Big Rivers
ELECTRIC CORPORATION

Sebree Generating Station

Reid/HMP&L CCR Surface Impoundment Closure Report & Certification

Revision 0

October 7, 2024

Issue Purpose: Use

Project No.: 14055-010

55 East Monroe Street
Chicago, IL 60603-5780 USA
312-269-2000
www.sargentlundy.com

Sargent & Lundy

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APPENDICES

ISSUE SUMMARY & APPROVAL PAGE

Rev.	Purpose of Issue	Date	By Whom	Summary of Revisions
0	Initial Issue	10/07/2024	Sargent & Lundy	N/A

This is to certify that the document, "Reid/HMP&L CCR Surface Impoundment Closure Report & Certification," has been prepared, reviewed and approved in accordance with Sargent & Lundy's Standard Operating Procedure SOP-0405, which is based on ANSI/ISO/ASSQC Q9001 Quality Management Systems.

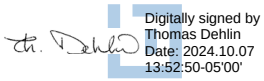
Contributors to Current Issue

Prepared by:

October 7, 2024

Aimee Sahlas
Senior Civil Associate

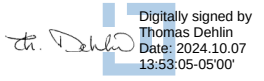
Reviewed by:



October 7, 2024

Thomas Dehlin, P.E.
Project Civil Engineer
(Licensed in KY, IL, and WY)

Approved by:



October 7, 2024

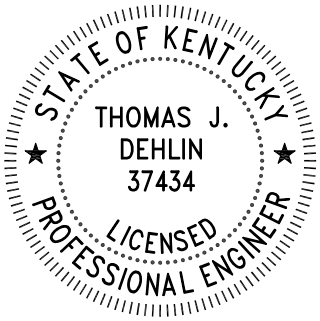
Thomas Dehlin, P.E.
Project Civil Engineer
(Licensed in KY, IL, and WY)

CERTIFICATION PAGE

I certify that this report was prepared by me or under my direct supervision and that I am a registered professional engineer under the laws of the Commonwealth of Kentucky.

Certified By: Thomas J. Dehlin Date: October 7, 2024

Seal:



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Thomas Dehlin
Date: 2024.10.07
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1.0 OVERVIEW

Federal CCR Rule Reference: 40 CFR 257.102(h)

Kentucky Administrative Regulations Reference: 401 KAR 46:110 Section 9

The Reid/HMP&L CCR Surface Impoundment at Big Rivers Electric Corporation's (BREC) Sebree Generating Station was a coal combustion residual (CCR) surface impoundment that was closed by removal of all CCR in the impoundment during its active life in accordance with § 257.102(c) of Title 40, Part 257 Subpart D of the Code of Federal Regulations (CFR) (Ref. 1, "Federal CCR Rule"), as revised and republished by the U.S. Environmental Protection Agency (EPA) Final Rule, "Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments" (Ref. 2), and in accordance with Section 9 of Title 401, Chapter 46, Regulation 110 of the Kentucky Administrative Regulations (KAR), which incorporates the Federal CCR Rule's closure requirements by reference (Ref. 3).

Pursuant to 40 CFR 257.102(h) and 401 KAR 46:110 Section 9, this "Reid/HMP&L CCR Surface Impoundment Closure Report & Certification" provides:

- Documentation of the closure by removal of CCR at the Reid/HMP&L CCR Surface Impoundment.
- Notification of closure of the Reid/HMP&L CCR Surface Impoundment.
- Certification of closure of the Reid/HMP&L CCR Surface Impoundment by a qualified professional engineer.
- Post-closure plan for the former Reid/HMP&L CCR Surface Impoundment site.

2.0 SITE BACKGROUND

2.1 SEBREE GENERATING STATION

BREC operates the Sebree Generating Station located on the Green River northeast of Sebree, Kentucky, with Interstate 69 located to the west. The location of the Sebree Generating Station site is shown on Figure 1 in Appendix A. Three former coal-fired power plants are co-located at the Sebree Generating Station: the Robert D. Green Station, the Robert A. Reid Station ("Reid"), and Henderson Municipal Power & Light (HMP&L) Station Two. Reid Unit 1 began commercial operation in 1966 and was retired on September 30, 2020. HMP&L Station Two Units 1 and 2 began commercial operation in 1973 and 1974, respectively; both units were retired as of February 1, 2019. Green Station Units 1 and 2 began commercial operation in 1979 and 1981, respectively, and were converted to natural gas fuel in 2022.

2.2 REID/HMP&L CCR SURFACE IMPOUNDMENT

2.2.1 LOCATION & DESCRIPTION

The location of the Reid/HMP&L CCR Surface Impoundment and its corresponding groundwater monitoring network is shown on Figure 2 in Appendix A. The impoundment is partially diked (west, south, and east sides) and partially incised (north side) and occupies an area of approximately 23.3 acres. Prior to being taken out of service in 2019, the Reid/HMP&L CCR Surface Impoundment had been used to manage ash sluice water from the Reid Station and HMP&L Station Two.

2.2.2 GROUNDWATER MONITORING & CORRECTIVE ACTION

In December 2015, BREC installed four monitoring wells around the perimeter of the Reid/HMP&L CCR Surface Impoundment as part of implementing the Federal CCR Rule at the site. These wells meet the requirements of 40 CFR 257.90 for installation of a groundwater monitoring system with one upgradient well (MW-7) and three downgradient wells (MW-8 through MW-10), all located at the waste boundary. The monitoring wells were installed in the uppermost saturated portion of the sandstone bedrock aquifer, which is interbedded sandstone and shale of the Shelburn Formation. All four monitoring wells are identified on Figure 2 in Appendix A.

In 2018, assessment monitoring results indicated the presence of lithium at a statistically significant level (SSL) above the groundwater protection standard (GWPS) in monitoring well MW-10. BREC subsequently initiated evaluation of the nature and extent of groundwater impacts as required by 40 CFR 257.95(g)(1) for characterization monitoring. Three additional monitoring wells (MW-110 through MW-112) were ultimately installed to assist in defining the nature and extent of impacts. The locations of these nature and extent wells are shown on Figure 2 in Appendix A. In addition, BREC performed an Assessment of Corrective Measures (ACM) to identify applicable remedial technologies to address the documented lithium impacts in groundwater pursuant to 40 CFR 257.96.

After completing the ACM in June 2019, BREC continued to evaluate the potential remedies identified in the ACM for the SSL exceedance of the GWPS for lithium identified at monitoring well MW-10. As documented in the semi-annual progress reports prepared pursuant to 40 CFR 257.97(a), BREC performed additional site investigations, collected additional groundwater data, developed conceptual designs for remedial alternatives identified in the ACM, and developed a basic numerical groundwater flow and contaminant fate and transport model with first order calibration for the site to conduct a thorough evaluation of each potential remedy identified in the ACM. To determine the most appropriate remedy of the options presented in the ACM, BREC performed an evaluation in accordance with EPA guidance on selecting remedies under the Resource Conservation and Recovery Act (Ref. 4) and in accordance with the threshold and balancing performance criteria prescribed by the Federal CCR Rule.

