



Illinois Power Generating Company
1500 Eastport Plaza Dr.
Collinsville, IL 62234

January 30, 2025

Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Re: Coffeen Ash Pond No. 2 (IEPA ID: W1350150004-02) 2024 Annual Consolidated Report

Dear Mr. LeCrone:

In accordance with 35 IAC § 845.550, Illinois Power Generating Company (IPGC) is submitting the annual consolidated report for the Coffeen Ash Pond No. 2 (IEPA ID: W1350150004-02), as enclosed.

Sincerely,

A handwritten signature in blue ink, reading 'Dianna Tickner', with a stylized flourish at the end.

Dianna Tickner
Sr. Director Decommissioning & Demolition

Enclosures

Annual Consolidated Report
Illinois Power Generating Company
Coffeen Power Plant
Ash Pond No. 2; IEPA ID: **W1350150004-02**

In accordance with 35 IAC § 845.550, Illinois Power Generating Company (IPGC) has prepared the annual consolidated report. The report is provided in three sections as follows:

Section 1

1) Annual CCR fugitive dust control report (Section 845.500(c))

Section 2

2) Annual inspection report (Section 845.540(b)), including:

- A) Annual hazard potential classification certification
- B) Annual structural stability assessment certification
- C) Annual safety factor assessment certification
- D) Inflow design flood control system plan certification

Section 3

3) Annual Groundwater Monitoring and Corrective Action Report (Section 845.610(e))

Section 1

Annual CCR Fugitive Dust Control Report

Annual CCR Fugitive Dust Control Report for Coffeen Power Station

Illinois Power Generating Company

**Coffeen Power Plant
134 CIPS Lane
Coffeen, IL 62017**

November 2024

**Coffeen Power Station
ANNUAL CCR FUGITIVE DUST CONTROL REPORT**

Reporting Year: 4th Quarter 2023 through 3rd Quarter 2024

Approved by: 
Name

Director, Decommissioning and Demolition
Title

This Annual CCR Fugitive Dust Control Report has been prepared for the Coffeen Power Station in accordance with 40 CFR 257.80(c) and 35 I.A.C. 845.500. Section 1 provides a description of the actions taken to control CCR fugitive dust at the facility during the reporting year, including a summary of any corrective measures taken. Section 2 provides a record of citizen complaints received concerning CCR fugitive dust at the facility during the reporting year, including a summary of any corrective measures taken.

Section 1 Actions Taken to Control CCR Fugitive Dust

In accordance with the Coffeen Power Station CCR Fugitive Dust Control Plan (Plan), the following measures were used to control CCR fugitive dust from becoming airborne at the facility during the reporting year:

CCR Activity	Actions Taken to Control CCR Fugitive Dust
Management of CCR in the facility's CCR units	CCR to be emplaced in the landfill is conditioned before emplacement.
	Wet management of CCR bottom ash and flue gas desulfurization materials in CCR surface impoundments.
	Water areas of exposed CCR in CCR units, as necessary.
	Naturally occurring grass vegetation in areas of exposed CCR in CCR surface impoundments.
Handling of CCR at the facility	CCR bottom ash removed from CCR surface impoundments and loaded into trucks for transport remains conditioned during handling.
	CCR fly ash to be emplaced in the landfill is conditioned before emplacement.
	Load CCR transport trucks from the CCR fly ash silo using a chute with a sock (skirt).
	Perform housekeeping, as necessary, in the fly ash loading area.

**Coffeen Power Station
ANNUAL CCR FUGITIVE DUST CONTROL REPORT**

CCR Activity	Actions Taken to Control CCR Fugitive Dust
Handling of CCR at the facility	CCR to be emplaced in the landfill is conditioned before emplacement.
	Cover or enclose trucks used to transport CCR fly ash.
	Limit the speed of vehicles to no more than 15 mph on facility roads.
Transportation of CCR at the facility	Cover or enclose trucks used to transport CCR other than fly ash, as necessary.
	Sweep or rinse off the outside of the trucks transporting CCR, as necessary.
	Remove CCR, as necessary, deposited on facility road surfaces during transport.
	Water CCR haul roads, including landfill roads, as necessary.

