = 391.9

Maximum depth of CCR material = 48.0

Maximum elevation of CCR material = 410.2

Present depth of impounded water = 13.0[2]
Present elevation of impounded water = 392.8

Present depth of CCR material = 48.0[3]
Present elevation of CCR material = 410.2[3]

[1]Depth not available due to absence of bathymetric survey data at times of minimum and maximum pool elevations
[2]At location of maximum impounded water depth
[3]At location of maximum CCR material depth

(iv) CCR Surface Impoundment Storage Capacity

The Green CCR Surface Impoundment storage capacity was estimated to be 976,165 cubic yards (if CCR can be placed to the spillway elevation of 393.8). Volume based on: 1) October 2017 flight derived topographic contours and bathymetric survey data, and 2) best available as-built design data for the impoundment prior to placement of CCR material (i.e. the Burns and Roe, Inc. Engineering and Consultants June 30, 1978 design plans provided by Big Rivers Electric Corporation).

(v) CCR Surface Impoundment Contents Volumes

The Green CCR Surface Impoundment contents volume of impounded water was estimated to be 146,812 cubic yards and volume of CCR material was estimated to be 856,550 cubic yards. Volumes based on: 1) October 2017 flight derived topographic contours and bathymetric survey data, and 2) best available as-built design data for the impoundment prior to placement of CCR material (i.e. the Burns and Roe, Inc. Engineering and Consultants June 30, 1978 design plans provided by Big Rivers Electric Corporation).

(vi) CCR Surface Impoundment Structural, Operational, and Safety Items

The inspection findings consisted of maintenance items and there were no appearances of an actual or potential structural weakness of the CCR unit, and no existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.

(vii) CCR Surface Impoundment Changes

There have been no significant changes to the Green CCR Surface Impoundment (or impounding structure) since the previous (2016) annual inspection that may have affected the stability or operation of the CCR surface impoundment.

BIG RIVERS ELECTRIC CORPORATION

Green CCR Surface Impoundment
2017 Annual Inspection Aerial Photo

Project Number:	17-0138A
Date:	12/12/2017
Scale:	1" = 250'
Drawn By:	A.E.I.

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BREC Final Rule CCR Impoundment 2017 Annual Inspection Checklist

Operator:	Sebree Generating Station	Weather:	Overcast
CCR Surface Impoundment:	Green	Temperature (Degrees F):	59 (high)
Date:	December 5, 2017	Inspector/Qualified Person:	David Lamb P.E. (AEI)

	ITEM	STATUS			OBSERVATIONS
		YES	NO	N/A	
1	**TOP OF DAM**				
	Visual settlement	☐	☒	☐	
	Misalignment	☐	☒	☐	
	Cracking	☐	☒	☐	
	Access road deterioration (potholes, rutting, etc.)	☒	☐	☐	Small isolated low area
2	**UPSTREAM SLOPE**				
	Any erosion	☒	☐	☐	Minor erosion at isolated areas
	Longitudinal cracks	☐	☒	☐	
	Transverse cracks	☐	☒	☐	
	Adequate vegetative cover	☐	☒	☐	Sporadic bare areas and invasive species monocultures where not rip-rapped
	Are trees growing on the slope	☐	☒	☐	
	Adequate riprap/slope protection	☐	☒	☐	Sporadic areas without rip-rap
	Visual depressions	☐	☒	☐	
	Visual settlement	☐	☒	☐	
	Any stone deterioration	☐	☒	☐	
	Debris or trash present	☐	☒	☐	
3	**DOWNSTREAM SLOPE AND TOE**				
	Any erosion	☒	☐	☐	East embankment
	Longitudinal cracks	☐	☒	☐	
	Transverse cracks	☐	☒	☐	
	Adequate vegetative cover	☒	☐	☐	Isolated bare areas
	Are trees growing on the slope	☐	☒	☐	
	Visual depressions or bulges	☒	☐	☐	Areas of tracking/rutting from tractor and mower tires
	Visual settlement	☐	☒	☐	
	Animal Burrows	☒	☐	☐	Small animal burrows and disturbed ground on south embankment
	Are boils present at the toe or slopes	☐	☒	☐	
	Are drainage features obstructed or damaged	☒	☐	☐	Drainage ditch along south embankment toe contains thick vegetation
	Are drainage features flowing	☐	☒	☐	
	Is seepage present	☐	☒	☐	

