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Big Rivers ELECTRIC CORPORATION

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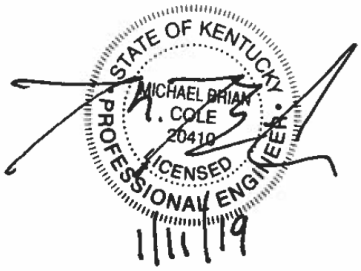
D.B. Wilson Phase II CCR Landfill

Disposal of Coal Combustion Residuals (CCR) from Electric Utilities Final Rule
CCR Phase II Landfill 2018 Annual Inspection Report

Big Rivers Electric Corporation

Project number: 60581515

January 11, 2019



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1. Project Background

Per United States Environmental Protection Agency (USEPA) Final Coal Combustion Residual (CCR) Rule §257.84 annual inspection by a qualified professional engineer is required for each CCR unit. AECOM completed the annual inspection in accordance with the CCR Rule requirements and prepared the following D.B. Wilson Phase II CCR Landfill Annual Inspection report for the D.B. Wilson Station, located in Ohio County, Kentucky

The CCR Rule requires a visual inspection by a licensed civil engineer of each CCR unit to ensure that the design, construction, operation and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. . This inspection was performed in accordance with the scope of work presented in our proposal number OPP-800547, dated June 6, 2018, executed under purchase order 249940 as part of general services agreement with Big Rivers Electric Corporation dated November 16, 2017.

2. Regulatory Requirements

The annual inspection criteria are specified in CCR Rule Section 257.84(b) (1) which at a minimum includes:

(i) 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 (e.g., the results of inspections by a qualified person, and results of the previous annual inspections); and

(ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.

In addition to the annual inspections, 7-day inspection per CCR Rule Section 257.84 (a) are completed by BREC and are documented in the facility operating record.

Once the annual inspection has been completed, the CCR Rule Section 257.84(b) (2) requires the qualified professional engineer to prepare a report following each inspection that addresses the following:

(i) Any changes in geometry of the structure since the previous annual inspection;

(ii) The approximate volume of CCR contained in the unit at the time of the inspection;

(iii) 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

(iv) Any other change(s) which may have affected the stability of operation of the CCR unit since the previous annual inspection.

3. Review of Available Information

Prior to completing the visual inspection of the CCR unit, AECOM reviewed the 2017 Annual Inspection Report for the CCR unit, prepared by Associated Engineers, Inc. dated January 11, 2018. Any areas in need of repair were addressed by the report and BREC completed the appropriate repairs where necessary. The observations from the 2017 annual inspection include:

- Surficial erosion rills in cover soil and perimeter ditch on the north side of the landfill
- Low areas in bench flowlines and longitudinal tracking from tractor/mower tires

- Basins and runoff ditches are eroded or contain sediment in areas
- Seepage present at the toe and lower slope of the east side of the landfill
- Bare areas and invasive species monocultures
- Minor to moderate erosion on the active disposal site (working face) and haul roads

The 2017 inspection concluded “no deficiencies or disrupting conditions that would require immediate measures to remedy were identified in the inspection. The inspection findings consisted of maintenance items that were not observed to be signs or potential signs of significant structural weakness.”

After the inspection observations were made available to BREC corrective actions at the D.B Wilson station CCR Landfill were completed. From the toe to the 1st bench on the east side of the protective cover soil does not readily support vegetation due to the rocky nature however, BREC is aware of this and has an agronomist implementing a long term plan to enhance the fertility of the soil to better support vegetative growth in this area. The process has already begun to show incremental improvement.

Several areas located in the active area on the south end of the landfill were observed to have minor to moderate erosion. These areas are regraded once the landfill meets the final subgrade elevations and can have protective cover placed and vegetative cover established to protect the subgrade from storm water runoff.

The remaining observations made in the 2017 inspections include surficial erosion rills in cover soils on the north side of the landfill, low areas in bench flowlines, cracking from tractor/mower tires, and catch basins and runoff ditches containing sediment or signs of erosion. These observations are repaired as soon as practical based on the mowing schedule and weather. Removing sediment buildup, filling low areas, and re-seeding activities were to be completed when such repair activities don’t exacerbate any required maintenance. Repairing storm drains identified in the inspection will result in creating more damage to the adjacent areas unless performed during the proper conditions therefore will be completed when feasible.

In summary no deficiencies were identified and the previously stated observations are being addressed as part of landfill operations and maintenance.

4. Inspection Procedures & Observations

Per CCR Rule Section257.84 (b) (3) the owner or operator of the CCR unit (BREC) must complete an initial inspection no later than January 18, 2016. This report summarizes the fourth annual inspection performed by BREC since the CCR Rule took effect April 17, 2015. This inspection was completed on July 26, 2018 by AECOM personnel Mark Keown, P.E. and Scott Mesi.

The inspection consisted of visual assessment of the landfill and associated protective cover soil, vegetation, and storm water management structures. The inspection began on the west side along the toe of the lowest slope, moving from north to south across each berm on each side of the landfill.