Based on a review of the Plan and inspections associated with CCR fugitive dust control performed in the reporting year, the control measures identified in the Plan as implemented at the facility effectively minimized CCR from becoming airborne at the facility. No revisions or additions to control measures identified in the Plan were needed.

No material changes occurred in the reporting year in site conditions potentially resulting in CCR fugitive dust becoming airborne at the facility that warrant an amendment of the Plan.

Coffeen Power Plant ceased operation in November of 2019. Not all the CCR activities that are listed in the table occurred after the plant was permanently shut down. For the activities that did occur, the actions taken to control CCR Fugitive Dust that are listed in the table were followed and were adequate to effectively minimize fugitive dust.

Section 2 Record of Citizen Complaints

No citizen complaints were received regarding CCR fugitive dust at Coffeen Power Station in the reporting year.

Section 2

Annual inspection report (Section 845.540(b)), including:

- A) Annual hazard potential classification certification, if applicable (Section 845.440)
- B) Annual structural stability assessment certification, if applicable (Section 845.450)
- C) Annual safety factor assessment certification, if applicable (Section 845.460)
- D) Inflow design flood control system plan certification (Section 845.510(c))

ANNUAL INSPECTION BY A QUALIFIED PROFESSIONAL ENGINEER

35 IAC § 845.540

(b)(1) The CCR surface impoundment must be inspected on an annual basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR surface impoundment is consistent with recognized and generally accepted engineering standards. The inspection must, at a minimum, include:

A) A review of available information regarding the status and condition of the CCR surface impoundment, including files available in the operating record (e.g., CCR surface impoundment design and construction information required by Sections 845.220(a)(1) and 845.230(d)(2)(A), previous structural stability assessments required under Section 845.450, the results of inspections by a qualified person, and results of previous annual inspections);

B) A visual inspection of the CCR surface impoundment to identify signs of distress or malfunction of the CCR surface impoundment and appurtenant structures;

C) A visual inspection of any hydraulic structures underlying the base of the CCR surface impoundment or passing through the dike of the CCR surface impoundment for structural integrity and continued safe and reliable operation;

D) The annual hazard potential classification certification, if applicable (see Section 845.440);

E) The annual structural stability assessment certification, if applicable (see Section 845.450);

F) The annual safety factor assessment certification, if applicable (see Section 845.460); and

G) The inflow design flood control system plan certification (see Section 845.510(c)).

SITE INFORMATION

Site Name / Address / Date of Inspection	Coffeen Power Station Montgomery County, Illinois 62017 9/16/2024
Operator Name / Address	Luminant Generation Company LLC 6555 Sierra Drive, Irving, TX 75039
CCR unit	Ash Pond No. 2

INSPECTION REPORT 35 IAC § 845.540

(b)(1)(D) The annual hazard potential classification certification, if applicable (see Section 845.440).	Based on a review of the CCR unit's annual hazard potential classification, the unit is classified as a Class II CCR surface impoundment.
(b)(2)(A) Any changes in geometry of the structure since the previous annual inspection.	Closure of this impoundment was completed 2020
(b)(2)(B) The location and type of existing instrumentation and the maximum recorded readings of each instrument since the previous annual inspection	See the attached.
b)(2)(C) The approximate minimum, maximum, and present depth and elevation of the impounded water and CCR since the previous annual inspection;	See the attached.
b)(2)(D) The storage capacity of the impounding structure at the time of the inspection	Impoundment has been capped and closed - there is zero (0) ac-ft of storage capacity.
(b)(2)(E) The approximate volume of the impounded water and CCR contained in the unit at the time of the inspection.	Impoundment has been dewatered, capped and closed, there is approximately 1300 ac-ft of CCR impounded.
(b)(2)(F) 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	