	ITEM	STATUS			OBSERVATIONS
		YES	NO	N/A	
	Is seepage or discharge carrying sediment	☐	☐	☒	
	Soft or spongy zones present	☐	☒	☐	
4	**ABUTMENTS**				
	Any erosion	☒	☐	☐	Moderate erosion on southeast downstream groin
	Visual differential movement	☐	☒	☐	
	Any cracks	☐	☒	☐	
	Are drainage features flowing	☐	☒	☐	
	Is seepage present	☐	☒	☐	
	Is seepage or discharge carrying sediment	☐	☐	☒	
5	**PRINCIPAL SPILLWAY**				
	Any deterioration of the spillway structure	☐	☒	☐	
	Any deterioration of the spillway conduit	☐	☒	☐	
	Spillway clear from obstructions	☐	☒	☐	Debris deflectors should be removed
	Is the spillway functioning and discharging correctly	☐	☐	☒	Spillway appears functional but not discharging at time of inspection
	Trash racks or skimmer operational	☐	☐	☒	
	Any signs of leakage with the structure or conduit	☐	☒	☐	
	Abnormally high or low pool elevation	☒	☐	☐	Low pool elevation is being maintained
6	**EMERGENCY SPILLWAY**				
	Any deterioration of the spillway structure	☐	☐	☒	
	Spillway clear from obstructions	☐	☐	☒	
	Signs or erosion or slope sloughing	☐	☐	☒	
	Adequate vegetative cover	☐	☐	☒	
	Signs of or currently discharging water	☐	☐	☒	
7	**VALVES/GATES**				
	Are the valves/gates operational	☐	☐	☒	
	Are the valves/gates broken or bent	☐	☐	☒	
	Are the valves/gates corroded or rusted	☐	☐	☒	
	Have the valves/gates been maintained	☐	☐	☒	
8	**HYDRAULIC STRUCTURES UNDER/THROUGH DAM**				
	Hydraulic structures under/through embankment are in safe and reliable operating condition	☒	☐	☐	
	Abnormal flow	☐	☐	☒	No discharge at time of inspection
	Abnormally colored discharge	☐	☐	☒	
	Debris or sediment in discharge	☐	☐	☒	
9	**SEEPAGE**				
	Seepage from toe drain	☐	☐	☒	

ITEM		STATUS			OBSERVATIONS
		YES	NO	N/A	
	Seepage from abutment drain	☐	☐	☒	
	Seepage from blanket drain	☐	☐	☒	
	Seepage from slope areas	☐	☒	☐	

DEFICIENCIES AND MAINTENANCE ITEMS

The inspection did not identify any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures. The inspection findings consisted of maintenance items that were not observed to be signs or potential signs of significant structural weakness.

Professional Engineer Certification [Per 40 CFR §257.83(b)]
Green CCR Surface Impoundment
Annual Inspections by a Qualified Professional Engineer

I hereby certify that myself or an agent under my review has prepared this Annual Inspection Report (Report), and being familiar with the provisions of the final rule to regulate the disposal of coal combustion residuals (CCR) as solid waste under subtitle D of the Resource Conservation and Recovery Act (RCRA), attest that this Report has been prepared in accordance with good engineering practices and meets the intent of 40 CFR Part 257.83(b). To the best of my knowledge and belief, the information contained in this Report is true, complete, and accurate.

David A. Lamb, P.E.

State of Kentucky License No. 17822

Date: 1-11-18

Big Rivers
ELECTRIC CORPORATION

201 Third Street
P.O. Box 24
Henderson, KY 42419-0024
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February 2, 2018

Re: *Corrective Actions at Big Rivers Electric Corporation's Green CCR Impoundment Resulting from the "CCR Surface Impoundment Annual Inspection Report" for the year 2017*

Associated Engineers Inc. prepared a "CCR Surface Impoundment Annual Inspection Report" for Big Rivers Electric Corporation's Green CCR surface impoundment. The report is available for full review on Big Rivers Electric Corporation's CCR website.

In the report, Associated Engineers Inc. did not identify any deficiencies. However, they identified minimal items that need to be addressed. Therefore, Big Rivers Electric Corporation has taken the following action to address the main noted item in the report:

- When weather permits, areas of rutting identified in the report from mowing will be repaired.