In July 2023, BREC published the results of its evaluation of potential groundwater remedies to address the lithium impacts at monitoring well MW-10 and the remedy selected in a final report prepared in accordance with 40 CFR 257.97(a) (Ref. 5). Under the selected remedy, BREC elected to close the Reid/HMP&L CCR Surface Impoundment by removing all CCR and CCR-laden soils from the impoundment in accordance with 40 CFR 257.102(c) and 401 KAR 46:110 Section 9 to eliminate the source of lithium impacts observed in the groundwater. In addition, the property will continue to be restricted to industrial use, and groundwater use will be prohibited for potable purposes. These institutional controls will limit potential exposure to contaminants of concern while the corrective action remedy is being implemented and its performance is being evaluated through continued groundwater monitoring at the impoundment site.

3.0 CLOSURE SCOPE AND SCHEDULE OF ACTIVITIES

Federal CCR Rule Reference: 40 CFR 257.102(c)
Kentucky Administrative Regulations Reference: 401 KAR 46:110 Section 9

Closure of the Reid/HMP&L CCR Surface Impoundment was managed by BREC and HMP&L, and the earthwork contractor was Charah Solutions, LLC (Charah) of Louisville, Kentucky. Charah began mobilizing to the site on July 31, 2023, and promptly installed temporary erosion and sediment control facilities, cleared and grubbed the site, demolished the former ash sluice piping and pipe support structures, removed and decontaminated riprap from the side slopes, and setup the dewatering and water treatment systems for the project. Charah began dewatering the Reid/HMP&L CCR Surface Impoundment on August 25, 2023. All water removed from the Reid/HMP&L CCR Surface Impoundment during closure via Charah's dewatering and water treatment systems was discharged through the surface impoundment's former outlet structure (regulated Outfall 004) in accordance with the effluent limitations for Outfalls 001 and 004 in the Station's Kentucky Pollutant Discharge Elimination System (KPDES) permit.

After some initial bulk dewatering and conditioning within the impoundment area, Charah began removing CCR and CCR-laden soils from the Reid/HMP&L CCR Surface Impoundment on September 14, 2023. All CCR and CCR-laden soils excavated from the impoundment were first dewatered in designated conditioning areas within the impoundment. After the material was sufficiently dewatered, all excavated CCR and CCR-laden soils were hauled to the Green Station CCR Landfill for final disposal. Excavation of the impoundment continued down to the native subsoils beneath the pond until all CCR and CCR-laden soils were removed. To ensure all such material was removed from the impoundment, an additional six inches (minimum) of native subsoils were excavated and removed from the impoundment. Photos highlighting the construction progress are included in Appendix B.

By September 11, 2024, all CCR and CCR-laden soils had been removed from the impoundment. In total, approximately 900,000 cubic yards of CCR, CCR-laden soils, and native subsoils were removed to complete

closure of the Reid/HMP&L CCR Surface Impoundment. On September 11, 2024, a representative from the Kentucky Division of Waste Management (KDWM) visually inspected the site to verify all CCR constituents had been removed. As documented in the representative's site investigation report (SIR), provided in its entirety in Appendix C, the KDWM representative found the area to be substantially clean and did not observe any CCR.

In October 2024, the impoundment floor will be graded to promote drainage to a detention area in the western corner of the pond. A series of ditches will be excavated within the pond floor to promote drainage to this detention area, where an outlet structure will be installed to provide a controlled release of stormwater runoff to the creek located west of the impoundment. The impoundment's western embankment will be lowered as needed to obtain the fill material required to re-grade the pond floor. Following the completion of the grading activities, topsoil will be placed, and the area will be seeded, fertilized, and mulched to establish vegetation.

4.0 CLOSURE CERTIFICATION

Following receipt of the KDWM SIR and a final survey of the site, the Reid/HMP&L CCR Surface Impoundment was officially transitioned to closure status on September 30, 2024, in accordance with 40 CFR 257.102, as revised and republished by EPA Final Rule, "Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments" (Ref. 2), and 401 KAR 46:110 Section 9. All CCR and CCR-laden soils were removed from the impoundment, including at least six inches of native subsoils. A copy of the closure certification prepared by a qualified professional engineer in accordance with 40 CFR 257.102(f)(3) and 401 KAR 46:110 Section 9 is provided in Appendix D.

5.0 POST-CLOSURE PLAN

Federal CCR Rule Reference: 40 CFR 257.104(d)
Kentucky Administrative Regulations Reference: 401 KAR 46:110 Section 9

In accordance with 40 CFR 257.104, as revised and republished by EPA Final Rule, "Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments" (Ref. 2), and 401 KAR Chapter 46:110 Section 9, BREC will conduct post-closure care of the Reid/HMP&L CCR Surface Impoundment site at least until the lithium impacts observed at monitoring well MW-10 meet the established GWPS in accordance with 40 CFR 257.98(c) and 401 KAR 46:110 Section 8. In addition to completing groundwater corrective action, post-closure care activities will include (1) maintaining and controlling vegetation within the former impoundment area and (2) removing

sediment buildup within ditches and near the outlet structure. The complete post-closure plan for the former Reid/HMP&L CCR Surface Impoundment site is provided in Appendix E.

6.0 REFERENCES

1. U.S. Environmental Protection Agency. “Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface impoundments.” 40 CFR 257 Subpart D. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-257/subpart-D.