INSPECTION REPORT 35 IAC § 845.540

(b)(2)(G) Any other changes that may have affected the stability or operation of the impounding structure since the previous annual inspection.	Based on a review of the CCR unit's records and visual observation during the on-site inspection, no other changes which may have affected the stability or operation of the CCR unit have taken place since the previous annual inspection.
(b)(1)(G) The inflow design flood control system plan certification (see Section 845.510(c))	Based on a review of the CCR unit's records, the CCR unit is designed, operated, and maintained to adequately manage the flow from the CCR impoundment and control the peak discharge from the inflow design flood.

35 IAC § 845.540 - Annual inspection by a qualified professional engineer.

I, James Knutelski, P.E., certify under penalty of law that the information submitted in this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Illinois. The information submitted, is to the best of my knowledge and belief, true, accurate and complete. Based on the annual inspection, the design, construction, operation, and maintenance of the CCR Unit is consistent with recognized and generally accepted good engineering standards. Based on a review of the records for the CCR unit and a visual inspection of the unit to document no material changes to the unit, the hazard potential classification was conducted in accordance with the requirements of Section 845.440, the structural stability assessment was conducted in accordance with the requirements of Section 845.450, the safety factor assessment was conducted in accordance with the requirements of Section 845.460, and the inflow design flood control system plan assessment was conducted in accordance with the requirements of Section 845.510.



James Knutelski, PE
 Illinois PE No. 062-054206, Expires: 11/30/2025
 Date: 12/13/2024

Site Name: Coffeen Power Station

CCR Unit: Ash Pond No. 2

35 IAC § 845.540 (b)(2)(B)		
Instrument ID #	Type	Maximum recorded reading since previous annual inspection (ft)
P009	Piezometer	623.37'
P010	Piezometer	616.79'
P012	Piezometer	621.39'
P014	Piezometer	612.69'

35 IAC § 845.540 (b)(2)(C)						
	Approximate Depth / Elevation					
Since previous inspection:	Elevation (ft)			Depth (ft)		
	Minimum	Present	Maximum	Minimum	Present	Maximum
Impounded Water		0			0	
CCR	636		648	42		54

Section 3

Annual Groundwater Monitoring and Corrective Action Report (Section 845.610(e))

Prepared for
Illinois Power Generating Company

Date
January 31, 2025

Project No.
1940106781-004

**2024 35 I.A.C. § 845 ANNUAL
GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
ASH POND NO. 2
COFFEEN POWER PLANT
COFFEEN, ILLINOIS
IEPA ID NO. W1350150004-02**

**2024 35 I.A.C. § 845 ANNUAL GROUNDWATER
MONITORING AND CORRECTIVE ACTION REPORT
COFFEEN POWER PLANT ASH POND**

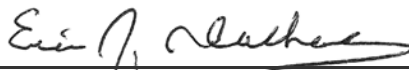
Project name **Coffeen Power Plant Ash Pond No. 2**
Project no. **1940106781-004**
Recipient **Illinois Power Generating Company**
Document type **Annual Groundwater Monitoring and Corrective Action Report**
Version **FINAL**
Date **January 31, 2025**
Prepared by **Kristen L. Theesfeld**
Checked by **Lauren D. Cook**
Approved by **Eric J. Tlachac, PE**
Description **Annual Report required by 35 I.A.C. § 845**

Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
USA

T 414-837-3607
F 414-837-3608
<https://ramboll.com>



Kristen L. Theesfeld
Hydrogeologist



Eric J. Tlachac, PE
Senior Project Manager

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TABLES (IN TEXT)

Table A 35 I.A.C. § 845 Monitoring Program Summary for 2024

TABLES (ATTACHED)

Table 1 Field Parameters and Analytical Results – Quarter 1, 2024
 Field Parameters and Analytical Results – Quarter 2, 2024
 Field Parameters and Analytical Results – Quarter 3, 2024
 Field Parameters and Analytical Results – Quarter 4, 2024