Big Rivers Electric Corporation will continue to conduct the weekly required CCR inspections of the CCR surface impoundment and address items as needed.

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Your Touchstone Energy® Cooperative

Reid/HMP&L CCR Surface Impoundment

Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule
CCR Impoundment 2017 Annual Inspection Report

January 11, 2018

Prepared By:

ASSOCIATED ENGINEERS, INC.
2740 North Main St. • Madisonville, KY 42431
Phone: (270) 821-7732 • Fax: (270) 821-7789

Project ID: 170138

Big Rivers Electric Corporation
Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule
CCR Impoundment 2017 Annual Inspection Report

CCR Surface Impoundment Information

Name:	Reid/HMP&L CCR Surface Impoundment
Operator:	Sebree Generating Station
Address:	9000 Highway 2096 Robards, Kentucky 42452

Qualified Professional Engineer

Name:	David A. Lamb
Company:	Associated Engineers, Inc.
Kentucky P.E. Number:	17822

Regulatory Applicability

Per 40 CFR §257.83(b), annual inspections by a qualified professional engineer must ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards.

Annual inspections of any CCR surface impoundment must include, at a minimum: (1) a review of all previously generated information regarding the status and condition of the CCR unit, including, but not limited to, all operating records and publicly accessible internet site entries, design and construction drawings and other documentation; (2) a thorough visual inspection to identify indications of distress, unusual or adverse behavior, or malfunction of the CCR unit and appurtenant structures; and (3) a thorough visual inspection of hydraulic structures underlying the base of the CCR unit and passing through the dike of the CCR unit for structural integrity and continued safe and reliable operation.

Additionally, following each annual inspection, the qualified professional engineer must prepare an inspection report which documents the following: (1) any changes in geometry of the impounding structure since the previous annual inspection; (2) the location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection; (3) the approximate maximum, minimum, and present depth and elevation of the impounded water and CCR since the previous annual inspection; (4) the storage capacity of the impounding structure at the time of inspection; (5) the approximate volume of the impounded water and CCR at the time of the inspection; (6) any 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; and (7) any other change(s) which may have affected the stability or operation of the impounding structure since the previous annual inspection.

Inspection Description

This is the third annual inspection report for the Reid/HMP&L CCR Surface Impoundment pursuant to the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule which became effective April 17, 2015. The inspection was conducted on December 5, 2017 by David Lamb, P.E. of Associated Engineers, Inc. of Madisonville, Kentucky. Weekly (7-day) inspections conducted by Big Rivers Electric Corporation are kept in the facility operating record.

The inspection consisted of a visual assessment of the surface impoundment, embankments and discharge; and began at the northeast corner of the impoundment adjacent to the access road located on the north embankment crest. The inspection noted thick vegetation in the interior of the impoundment and on the upstream slope of the embankment. A channel of open water is maintained adjacent to the upstream slope of the embankment. The upstream slope is steep where the channel has been dredged and heavily vegetated. The inspection proceeded west along the north embankment crest where a minor slip was observed on the upstream slope adjacent to the dredged channel. The access road continues around the impoundment on the crest of the west and south embankments and is adequately rocked and maintained. Several small areas of exposed soil (no rock or vegetation) were observed at the southeast corner of the impoundment adjacent to the catwalk to the discharge structure.

The inspection continued to the downstream slope of the south embankment where damage to vegetation from mowing equipment was noted at the southeast corner. The south downstream slope was vegetated and generally in good condition with a small depression located mid-slope approximately mid-length of the embankment. Areas of older vegetated erosion were also observed at this approximate location along the downstream slope toe. As the inspection progressed west, areas along the slope were very wet and supported thick vegetation. Areas of saturated ground and deep mower ruts were observed on the lower slope adjacent to the toe. Very wet conditions, saturated ground and mower ruts continued along the toe of the southwest and west embankments. Wet areas include a depression on the embankment slope and a heavily vegetated saturated strip of ground extending from the embankment toe to the adjacent ditch. Minor mower damage was observed along the upper downstream slope at the north end of the west embankment. The crest of the west embankment was well maintained.

The inspection of the downstream slope of the north embankment noted an area of approximately one-quarter acre of standing water and very thick vegetation at the east end of the embankment. The crest of the north embankment was in good condition and areas of moderate to deep erosion were observed on the upstream slope of the northeast corner of the

impoundment. Active management of CCR material was observed in an area of approximately three-quarters acre in the interior of the northeast corner of the impoundment. The majority of the northern area of the impoundment interior was observed to be thickly vegetated with stands of phragmites.