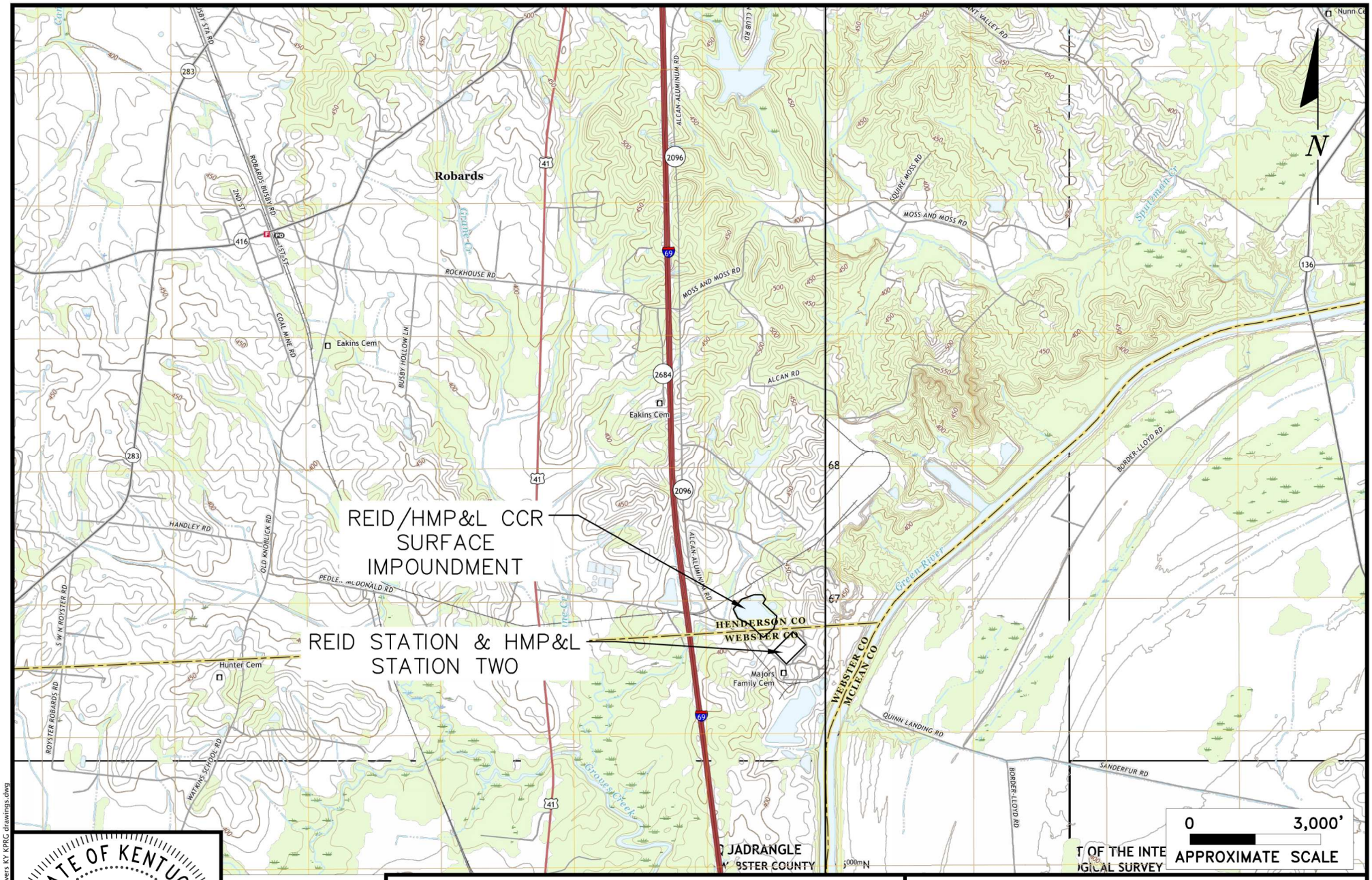
2. U.S. Environmental Protection Agency. “Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments.” 89 *Fed. Reg.* 90. Pp. 38950–39122. May 8, 2024.

3. Kentucky Administrative Regulations. Title 401, Chapter 046, “Coal Combustion Residuals (CCR).” https://apps.legislature.ky.gov/law/kar/titles/401/046/110/.

4. EPA, 2000. “Fact Sheet #3: Final Remedy Selection for Results-Based RCRA Corrective Action.” *RCRA Corrective Action Workshop on Results-Based Project Management: Fact Sheet Series.* March.

5. S&L and KPRG, 2023. “Final Report on Selection of Groundwater Remedy.” Sebree Generating Station, Reid/HMP&L CCR Surface Impoundment. Rev. 0. July 25.

APPENDIX A: SITE MAPS



STATE OF KENTUCKY
THOMAS J. DEHLIN
37434
LICENSED PROFESSIONAL ENGINEER

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Date: 2024.10.07 05:34:16-05'00'

ENVIRONMENTAL CONSULTATION & REMEDIATION

KPRG and Associates, inc.

14665 West Lisbon Road, Suite 1A Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1593

GENERAL LOCATION MAP

BIG RIVERS ELECTRIC CORPORATION
ROBARDS, KENTUCKY

Scale: 1" = 3,000' | Date: August 8, 2022

KPRG Project No. 21021 | FIGURE 1

MW-7

MW-8*

MW-110*

REID/HMP&L
CCR SURFACE IMPOUNDMENT

MW-9

HMP&L STATION TWO
UNITS 1 & 2 (RET.)

MW-10

REID STATION
UNIT 1 (RET.)

MW-111

MW-112

N

0 300'
APPROXIMATE SCALE

LEGEND

MW-7 EXISTING MONITORING WELL LOCATION

* MONITORING WELL HAS ARTESIAN PROPERTIES

STATE OF KENTUCKY
THOMAS J. DEHLIN 37434
LICENSED PROFESSIONAL ENGINEER

Digitally signed by Thomas Dehlin
Date: 2024.10.07 05:33:55-05'00'

ENVIRONMENTAL CONSULTATION & REMEDIATION

KPRG and Associates, Inc.

14665 West Lisbon Road, Suite 1A Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1593

MONITORING WELL LOCATIONS

BIG RIVERS ELECTRIC CORPORATION
ROBARDS, KENTUCKY

Scale: 1" = 300' | Date: July 12, 2022

KPRG Project No. 21021 | FIGURE 2

W:\projects\sargent & lundy-kentucky\KPRG drawings.dwg

APPENDIX B: CONSTRUCTION PROGRESS PHOTOS

Photograph 1. Bulk dewatering system.

(Photograph taken by Charah Solutions, LLC, August 2023)

Photograph 2. Stripping vegetation and topsoil from impoundment area.

(Photograph taken by Charah Solutions, LLC, August 2023)

Photograph 3. Decontaminating and stockpiling riprap for reuse.

(Photograph taken by Charah Solutions, LLC, August 2023)

Photograph 4. Excavating rim ditches to promote dewatering of impounded ash.

(Photograph taken by Charah Solutions, LLC, September 2023)

Photograph 5. Loading ash into haul truck for transportation to landfill.

(Photograph taken by Charah Solutions, LLC, September 2023)

Photograph 6. Rim ditch to sump upstream of bulk dewatering system.

(Photograph taken by Charah Solutions, LLC, October 2023)

Photograph 7. Bridging over impoundment area to provide work platform for equipment.

(Photograph taken by Charah Solutions, LLC, October 2023)

Photograph 8. Loading ash into haul trucks for transportation to landfill.

(Photograph taken by Charah Solutions, LLC, October 2023)

Photograph 9. Expansion of sump downstream of rim ditch.

(Photograph taken by Charah Solutions, LLC, November 2023)

Photograph 10. Placement of ash in Green Station CCR Landfill.

(Photograph taken by Charah Solutions, LLC, November 2023)

Photograph 11. Continued excavation of rim ditches to promote dewatering of impounded ash.

(Photograph taken by Charah Solutions, LLC, November 2023)

Photograph 12. Placement and compaction of ash in Green Station CCR Landfill.

(Photograph taken by Charah Solutions, LLC, December 2023)

Photograph 13. Continued ash excavation.

(Photograph taken by Charah Solutions, LLC, December 2023)

Photograph 14. Lowering rim ditches to continue dewatering ash.

(Photograph taken by Charah Solutions, LLC, December 2023)

Photograph 15. Loading ash into haul truck for transportation to landfill.

(Photograph taken by Charah Solutions, LLC, January 2024)

Photograph 16. Grading ash placed in Green Station CCR Landfill.