Table 2 Evaluation of Compliance – Quarter 1, 2024
 Evaluation of Compliance – Quarter 2, 2024
 Evaluation of Compliance – Quarter 3, 2024

FIGURES (ATTACHED)

Figure 1 Monitoring Well Location Map

Figure 2 GWPS Exceedance Map Uppermost Aquifer, Quarters 1-3, 2024

Figure 3 GWPS Exceedance Map Lower Confining Unit, Quarters 1-3, 2024

Figure 4 Potentiometric Surface Map, January 12, 2024

Figure 5 Potentiometric Surface Map, February 12 and 13, 2024

Figure 6 Potentiometric Surface Map, March 29, 2024

Figure 7 Potentiometric Surface Map, April 29, 2024

Figure 8 Potentiometric Surface Map, May 29, 2024

Figure 9 Potentiometric Surface Map, June 29, 2024

Figure 10 Potentiometric Surface Map, July 29 and 30, 2024

Figure 11 Potentiometric Surface Map, August 28, 2024

Figure 12 Potentiometric Surface Map, September 28, 2024

Figure 13 Potentiometric Surface Map, October 28 and 29, 2024

Figure 14 Potentiometric Surface Map, November 19, 2024

Figure 15 Potentiometric Surface Map, December 11-13, 2024

ATTACHMENTS

- Attachment A Groundwater Elevation Data
- Attachment B Comparison to Background – Quarter 1, 2024
Comparison to Background – Quarter 2, 2024
Comparison to Background – Quarter 3, 2024

ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
AP2	Ash Pond No. 2
ASD	Alternative Source Demonstration
CCA	compliance commitment agreement
CCR	coal combustion residuals
CMA	assessment of corrective measures
CPP	Coffeen Power Plant
E004	Quarter 1, 2024 sampling event
E005	Quarter 2, 2024 sampling event
E006	Quarter 3, 2024 sampling event
E007	Quarter 4, 2024 sampling event
GWPS	groundwater protection standard
ID	identification
IEPA	Illinois Environmental Protection Agency
IPCB	Illinois Pollution Control Board
IPGC	Illinois Power Generating Company
NID	National Inventory of Dams
No.	number
Ramboll	Ramboll Americas Engineering Solutions, Inc.
SI	surface impoundment
SSI	statistically significant increase

EXECUTIVE SUMMARY

This report has been prepared to provide the information required by Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845.610(e) (*Annual Groundwater Monitoring and Corrective Action Report*) for Ash Pond Number (No.) 2 (AP2) located at Coffeen Power Plant (CPP) near Coffeen, Illinois. AP2 is recognized by coal combustion residuals (CCR) unit identification (ID) No. 102, Illinois Environmental Protection Agency (IEPA) ID No. W1350150004-02, and National Inventory of Dams (NID) No. IL50723.

As required by 35 I.A.C. § 845, an operating permit application for AP2 was submitted by Illinois Power Generating Company (IPGC) to the IEPA by October 31, 2021 in accordance with the requirements specified in 35 I.A.C. § 845.230(d) and is pending approval. IPGC entered into a compliance commitment agreement (CCA) with the IEPA on December 28, 2022. As specified in the CCA, groundwater monitoring in accordance with the proposed groundwater monitoring plan and sampling methodologies provided in the operating permit application for AP2 commenced in the second quarter of 2023 and quarterly groundwater sampling was conducted in 2024 in accordance with 35 I.A.C. § 845.650. All available groundwater monitoring data collected in 2024 are summarized in **Table 1** (field parameters and analytical results) and **Attachment A** (groundwater elevation data). After AP2 has been issued an approved operating permit, groundwater monitoring shall be conducted in accordance with that operating permit.