The south embankment which parallels adjacent cooling towers to the east is the smallest embankment and occurs primarily on the southwest corner of the impoundment. The upstream side is steep-sided, thinly covered with rip-rap and covered with phragmites. The crest and downstream embankment slope were mowed. The sand filter backwash pipe runs along the crest (south end) and exits at the discharge structure located in the southeast corner of the impoundment. The impoundment embankment crest supports an access road around the south, west and north perimeters and has adequate gravel cover over the entire length.

The impoundment discharge structure consists a rectangular concrete drop structure with a variable height steel debris skimmer and the pool elevation can be controlled by adding or removing stop logs. The discharge structure connects to a 24-inch diameter smooth walled metal pipe underground conveyance. The pipe conveyance was inspected on October 27, 2017 by Envision Contractors, LLC using a remote camera and found to be in acceptable operating condition.

Inspection Report Specifications

(i) CCR Surface Impoundment Geometry

The Reid/HMPL CCR Surface Impoundment is a combined incised/earthen embankment structure. The immediate watershed that drains to the CCR surface impoundment, and in which the CCR surface impoundment is considered to be located, is unnamed and 25.45 acres in size. Embankments form the north, west, south and southeast sides of the impoundment. The northeast side is incised. The original terrain on which the impoundment was constructed generally sloped toward the west. The Green River is located approximately 2,500 feet east of the structure. The embankment reaches its greatest relief of approximately 42 feet on the west side. The impoundment originally received fly ash and bottom ash, but stopped receiving fly ash in approximately 1985 when the Boothe system was placed in operation.

There have been no significant changes to the geometry of the impounding structure since the previous (2016) annual inspection. Placement of additional CCR material in the impoundment is ongoing.

(ii) CCR Surface Impoundment Instrumentation

There are five piezometers and one water level indicator associated with the Reid/HMP&L CCR Surface Impoundment.

(ii) a – Piezometers

*Maximum elevation above mean sea level (AMSL) measured at each piezometer since the 2016 annual inspection report:

Piezometer ID	Northing	Easting	Top of Casing Elevation (AMSL)	Depth to Static Water Level	Static Water Elevation* (AMSL)
P-1A	483464.43	1491086.43	428.95	12.03 feet	416.92
P-2A	483141.96	1491515.32	428.63	10.07 feet	418.56
P-3A	483772.54	1491306.43	428.75	18.58 feet	410.17
P-4	483033.84	1491399.12	397.44	4.06 feet	393.38
P-5	483415.93	1490969.80	395.34	9.08 feet	386.26

(ii) b – Water Surface Level Indicator

The maximum water surface elevation since the 2016 annual inspection report is 426.33 feet above mean sea level as measured at a water level indicator located adjacent to the impoundment discharge structure.

(iii) CCR Surface Impoundment Contents Depths and Elevations

The Reid/HMP&L CCR Surface Impoundment contents depths and elevations are provided below. They are based on: 1) available measured water surface elevations, 2) October 2017 flight derived topographic contours and bathymetric survey data, and 3) best available as-built design data for the impoundment prior to placement of CCR material (i.e. the Burns & McDonnell Engineering Co. October 8, 1971 design plans provided by Big Rivers Electric Corporation).

Elevations are provided as feet above mean sea level and depths are provided as height in feet above the impoundment's design bottom prior to placement of CCR material. All values are rounded off to the nearest tenth of foot.

Minimum depth of impounded water = Not available[1]
Minimum elevation of impounded water = <424.8

Minimum depth of CCR material = 14.0
Minimum elevation of CCR material = 411.4

Maximum depth of impounded water = Not available[1]
Maximum elevation of impounded water = 426.3

Maximum depth of CCR material = 39.9
Maximum elevation of CCR material = 439.4

Present depth of impounded water = 14.8[2]
Present elevation of impounded water = 426.2

Present depth of CCR material = 39.9[3]
Present elevation of CCR material = 439.4[3]

[1]Depth not available due to absence of bathymetric survey data at times of minimum and maximum pool elevations
[2]At location of maximum impounded water depth
[3]At location of maximum CCR material depth

(iv) CCR Surface Impoundment Storage Capacity

The Reid/HMP&L CCR Surface Impoundment storage capacity was estimated to be 758,873 cubic yards (if CCR can be placed to the spillway elevation of 425.8). Volume based on: 1) October 2017 flight derived topographic contours and bathymetric survey data, and 2) best available as-built design data for the impoundment prior to placement of CCR material (i.e. the Burns & McDonnell Engineering Co. October 8, 1971 design plans provided by Big Rivers Electric Corporation).