The west side of the landfill was well covered with protective cover soil and vegetation was well established throughout the west side of the landfill. The catch basins were clear of debris and were well maintained. The drainage swales on the mid-slope benches were adequately slope to promote drainage to the catch basins. There were minor low areas (approximately 6-inch deep) within the drainage swales however, these low areas were isolated and did not hinder drainage or cause excessive ponding.

The north face of the landfill was well vegetated and the drainage controls were well maintained. There was some rutting noted on the 3rd and 4th benches near the northeast corner of the landfill, likely the result of the weight of the tractor and mowing deck traveling downslope onto the bench when the protective cover soils were soft or wet. The

rutting was relatively minor (approximately 6-inches deep) and should be filled and re-seeded when the weather permits.

Along the toe of the east slope sparse vegetation was noted, BREC is aware of this area and has been conditioning the soil to improve the soils in order to sustain vegetation as stated in the 2017 inspection report. The area did not have significant erosion rills however, should continue to be monitored for erosion. There was also surface staining possibly due to CCR leachate. These areas were near the 2nd transmission line tower on the east slope near the toe. As the inspection progressed to the north along the east slope, the channel protection for an outlet pipe, approximately 24 inches, in diameter showed signs of distress. The discharge has begun to erode the rip rap that was placed for erosion control. The erosion consists of rills approximately 1 foot deep exposing the subgrade however, no CCR was visible; it is possible the erosion is occurring outside the limits of waste however, the area should be re-graded and the riprap channel shall be reconstructed for the anticipated flow velocities and volumes.

Sparse vegetation was noted at two locations along the east side of the landfill. The sparse vegetation was likely the result of the tractor mowing deck being too close to the ground surface over the transition from slopes to the bench. There were 2 areas identified, one location approximately 120 yards from the northeast corner and another near the 2nd transmission tower from the northeast corner. The areas are approximately 20 ft. long and 1 to 1.5 ft. wide. This may be avoided while mowing by avoiding driving the mowing deck perpendicular to the bench and approaching the bench at a slower speed gentle angle.

The inspection was limited to the portions of the landfill that had protective cover soils placed and were not part of the working face of the landfill. The working face of the landfill is maintained by BREC operations.

5. Inspection Findings

Per CCR Rule Section 257.84(b) (2) the following observations were made.

CCR Landfill Geometry

The D.B. Wilson Phase II CCR Landfill is used for the placement of coal combustion residual (CCR) material including fly ash, bottom ash, Poz-O-Tec, and related materials. The landfill has a maximum elevation of approximately 529 feet above mean sea level (MSL). The original topography within the landfill footprint was irregular with a ridge to the west near the Green River. Elk Creek and small stream valleys drained to the south as well as other small tributaries draining west towards the Green River and north towards the Rough River. An aerial photograph of the D.B. Wilson Phase II CCR Landfill is presented on the next page in Figure 1.

Figure 1: D.B. Wilson Phase II CCR Landfill Aerial Photograph

Changes to the landfill geometry since the previous 2017 annual inspection includes placement of additional CCR, protective cover soils and establishing vegetation on the landfill.

CCR Landfill Volume

The total volume of CCR material contained in the D.B Wilson Phase II CCR Landfill was estimated in 2018 to be 2.79 million cubic yards. This volume was calculated from available the previous 3 annual inspection reports and the average volume of CCR placed each month over the past 3 years to estimate the 2018 volume at the time of the inspection.

CCR Landfill Structural, Operational, and Safety Items

No deficiencies or disrupting conditions that would require immediate measures to remedy were identified in the inspection. The inspection findings consisted of maintenance items that were not observed to be signs or potential signs of significant structural weakness.

BREC has been made aware of the aforementioned observations and haverepaired the observations in 2018, the repairs will be reinspected as part of the 2019 annual inspected. The observations were limited to sparse vegetation, rutting from mowing operations, and repairing the channel protection for an outlet pipe on the east side of the landfill.

CCR Landfill Changes

There have been no changes to the D.B. Wilson CCR Landfill since the previous 2017 annual inspection that may have the potential to affect the stability or operation of the CCR unit. Changes include typical operations activity such as, placement of additional CCR material and protective cover soil to meet the closure design grades of the landfill.

6. Recommendations – General Maintenance and Monitoring Conditions

Overall

1. Continue regular mowing of all berms with vegetation control to prevent the growth of excessive woody plants and brushes.
2. Continue regular maintenance of minor erosion rills in timely manner.
3. Continue weekly inspection as required by the CCR mandated roles and submit Inspection Reports to the facility operating record in a timely manner.
4. Continue to improve soil conditions on the east side at the toe of slope to establish vegetation.

Active Areas

1. Continue current maintenance practices.

Closed Areas

1. Continue current maintenance practices.

7. Recommendations – Remedial Actions/Repairs

Active Areas

1. No deficiencies were observed during the site inspection that would require remedial action or repairs.

Closed Areas

1. Continue to complete seasonal repairs such as reseeding where sparse vegetation and filling in ruts caused by the tractor and mowing operations.
2. Continue to check catch basins for obstructions and clear as needed.
3. Consider options to improve the outlet pipe erosion control features on the east side of the landfill. This condition was not previously identified in the last annual inspection however, should continue to monitored and improved when feasible to reduce the risk of further erosion.