In accordance with 35 I.A.C. § 845.610(b)(3)(C) and the statistical analysis plan submitted with the operating permit application (Appendix A of the Groundwater Monitoring Plan [Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021]), constituent concentrations observed at compliance monitoring wells were evaluated for compliance with the groundwater protection standards (GWPSs) described in 35 I.A.C. § 845.600 to determine exceedances¹ of the GWPS (**Table 2**). The following GWPS exceedances were determined following quarterly groundwater sampling in 2024 (Ramboll, 2024a; Ramboll, 2024b; Ramboll, 2024c)²:

- Boron in G401, G402, G404, and G405
- Cobalt in G401
- pH in G401
- Sulfate in G401, G404, G405, G406, and G407
- Total Dissolved Solids (TDS) in G401, G402, G404, G405, and G407

Alternative Source Demonstrations (ASDs) were completed on December 15, 2023 for the cobalt GWPS exceedance at G401 and for the sulfate and TDS GWPS exceedances at G407 detected during the Quarter 2, 2023 sampling event (Geosyntec Consultants, Inc., 2023). The IEPA provided written responses on January 11, 2024 that it did not concur with the ASDs. These documents were included in the 2023 Annual Groundwater Monitoring and Corrective Action

¹ Throughout this document, "exceedance" or "exceedances" is intended to refer only to potential exceedances of proposed applicable background statistics or GWPSs as described in the proposed groundwater monitoring program which was submitted to the IEPA on October 25, 2021 as part of IPGC's operating permit application for the CPP AP2. That operating permit application, including the proposed groundwater monitoring program, remains under review by the IEPA and, therefore, IPGC has not identified any actual exceedances.

Report (Ramboll, 2024d). As allowed by 35 I.A.C. § 845.650(e)(7), IPGC filed petitions with the Illinois Pollution Control Board (IPCB; case numbers 2024-055³ and 2024-056⁴) on February 20, 2024 for review of IEPA's non-concurrence and requested a partial stay of the requirements of 35 I.A.C. §§ 845.650(d), 845.660, 845.670, and 845.680 as they apply to the exceedances of the cobalt GWPS detected at G401 and the exceedances of the sulfate and TDS GWPSs detected at G407. These requests were unopposed by the IEPA and the IPCB granted them on April 18, 2024.

An ASD was not completed for the remaining GWPS exceedances listed above; therefore, an assessment of corrective measures (CMA) was initiated in accordance with 35 I.A.C. § 845.650(d)(3) on January 14, 2024. A CMA extension request was submitted to IEPA on January 15, 2024 and approved on January 17, 2024. The CMA extension request and IEPA approval letter were included in the 2023 Annual Groundwater Monitoring and Corrective Action Report (Ramboll, 2024d). The CMA was completed in accordance with 35 I.A.C. § 845.660 and submitted to IEPA on June 12, 2024 (Ramboll, 2024e). In accordance with 35 I.A.C. § 845.670, a semiannual report describing the progress in selecting and designing a groundwater corrective action remedy and developing a corrective action plan was submitted to IEPA on December 12, 2024.

As required by 35 I.A.C. § 845.670, a corrective action plan that identifies the selected remedy must be submitted to IEPA within one year after completing the CMA. Activities currently ongoing in support of developing the corrective action plan include development of a corrective action alternatives analysis, human health and ecological risk assessment, and supporting technical documents. Accordingly, a public meeting will be held prior to selection of a remedy in accordance with 35 I.A.C. § 845.660(d) and a corrective action plan will be submitted to IEPA on or before June 12, 2025. Upon selection of a remedy, a permit application will be submitted to IEPA identifying the proposed corrective action. Remedial activities have not been initiated under 35 I.A.C. § 845.780 in 2024.

In accordance with 35 I.A.C. § 845.610(b)(3)(B), constituent concentrations observed at compliance monitoring wells were also evaluated quarterly for exceedances over statistical background levels (**Attachment B**).