(v) CCR Surface Impoundment Contents Volumes

The Reid/HMP&L CCR Surface Impoundment contents volume of impounded water was estimated to be 78,386 cubic yards and volume of CCR material was estimated to be 718,423 cubic yards. Volumes based on: 1) October 2017 flight derived topographic contours and bathymetric survey data, and 2) best available as-built design data for the impoundment prior to placement of CCR material (i.e. the Burns & McDonnell Engineering Co. October 8, 1971 design plans provided by Big Rivers Electric Corporation).

(vi) CCR Surface Impoundment Structural, Operational, and Safety Items

The inspection findings consisted of maintenance items and there were no appearances of an actual or potential structural weakness of the CCR unit, and no existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures.

(vii) CCR Surface Impoundment Changes

There have been no significant changes to the Reid/HMP&L CCR Surface Impoundment (or impounding structure) since the previous (2016) annual inspection that may have affected the stability or operation of the CCR surface impoundment.

BIG RIVERS ELECTRIC CORPORATION

Reid/HMP&L CCR Surface Impoundment
2017 Annual Inspection Aerial Photo

Project Number:	17-0138
Date:	12/12/2017
Scale:	1" = 200'
Drawn By:	A.E.I.

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BREC Final Rule CCR Impoundment 2017 Annual Inspection Checklist

Operator:	Sebree Generating Station	Weather:	Overcast
CCR Surface Impoundment:	Reid/HMP&L	Temperature (Degrees F):	59 (high)
Date:	December 5, 2017	Inspector/Qualified Person:	David Lamb, P.E. (AEI)

	ITEM	STATUS			OBSERVATIONS
		YES	NO	N/A	
1	**TOP OF DAM**				
	Visual settlement	☐	☒	☐	
	Misalignment	☐	☒	☐	
	Cracking	☐	☒	☐	
	Access road deterioration (potholes, rutting, etc.)	☐	☒	☐	
2	**UPSTREAM SLOPE**				
	Any erosion	☒	☐	☐	Moderate to deep erosion
	Longitudinal cracks	☐	☒	☐	
	Transverse cracks	☐	☒	☐	
	Adequate vegetative cover	☐	☒	☐	Sporadic bare areas and invasive species monocultures where not rip-rapped
	Are trees growing on the slope	☐	☒	☐	
	Adequate riprap/slope protection	☐	☒	☐	Adequate where rip-rapped; small areas of exposed soil
	Visual depressions	☐	☒	☐	
	Visual settlement	☐	☒	☐	
	Any stone deterioration	☐	☒	☐	
	Debris or trash present	☐	☒	☐	
3	**DOWNSTREAM SLOPE AND TOE**				
	Any erosion	☒	☐	☐	Minor erosion at isolated areas
	Longitudinal cracks	☐	☒	☐	
	Transverse cracks	☐	☒	☐	
	Adequate vegetative cover	☒	☐	☐	Isolated areas of exposed soil; thick vegetation
	Are trees growing on the slope	☐	☒	☐	
	Visual depressions or bulges	☒	☐	☐	Some equipment/mower tracking and depressions
	Visual settlement	☐	☒	☐	
	Animal Burrows	☐	☒	☐	
	Are boils present at the toe or slopes	☐	☒	☐	
	Are drainage features obstructed or damaged	☐	☒	☐	
	Are drainage features flowing	☐	☒	☐	
	Is seepage present	☒	☐	☐	Wet areas from seepage along portions of south, west and north embankments