(Photograph taken by Charah Solutions, LLC, January 2024)

Photograph 17. State of Reid/HMP&L CCR Surface Impoundment – Week of January 8, 2024.

(Photograph taken by Charah Solutions, LLC, January 2024).

Photograph 18. Material excavation and stockpiling within decant area for dewatering.

(Photograph taken by Charah Solutions, LLC, January 2024).

Photograph 19. Working ash within decant area / sump to promote dewatering.

(Photograph taken by Charah Solutions, LLC, February 2024)

Photograph 20. Loading ash from decant area into haul truck for transportation to landfill.

(Photograph taken by Charah Solutions, LLC, February 2024)

Photograph 21. Working ash within decant area / sump to promote dewatering.

(Photograph taken by Charah Solutions, LLC, March 2024)

Photograph 22. Placing and grading ash in Green Station CCR Landfill.

(Photograph taken by Charah Solutions, LLC, March 2024)

Photograph 23. State of Reid/HMP&L CCR Surface Impoundment – Week of March 18, 2024.

(Photograph taken by Charah Solutions, LLC, March 2024).

Photograph 24. State of Reid/HMP&L CCR Surface Impoundment – Week of April 1, 2024.

(Photograph taken by Charah Solutions, LLC, April 2024).

Photograph 25. State of Reid/HMP&L CCR Surface Impoundment – Week of April 15, 2024.

(Photograph taken by Charah Solutions, LLC, April 2024).

Photograph 26. State of Reid/HMP&L CCR Surface Impoundment – Week of May 6, 2024.

(Photograph taken by Charah Solutions, LLC, May 2024)

Photograph 27. Loading ash into haul truck for transportation to landfill.

(Photograph taken by Charah Solutions, LLC, May 2024)

Photograph 28. Compacting ash in Green Station CCR Landfill.

(Photograph taken by Charah Solutions, LLC, May 2024)

Photograph 29. State of Reid/HMP&L CCR Surface Impoundment – Week of May 13, 2024.

(Photograph taken by Charah Solutions, LLC, May 2024)

Photograph 30. State of Reid/HMP&L CCR Surface Impoundment – Week of May 20, 2024.

(Photograph taken by Charah Solutions, LLC, May 2024)

Photograph 31. Loading ash into haul truck for transportation to landfill.

(Photograph taken by Charah Solutions, LLC, May 2024)

Photograph 32. State of Reid/HMP&L CCR Surface Impoundment – Week of May 27, 2024.

(Photograph taken by Charah Solutions, LLC, May 2024)

Photograph 33. Removing ash from impoundment berms.

(Photograph taken by Charah Solutions, LLC, June 2024)

Photograph 34. State of Reid/HMP&L CCR Surface Impoundment – Week of June 24, 2024.

(Photograph taken by Charah Solutions, LLC, June 2024)

Photograph 35. State of Reid/HMP&L CCR Surface Impoundment – Week of June 24, 2024.

(Photograph taken by Charah Solutions, LLC, June 2024)

Photograph 36. Excavating ash prior to loading into haul trucks for transportation to landfill.

(Photograph taken by Charah Solutions, LLC, July 2024)

Photograph 37. State of Reid/HMP&L CCR Surface Impoundment – Week of August 12, 2024.

(Photograph taken by Charah Solutions, LLC, August 2024)

Photograph 38. State of Reid/HMP&L CCR Surface Impoundment – Week of August 26, 2024.

(Photograph taken by Charah Solutions, LLC, August 2024)

Photograph 39. Excavating and loading ash material from west corner of impoundment.

(Photograph taken by Charah Solutions, LLC, August 2024)

Photograph 40. Placing ash in Green Station CCR Landfill.

(Photograph taken by Charah Solutions, LLC, August 2024)

Photograph 41. State of Reid/HMP&L CCR Surface Impoundment – September 9, 2024.

(Photograph taken by Associated Engineers, Inc., September 2024)

Photograph 42. Excavated Reid/HMP&L CCR Surface Impoundment (Looking North).

(Photograph taken by Charah Solutions, LLC, September 2024)

Photograph 43. Excavated Reid/HMP&L CCR Surface Impoundment (Looking South-Southeast).

(Photograph taken by Woody Higginbotham, Kentucky DWM, September 11, 2024)

Photograph 44. Excavated Reid/HMP&L CCR Surface Impoundment (Looking West-Southwest).

(Photograph taken by Woody Higginbotham, Kentucky DWM, September 11, 2024)

APPENDIX C: KENTUCKY DWM SITE INSPECTION REPORT

DIVISION OF WASTE MANAGEMENT
SITE INVESTIGATION REPORT

FILE INFORMATION:

Facility Name: **Big Rivers Electric Corp – Reid HMP&L Station 2**
ID Number: **AI 4196 / SW 117-00007**
County: **Webster**

PREPARED BY:

Name: **Woody Higginbotham, P.E.**
Title: **Environmental Engineer Supervisor**

9/16/2024

X Woody Higginbotham

Woody Higginbotham, P.E.

Signed by: Woody Higginbotham

Purpose of Site Visit: CCR Closure by Removal for Henderson Municipal Power & Light Station Ash Pond

Date: September 11, 2024 [ ] Complaint [ ] Technical Assistance [X] Closure

Time: 10:30 AM –11:30 AM CT [ ] Sampling [X] Construction [ ] Follow-Up

PARTICIPANTS: Mark Bertram and Hunter Mizell with Big Rivers Electric Corporation (BREC); George Southerby with Charah Solutions, Inc.; Woody Higginbotham, P.E with KDWM.

WEATHER: Sunny, 78F

FINDINGS: I arrived on-site at approximately 10:30 AM CT and checked into the guard office. Mark Betram with BREC came to the gate to lead us back to the project area. The purpose of today's inspection was to inspect the clean closure of Henderson Municipal Power & Light Station Ash Pond which is ACTV0009 on the permit. This pond is to be closed by removal of all Coal Combustion Residual (CCR) material per the approved application under APE20230005.

After entering the site, we followed BREC to the project area which was approximately 20 acres. I entered the ash pond from the East side. I walked the perimeter of the floor and zig-zagged through the middle of the pond. The pond was substantially clean, and no coal ash was observed. In the Western most corner was a concrete discharge structure. The contractor confirmed the structure is mostly full of concrete, and this structure will eventually be removed. BREC indicated the future plans would be to breach the dam on the Western side to allow the pond to drain.