³ <https://pcb.illinois.gov/Cases/GetCaseDetailsById?caseId=17466>

⁴ <https://pcb.illinois.gov/Cases/GetCaseDetailsById?caseId=17467>

1. INTRODUCTION

This report has been prepared by Ramboll on behalf of IPGC, to provide the information required by 35 I.A.C. § 845.610(e) for AP2 located at CPP near Coffeen, Illinois. The owner or operator of a CCR surface impoundment (SI) must prepare and submit to IEPA by January 31st of each year an Annual Groundwater Monitoring and Corrective Action Report for the preceding calendar year as part of the Annual Consolidated Report required by 35 I.A.C. § 845.550. The Annual Groundwater Monitoring and Corrective Action Report shall document the status of the groundwater monitoring and corrective action plan for the CCR SI (**Section 2**), summarize key actions completed, including the status of permit applications and Agency approvals (**Section 3**), describe any problems encountered and actions to resolve the problems (**Section 4**), and project key activities for the upcoming year (**Section 5**).

At a minimum, the annual report must contain the following information, to the extent available:

- A. A map, aerial image, or diagram showing the CCR SI and all background (or upgradient) and [downgradient] compliance monitoring wells, including the well identification numbers, that are part of the groundwater monitoring program for the CCR surface SI (**Figure 1**) and a visual delineation of any exceedances of the [groundwater protection standard] GWPS (**Figures 2 and 3**).
- B. Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken (**Section 3**, paragraph 1).
- C. A potentiometric surface map for each groundwater elevation sampling event required by 35 I.A.C. § 845.650(b)(2) (**Figures 4 through 15**).
- D. In addition to all the monitoring data obtained under 35 I.A.C. §§ 845.600-680, a summary including the number of groundwater samples that were collected for analysis for each background and [downgradient] compliance well, and the dates the samples were collected (**Section 3.1** and **Table A**).
- E. A narrative discussion of any statistically significant increases (SSIs) over background levels for the constituents listed in 35 I.A.C. § 845.600 (**Section 3.3** and **Attachment B**).
- F. Other information required to be included in the annual report as specified in 35 I.A.C. §§ 845.600-680.

A section at the beginning of the annual report must provide an overview of the current status of the groundwater monitoring program and corrective action plan for the CCR SI (see **Executive Summary**). At a minimum, the summary must:

- A. Specify whether groundwater monitoring data shows an SSI over background concentrations for one or more constituents listed in 35 I.A.C. § 845.600.
- B. Identify those constituents having an SSI over background concentrations and the names of the monitoring wells associated with the SSI(s).
- C. Specify whether there have been any exceedances of the GWPS for one or more constituents listed in 35 I.A.C. § 845.600.

- D. Identify those constituents with exceedances of the GWPS in 35 I.A.C. § 845.600 and the names of the monitoring wells associated with the exceedance.
- E. Provide the date when the assessment of corrective measures was initiated for the CCR SI.
- F. Provide the date when the assessment of corrective measures was completed for the CCR SI.
- G. Specify whether a remedy was selected under 35 I.A.C. § 845.670 during the current annual reporting period, and if so, the date of remedy selection.
- H. Specify whether remedial activities were initiated or are ongoing under 35 I.A.C. § 845.780 during the current annual reporting period.

This report provides the required information for the CPP AP2 for calendar year 2024.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

An operating permit application for AP2 was submitted by IPGC to IEPA by October 31, 2021 in accordance with the requirements specified in 35 I.A.C. § 845.230(d) and is pending approval. IPGC entered into a CCA with the IEPA on December 28, 2022. The CCA required that groundwater monitoring in accordance with the proposed groundwater monitoring plan and sampling methodologies provided in the operating permit application for AP2 commence in the second quarter of 2023. After AP2 has been issued an approved operating permit, groundwater monitoring shall be conducted in accordance with that operating permit. As specified in the CCA, groundwater sampling requirements that apply to the CCR SI under other existing permit programs will become void upon issuance of an approved operating permit pursuant to 35 I.A.C § 845.