	ITEM	STATUS			OBSERVATIONS
		YES	NO	N/A	
	Is seepage or discharge carrying sediment	☐	☒	☐	
	Soft or spongy zones present	☒	☐	☐	Areas of soft ground along portions of south, west and north embankments
4	**ABUTMENTS**				
	Any erosion	☐	☒	☐	
	Visual differential movement	☐	☒	☐	
	Any cracks	☐	☒	☐	
	Are drainage features flowing	☐	☒	☐	
	Is seepage present	☐	☒	☐	
	Is seepage or discharge carrying sediment	☐	☐	☒	
5	**PRINCIPAL SPILLWAY**				
	Any deterioration of the spillway structure	☐	☒	☐	
	Any deterioration of the spillway conduit	☐	☒	☐	
	Spillway clear from obstructions	☒	☐	☐	
	Is the spillway functioning and discharging correctly	☒	☐	☐	
	Trash racks or skimmer operational	☒	☐	☐	
	Any signs of leakage with the structure or conduit	☐	☒	☐	
	Abnormally high or low pool elevation	☐	☒	☐	
6	**EMERGENCY SPILLWAY**				
	Any deterioration of the spillway structure	☐	☐	☒	
	Spillway clear from obstructions	☐	☐	☒	
	Signs or erosion or slope sloughing	☐	☐	☒	
	Adequate vegetative cover	☐	☐	☒	
	Signs of or currently discharging water	☐	☐	☒	
7	**VALVES/GATES**				
	Are the valves/gates operational	☐	☐	☒	
	Are the valves/gates broken or bent	☐	☐	☒	
	Are the valves/gates corroded or rusted	☐	☐	☒	
	Have the valves/gates been maintained	☐	☐	☒	
8	**HYDRAULIC STRUCTURES UNDER/THROUGH DAM**				
	Hydraulic structures under/through embankment are in safe and reliable operating condition	☒	☐	☐	
	Abnormal flow	☐	☒	☐	
	Abnormally colored discharge	☐	☒	☐	
	Debris or sediment in discharge	☐	☒	☐	
9	**SEEPAGE**				
	Seepage from toe drain	☒	☐	☐	Wet saturated ground along embankment toe; no discrete discharge visible

ITEM		STATUS			OBSERVATIONS
		YES	NO	N/A	
	Seepage from abutment drain	☐	☐	☒	
	Seepage from blanket drain	☒	☐	☐	Wet saturated ground along embankment toe; no discrete visible discharge
	Seepage from slope areas	☐	☒	☐	

DEFICIENCIES AND MAINTENANCE ITEMS

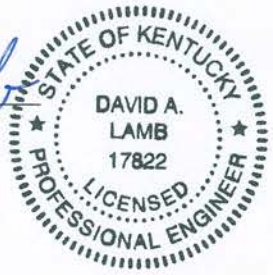
The inspection did not identify any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit and appurtenant structures. The inspection findings consisted of maintenance items that were not observed to be signs or potential signs of significant structural weakness.

Professional Engineer Certification [Per 40 CFR §257.83(b)]
Reid/HMP&L CCR Surface Impoundment
Annual Inspections by a Qualified Professional Engineer

I hereby certify that myself or an agent under my review has prepared this Annual Inspection Report (Report), and being familiar with the provisions of the final rule to regulate the disposal of coal combustion residuals (CCR) as solid waste under subtitle D of the Resource Conservation and Recovery Act (RCRA), attest that this Report has been prepared in accordance with good engineering practices and meets the intent of 40 CFR Part 257.83(b). To the best of my knowledge and belief, the information contained in this Report is true, complete, and accurate.

David A. Lamb P.E.

State of Kentucky License No. 17822



Date: 1-11-18

Big Rivers
ELECTRIC CORPORATION

201 Third Street
P.O. Box 24
Henderson, KY 42419-0024
270-827-2561
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February 2, 2018

Re: *Corrective Actions at Big Rivers Electric Corporation's Reid HMP&L CCR Impoundment Resulting from the "CCR Surface Impoundment Annual Inspection Report" for the year 2017*

Associated Engineers Inc. prepared a "CCR Surface Impoundment Annual Inspection Report" for Big Rivers Electric Corporation's Reid HMP&L surface impoundment. The report is available for full review on Big Rivers Electric Corporation's CCR website.

In the report, Associated Engineers Inc. did not identify any deficiencies. However, they identified some items that need to be addressed. Therefore, Big Rivers Electric Corporation has taken the following steps to address some of the noted items in the report:

- When the weather warms, the upstream slope areas that need additional rip rap will be repaired.
- When the weather warms, the downstream slope areas that are sporadically bare will be either seeded or covered by rip rap.

Big Rivers Electric Corporation will continue to conduct the weekly required CCR inspections of the CCR surface impoundment and address items as needed.