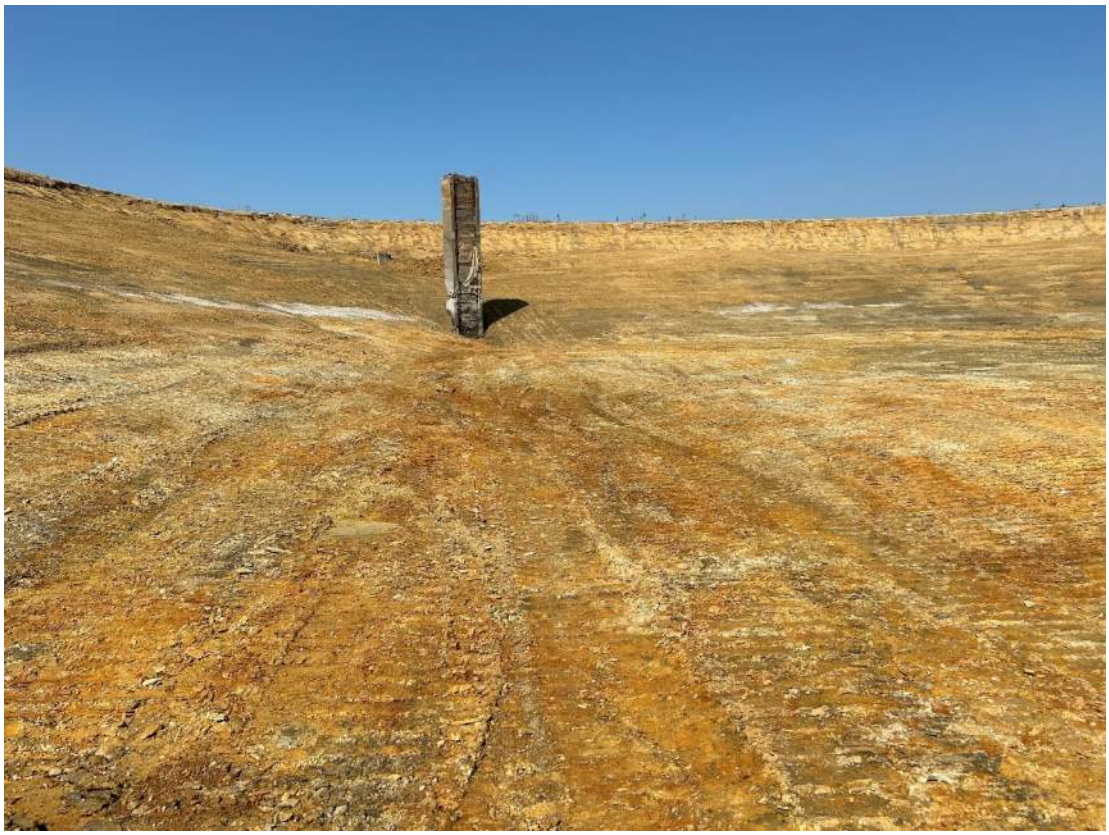
The project team stated that approximately 840,000 cubic yards (cy) of CCR material was removed from the pond and hauled to the landfill for disposal. The CPRs for both this pond and the Green Station Ash Pond should be submitted separately in the coming weeks. I left at approximately 11:30 AM.

Copies To: Mark Bertram Attachments: Photographs

Standing on the floor of the pond, facing South-SE.

Standing on the floor of the pond, facing East.

Standing on the floor of the pond, facing West.



Concrete outfall structure in Western corner of pond.

Standing on the floor of the pond, facing North-NW.

Standing on the floor of the pond, facing West-SW.

APPENDIX D: CLOSURE CERTIFICATION

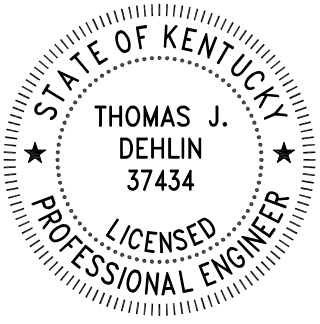
REID/HMP&L CCR SURFACE IMPOUNDMENT CLOSURE CERTIFICATION

In accordance with 40 CFR 257.102(f)(3) and 401 KAR 46:110 Section 9, I certify that the Reid/HMP&L CCR Surface Impoundment has been closed in accordance with:

- The closure plan specified in 40 CFR 257.102(b) and 401 KAR 46:110 Section 9 ("Reid/HMP&L CCR Surface Impoundment Closure Plan," Rev. 2, dated July 24, 2023).
- The requirements of 40 CFR 257.102, as revised and republished by U.S. Environmental Protection Agency Final Rule, "Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Legacy CCR Surface Impoundments" (89 FR 38950).
- The requirements of 401 KAR 46:110 Section 9, which incorporates the requirements of 40 CFR 257.102 by reference.

Certified By: Thomas J. Dehlin Date: September 30, 2024

Seal:



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APPENDIX E: POST-CLOSURE PLAN

Big Rivers
ELECTRIC CORPORATION

Sebree Generating Station

Former Reid/HMP&L CCR Surface Impoundment Post-Closure Plan

Revision 0

October 7, 2024

Issue Purpose: Use

Project No.: 14055-010

55 East Monroe Street
Chicago, IL 60603-5780 USA
312-269-2000
www.sargentlundy.com

Sargent & Lundy

POST-CLOSURE PLAN REVISION HISTORY

Rev.	Purpose of Issue	Date	By Whom	Summary of Revisions
0	Initial Issue	10/07/2024	Sargent & Lundy	N/A

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FIGURES

1.0 PURPOSE & SCOPE

Federal CCR Rule Reference: 40 CFR 257.104(d)
Kentucky Administrative Regulations Reference: 401 KAR 46:110 Section 9

The Reid/HMP&L CCR Surface Impoundment at Big Rivers Electric Corporation's (BREC) Sebree Generating Station was a coal combustion residual (CCR) surface impoundment that was closed by removal of all CCR in the impoundment during its active life in accordance with § 257.102(c) of Title 40, Part 257 Subpart D of the Code of Federal Regulations (CFR) (Ref. 1, "Federal CCR Rule"), as revised and republished by U.S. Environmental Protection Agency (EPA) Final Rule, "Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments" (Ref. 2), and in accordance with Section 9 of Title 401, Chapter 46, Regulation 110 of the Kentucky Administrative Regulations (KAR), which incorporates the Federal CCR Rule's closure requirements by reference (Ref. 3).

Pursuant to 40 CFR 257.104(d) and 401 KAR 46:110 Section 9, this document provides the written post-closure plan for the former Reid/HMP&L CCR Surface Impoundment site at the Sebree Generating Station. This plan describes the post-closure care activities BREC anticipates performing throughout the post-closure care period for the former Reid/HMP&L CCR Surface Impoundment site.

2.0 SITE BACKGROUND

2.1 SEBREE GENERATING STATION

BREC operates the Sebree Generating Station located on the Green River northeast of Sebree, Kentucky, with Interstate 69 located to the west. The location of the Sebree Generation Station site is shown on Figure 1. Three former coal-fired power plants are co-located at the Sebree Generating Station: the Robert D. Green Station, the Robert A. Reid Station ("Reid"), and Henderson Municipal Power & Light (HMP&L) Station Two. Reid Unit 1 began commercial operation in 1966 and was retired on September 30, 2020. HMP&L Station Two Units 1 and 2 began commercial operation in 1973 and 1974, respectively; both units were retired as of February 1, 2019. Green Station Units 1 and 2 began commercial operation in 1979 and 1981, respectively, and were converted to natural gas fuel in 2022.