A closure construction permit application for AP2 was also submitted by IPGC to IEPA on July 28, 2022 in accordance with the requirements specified in 35 I.A.C. § 845.220(a) and (d) and is pending approval.

As noted in the **Executive Summary**, GWPS exceedances were determined for AP2 in 2024. ASDs were completed on December 15, 2023 for the cobalt GWPS exceedance at G401 and for the sulfate and TDS GWPS exceedances at G407. The IEPA provided written responses on January 11, 2024 that it did not concur with the ASDs. These documents were included in the 2023 Annual Groundwater Monitoring and Corrective Action Report (Ramboll, 2024d). As allowed by 35 I.A.C. § 845.650(e)(7), IPGC filed petitions with the IPCB (case numbers 2024-055 and 2024-056) on February 20, 2024 for review of IEPA's non-concurrence and requested a partial stay of the requirements of 35 I.A.C. §§ 845.650(d), 845.660, 845.670, and 845.680 as they apply to the exceedances of the cobalt GWPS detected at G401 and the exceedances of the sulfate and TDS GWPSs detected at G407. These requests were unopposed by the IEPA and the IPCB granted them on April 18, 2024.

An ASD was not completed for the remaining GWPS exceedances; therefore, a CMA was initiated on January 14, 2024. A CMA extension request was submitted to IEPA on January 15, 2024 and approved on January 17, 2024. The CMA extension request and IEPA approval letter were included in the 2023 Annual Groundwater Monitoring and Corrective Action Report (Ramboll, 2024d).

The CMA was completed in accordance with 35 I.A.C. § 845.660 and submitted to IEPA on June 12, 2024 (Ramboll, 2024e). In accordance with 35 I.A.C. § 845.670, a semiannual report describing the progress in selecting and designing a groundwater corrective action remedy and developing a corrective action plan was submitted to IEPA on December 12, 2024.

As required by 35 I.A.C. § 845.670, a corrective action plan that identifies the selected remedy must be submitted to IEPA within one year after completing the CMA. Activities currently ongoing in support of developing the corrective action plan include development of a corrective action alternatives analysis, human health and ecological risk assessment, and supporting technical documents. Accordingly, a public meeting will be held prior to selection of a remedy in accordance with 35 I.A.C. § 845.660(d) and a corrective action plan will be submitted to IEPA on

or before June 12, 2025. Upon selection of a remedy, a permit application will be submitted to IEPA identifying the proposed corrective action.

3. KEY ACTIONS COMPLETED IN 2024

The proposed 35 I.A.C. § 845 monitoring system is presented in **Figure 1**. No wells were installed or decommissioned in 2024.

Monthly groundwater level elevations were collected in 2024 as required by 35 I.A.C. § 845.650(b)(2). **Attachment A** summarizes the groundwater elevation data collected in 2024⁵. Potentiometric surfaces for January through December 2024 are included in **Figures 4 through 15**.

A summary of the samples collected in 2024 is included in **Section 3.1**. Narrative discussions of exceedances of GWPSs and background are included in **Section 3.2** and **Section 3.3**, respectively. Statistical procedures used to evaluate groundwater results are provided in Appendix A of the Groundwater Monitoring Plan provided in the operating permit application (Ramboll, 2021).

3.1 Sample and Analysis Summary

One groundwater sample was collected from each background and compliance well during each quarterly monitoring event in 2024. All samples were collected and analyzed in accordance with the Groundwater Monitoring Plan provided in the operating permit application (Ramboll, 2021). A summary of the samples collected from background and compliance monitoring wells in 2024 is included in **Table A** on the following page. **Table 1** is a summary of the field parameters and analytical results from the 2024 sampling events. Laboratory analytical reports and field data sheets are attached to the quarterly Groundwater Monitoring Data and Detected Exceedances Reports for Quarters 1 through 3 (Ramboll, 2024a; Ramboll, 2024b; Ramboll, 2024c); therefore, these reports are not attached to this annual report to avoid reproduction of lengthy data transmittals that have been previously provided in hardcopy. Analytical data received after December 31, 2024 will be reported in the Quarter 4, 2024 Groundwater Monitoring Data and Detected Exceedances Report.