2.2 REID/HMP&L CCR SURFACE IMPOUNDMENT

2.2.1 SITE LOCATION & DESCRIPTION

The location of the Reid/HMP&L CCR Surface Impoundment and its corresponding groundwater monitoring network is shown on Figure 2. The impoundment is partially diked (west, south, and east sides) and partially incised (north side) and occupies an area of approximately 23.3 acres. Prior to being taken out of service in

2019, the Reid/HMP&L CCR Surface Impoundment had been used to manage ash sluice water from the Reid Station and HMP&L Station Two.

2.2.2 GROUNDWATER MONITORING & CORRECTIVE ACTION

In December 2015, BREC installed four monitoring wells around the perimeter of the Reid/HMP&L CCR Surface Impoundment as part of the implementation of the Federal CCR Rule at the site. These wells meet the requirements of 40 CFR 257.90 for installation of a groundwater monitoring system with one upgradient well (MW-7) and three downgradient wells (MW-8 through MW-10), all located at the waste boundary. The monitoring wells were installed in the uppermost saturated portion of the sandstone bedrock aquifer, which is interbedded sandstone and shale of the Shelburn Formation. All four monitoring wells are identified on the site map in Figure 2.

In 2018, assessment monitoring results indicated the presence of lithium at a statistically significant level (SSL) above the groundwater protection standard (GWPS) in monitoring well MW-10. BREC subsequently initiated evaluation of the nature and extent of groundwater impacts as required by 40 CFR 257.95(g)(1) for characterization monitoring. Three additional monitoring wells (MW-110 through MW-112) were ultimately installed to assist in defining the nature and extent of impacts. The locations of these nature and extent wells are shown on the site map in Figure 2. In addition, BREC performed an Assessment of Corrective Measures (ACM) to identify applicable remedial technologies to address the documented lithium impacts in groundwater pursuant to 40 CFR 257.96.

After completing the ACM in June 2019, BREC continued to evaluate the potential remedies identified in the ACM for the SSL exceedance of the GWPS for lithium identified at monitoring well MW-10. As documented in the semi-annual progress reports prepared pursuant to 40 CFR 257.97(a), BREC performed additional site investigations, collected additional groundwater data, developed conceptual designs for remedial alternatives identified in the ACM, and developed a basic numerical groundwater flow and contaminant fate and transport model with first order calibration for the site to conduct a thorough evaluation of each potential remedy identified in the ACM. To determine the most appropriate remedy of the options presented in the ACM, BREC performed an evaluation in accordance with EPA guidance on selecting remedies under the Resource Conservation and Recovery Act (Ref. 4) and in accordance with the threshold and balancing performance criteria prescribed by the Federal CCR Rule.

In July 2023, BREC published the results of its evaluation of potential groundwater remedies to address the lithium impacts at monitoring well MW-10 and the remedy selected in a final report prepared in accordance with 40 CFR 257.97(a) (Ref. 5). Under the selected remedy, BREC elected to close the Reid/HMP&L CCR Surface Impoundment by removing all CCR and CCR-laden soils from the impoundment in accordance with 40 CFR 257.102(c) and 401 KAR 46:110 Section 9 to eliminate the source of lithium impacts observed in the

groundwater. In addition, the property will continue to be restricted to industrial use, and groundwater use will be prohibited for potable purposes. These institutional controls will limit potential exposure to contaminants of concern while the corrective action remedy is being implemented and its performance is being evaluated through continued groundwater monitoring at the impoundment site.

2.2.3 CLOSURE

On July 31, 2023, closure construction activities and, by extension, groundwater remedial commenced at the Reid/HMP&L CCR Surface Impoundment. To close the Reid/HMP&L CCR Surface Impoundment, CCR and CCR-laden soils therein were excavated down to the native subsoils under the pond. An additional six inches (minimum) of native subsoils were excavated to ensure all CCR and CCR-laden soils were removed from the impoundment site. All excavated CCR and CCR-laden soils were loaded onto trucks and hauled to the on-site Green Station CCR Landfill for disposal. By September 11, 2024, all CCR and CCR-laden soils had been removed from the impoundment. In total, approximately 900,000 cubic yards of CCR, CCR-laden soils, and native subsoils were removed to complete closure of the Reid/HMP&L CCR Surface Impoundment.

Following confirmation that all CCR and CCR-laden soils were removed from the impoundment area, BREC started re-grading the pond floor to promote positive drainage to a detention area in the western corner of the impoundment. A series of ditches will be excavated within the pond floor to promote drainage to this detention area, where an outlet structure will be installed to provide a controlled release of stormwater runoff to the creek immediately west of the pond. The impoundment's western embankment will be lowered as needed to obtain the fill material required to re-grade the pond floor. After the pond floor has been re-graded, BREC will place a layer of topsoil and seed, fertilize, and mulch to establish vegetation.

3.0 POST-CLOSURE CARE ACTIVITIES

Federal CCR Rule Reference: 40 CFR 257.104(d)(1)(i)
Kentucky Administrative Regulations Reference: 401 KAR 46:110 Section 9

Post-closure care activities for the Reid/HMP&L CCR Surface Impoundment will include (1) maintaining and controlling vegetation within the former impoundment area, (2) removing sediment buildup within ditches and near the outlet structure, and (3) completing groundwater corrective action in accordance with 40 CFR 257.98(c) and 401 KAR 46:110 Section 8. Table 1 summarizes the post-closure maintenance and monitoring activities planned to meet these objectives and the corresponding minimum frequencies at which these activities will be performed.

Table 1. Post-Closure Care Activities for Reid/HMP&L CCR Surface Impoundment

Activity	Description	Minimum Frequency
Maintain Vegetation	Seed and fertilize spots where vegetation is bare or thin.	As Needed
Control Vegetation	Mow vegetation.	Semi-Annually
Sediment Control	Remove sediment build-up in ditches and near outlet structure.	As Needed
Groundwater Corrective Action	Prohibit groundwater for potable purposes.	N/A
	Monitor groundwater quality to: • Ensure lithium concentrations at MW-10 meet the GWPS. • Verify further releases of other Appendix IV constituents are minimized or eliminated.	Semi-Annually

3.1 VEGETATIVE COVER MAINTENANCE & CONTROL

Throughout the post-closure care period, BREC will maintain and control the vegetative cover within the former impoundment area. Vegetation will be mowed at least twice a year to limit excessive growth. In addition, BREC will seed and fertilize bare or thin spots observed within the vegetated area on an as-needed basis.

3.2 SEDIMENT CONTROL

Throughout the post-closure care period, BREC will remove excessive sediment build-up within the ditches draining to the detention area and near the outlet structure draining to the creek west of the former Reid/HMP&L CCR Surface Impoundment site. Removal of such build-up will (1) ensure the ditches remain effective in routing stormwater to the detention area in a controlled manner and (2) minimize or eliminate the quantity of total suspended solids discharged to the creek.

3.3 GROUNDWATER MONITORING & CORRECTIVE ACTION

Federal CCR Rule References: 40 CFR 257.104(b)(3)
Kentucky Administrative Regulations Reference: 401 KAR 46:110 Section 9

Groundwater monitoring will continue at the Reid/HMP&L CCR Surface Impoundment to evaluate the effects that removing CCR and CCR-laden soils from the impoundment have on the lithium impacts observed in the groundwater at monitoring well MW-10. Sampling events conducted during the post-closure period will be used to (1) ensure lithium concentrations are trending towards compliance with the groundwater protection standard (GWPS), (2) confirm the GWPS for lithium is ultimately met, and (3) verify further releases of other

Appendix IV constituents are minimized or eliminated. Pursuant to 40 CFR 257.98(c)(2) and 257.102(c) and 401 KAR 46:110 Sections 8 and 9, groundwater monitoring will continue at the site on a semi-annual basis until the GWPS for lithium has been met for a period of at least three consecutive years.

4.0 FACILITY CONTACT DURING POST-CLOSURE CARE PERIOD

Federal CCR Rule Reference: 40 CFR 257.104(d)(1)(ii)
Kentucky Administrative Regulations Reference: 401 KAR 46:110 Section 9

The name, address, telephone number, and e-mail address of the person to contact about the Reid/HMP&L CCR Surface Impoundment during the post-closure care period are presented below.

Name:	Mark Bertram, Director Environmental Services
Address:	9000 Highway 2096
	Robards, KY 42452
Telephone Number:	(270) 844-5708
E-mail Address:	Mark.Bertram@bigrivers.com

5.0 PROPERTY USE DURING POST-CLOSURE CARE PERIOD

Federal CCR Rule Reference: 40 CFR 257.104(d)(1)(iii)
Kentucky Administrative Regulations Reference: 401 KAR 46:110 Section 9

In accordance with the remedy BREC selected to address the GWPS exceedances of lithium observed at monitoring well MW-10, the Station property – including the former Reid/HMP&L CCR Surface Impoundment site – will continue to be restricted to industrial use, and groundwater use will be prohibited for potable purposes. In addition, the former Reid/HMP&L CCR Surface Impoundment site will remain undisturbed during its post-closure care period. Access to the site will be limited to maintaining and controlling vegetation, removing sediment build-up, and accessing the groundwater monitoring wells.

6.0 AMENDMENTS TO POST-CLOSURE PLAN

Federal CCR Rule Reference: 40 CFR 257.104(d)(3)
Kentucky Administrative Regulations Reference: 401 KAR 46:110 Section 9

This post-closure plan will be amended in accordance with 40 CFR 257.104(d)(3) and 401 KAR 46:110 Section 9 if a change in the operation of the Reid/HMP&L CCR Surface Impoundment would substantially affect this post-closure plan or if an unanticipated event necessitates a revision to this post-closure plan. Any

and all amendments to this post-closure plan will be certified by a qualified professional engineer registered in the Commonwealth of Kentucky in accordance with 40 CFR 257.104(d)(3) and 401 KAR 46:110 Section 9.

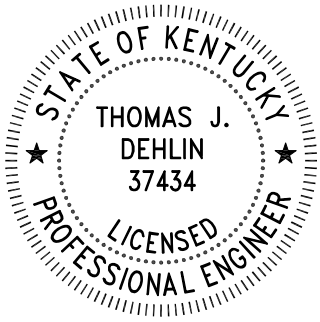
7.0 CERTIFICATION

I certify that:

- This post-closure plan for the Reid/HMP&L CCR Surface Impoundment meets the requirements for a written post-closure plan pursuant to 40 CFR 257.104(d) and 401 KAR 46:110 Section 9.
- This post-closure plan for the Reid/HMP&L CCR Surface Impoundment was prepared by me or under my direct supervision.
- I am a registered professional engineer under the laws of the Commonwealth of Kentucky.

Certified By: Thomas J. Dehlin Date: October 7, 2024

Seal:



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8.0 REFERENCES

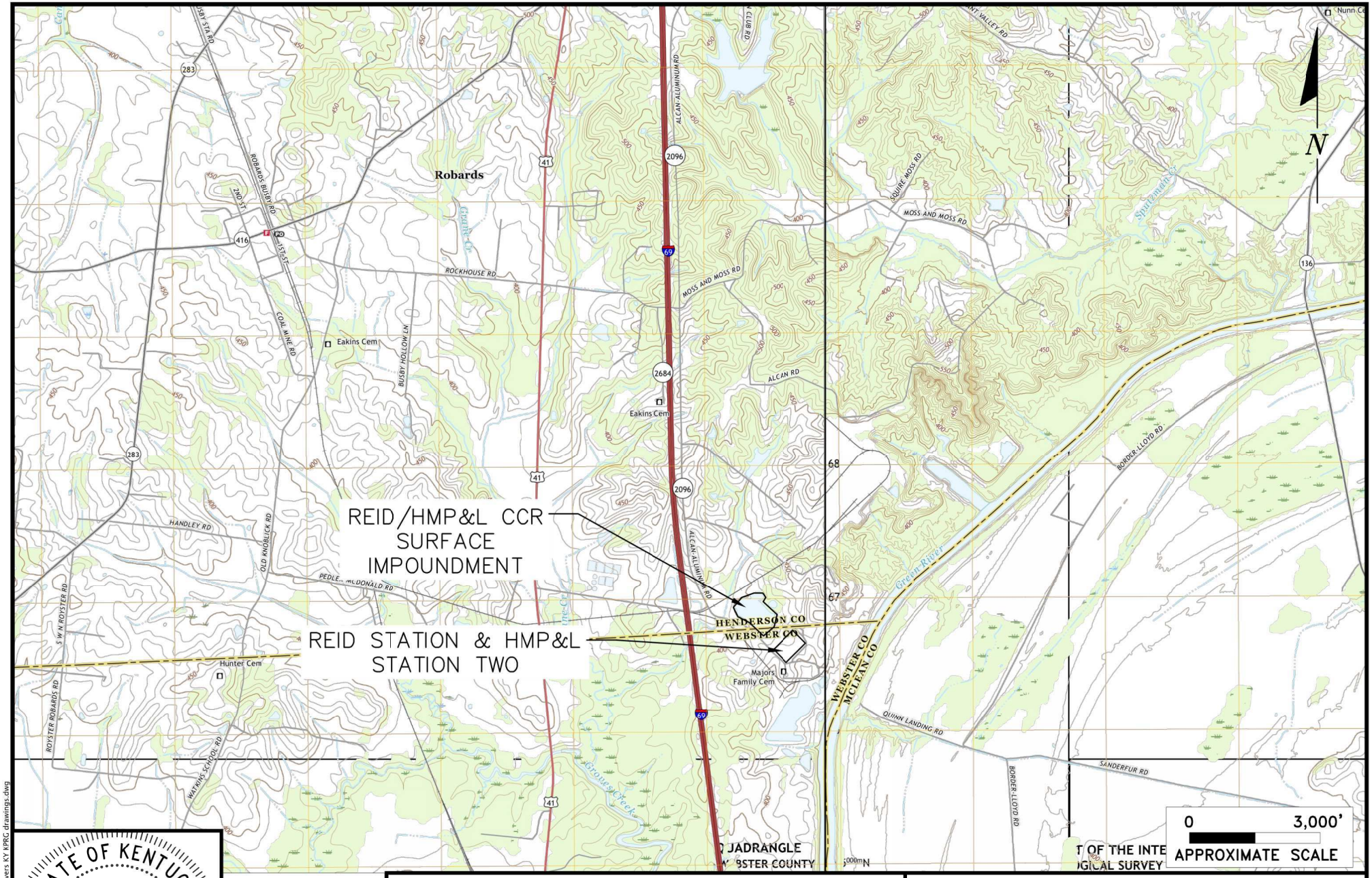
1. U.S. Environmental Protection Agency. “Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface impoundments.” 40 CFR 257 Subpart D. https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-257/subpart-D.

2. U.S. Environmental Protection Agency. “Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments.” 89 *Fed. Reg.* 90. pp. 38950–39122. May 8, 2024.

3. Kentucky Administrative Regulations. Title 401, Chapter 046, “Coal Combustion Residuals (CCR).” https://apps.legislature.ky.gov/law/kar/titles/401/046/110/.

4. EPA, 2000. “Fact Sheet #3: Final Remedy Selection for Results-Based RCRA Corrective Action.” *RCRA Corrective Action Workshop on Results-Based Project Management: Fact Sheet Series.* March.

5. S&L and KPRG, 2023. “Final Report on Selection of Groundwater Remedy.” Sebree Generating Station, Reid/HMP&L CCR Surface Impoundment. Rev. 0. July 25.



STATE OF KENTUCKY
THOMAS J. DEHLIN
37434
LICENSED PROFESSIONAL ENGINEER

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ENVIRONMENTAL CONSULTATION & REMEDIATION

KPRG and Associates, inc.

14665 West Lisbon Road, Suite 1A Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1593

GENERAL LOCATION MAP

BIG RIVERS ELECTRIC CORPORATION
ROBARDS, KENTUCKY

Scale: 1" = 3,000' | Date: August 8, 2022

KPRG Project No. 21021 | FIGURE 1

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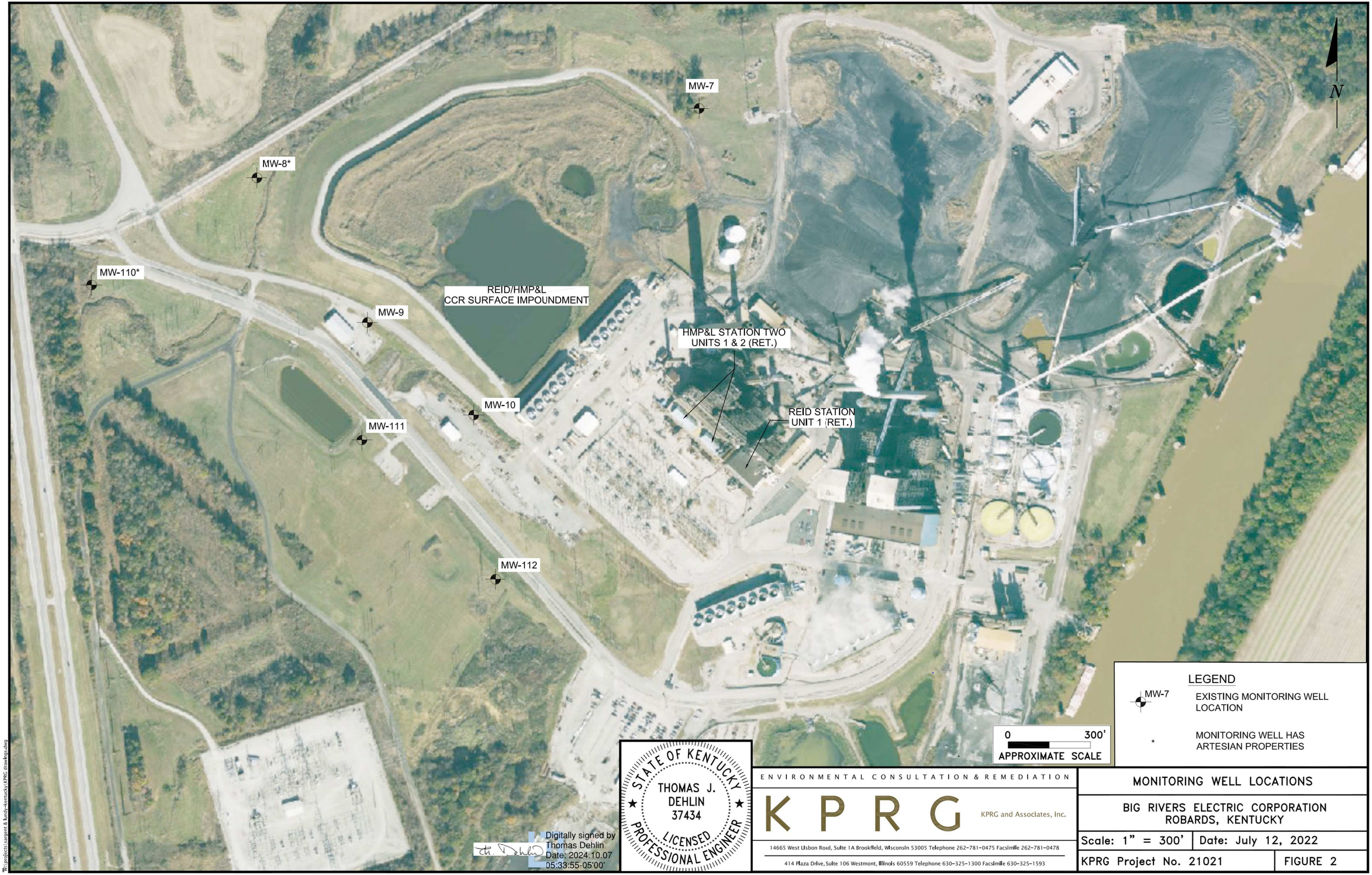

LEGEND

MW-7 — EXISTING MONITORING WELL LOCATION

* — MONITORING WELL HAS ARTESIAN PROPERTIES

STATE OF KENTUCKY
THOMAS J. DEHLIN
37434
LICENSED PROFESSIONAL ENGINEER

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ENVIRONMENTAL CONSULTATION & REMEDIATION

KPRG and Associates, Inc.

14665 West Lisbon Road, Suite 1A Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1593

MONITORING WELL LOCATIONS

BIG RIVERS ELECTRIC CORPORATION
ROBARDS, KENTUCKY

Scale: 1" = 300' | Date: July 12, 2022

KPRG Project No. 21021 | FIGURE 2

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