⁵ Monitoring well G1003 has not had measurable amounts of water since its construction in 2021; therefore, groundwater elevation data were not recorded.

SG-04, located on the unnamed tributary, was destroyed following a rain event in October 2023; therefore, groundwater elevation data were not recorded during 2024.

Table A. 35 I.A.C. § 845 Monitoring Program Summary for 2024

Event ID	Sampling Dates ^{1, 2, 3}	Analytical Data Receipt Date	Exceedance Determination Date	ASD Completion Date
E004	February 15-21, 2024	April 8, 2024	June 7, 2024	NA
E005	April 29 - May 8, 2024	June 17, 2024	August 16, 2024	NA
E006	July 30 - August 7, 2024	September 13, 2024	November 12, 2024	NA
E007	October 29 – November 7, 2024	December 19, 2024	TBD ⁴	TBD

Notes:

ASD: Alternative Source Demonstration

CMA: Corrective Measures Assessment

NA: not applicable

TBD: to be determined after January 31, 2025

¹ All samples were analyzed for the parameters listed in 35 I.A.C. § 845.600, calcium, and turbidity.

² The following background wells were sampled for each event: G270, G280, and G281

³ The following compliance wells were sampled for each event: G401, G402, G403, G404, G405, G406, G407, and G1001

⁴ GWPS exceedances determined after January 31, 2025 will be reported in the Quarter 4, 2024 Groundwater Monitoring Data and Detected Exceedances Report.

3.2 Exceedances of GWPS

In accordance with 35 I.A.C. § 845.610(b)(3)(C), the constituent concentrations observed at compliance monitoring wells identified as Statistical Results in **Table 2** were compared with the GWPSs described in 35 I.A.C. § 845.600 to determine exceedances of the GWPS. The following exceedances of the GWPSs were determined and are shown on **Figures 2 and 3**⁶:

- Boron in G401, G402, G404, and G405
- Cobalt in G401
- pH in G401
- Sulfate in G401, G404, G405, G406, and G407
- TDS in G401, G402, G404, G405, and G407

Response actions for these exceedances are summarized in **Section 2**.

3.3 Exceedances of Background

In accordance with 35 I.A.C. § 845.610(b)(3)(B), constituent concentrations observed at compliance monitoring wells were also evaluated quarterly for exceedances over statistical background levels for the constituents listed in 35 I.A.C. § 845.600. **Attachment B** shows the constituent concentrations compared to statistical background levels.

⁶ GWPS exceedances determined after January 31, 2025 will be reported in the Quarter 4, 2024 Groundwater Monitoring Data and Detected Exceedances Report.

4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

Quarterly groundwater monitoring was completed in 2024. Groundwater samples were collected and analyzed in accordance with the Groundwater Monitoring Plan provided in the operating permit application (Ramboll, 2021) and all data were accepted. After AP2 has been issued an approved operating permit, groundwater monitoring shall be conducted in accordance with that operating permit.

5. KEY ACTIVITIES PLANNED FOR 2025

The following key activities are planned for 2025:

- Continuation of groundwater monitoring in accordance with the proposed groundwater monitoring plan and sampling methodologies provided in the operating permit application for AP2. After AP2 has been issued an approved operating permit, groundwater monitoring shall be conducted in accordance with that operating permit. Groundwater monitoring will include:
 - Monthly groundwater elevations
 - Quarterly groundwater sampling
- Complete evaluation of analytical data from the compliance wells to determine whether exceedances above GWPSs have occurred.
- If a GWPS exceedance is identified, potential alternative sources (*i.e.*, a source other than the CCR unit caused the GWPS exceedance or that the exceedance resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated.
 - If an alternative source is identified to be the cause of the GWPS exceedance, a written demonstration will be completed within 60 days of determination and included in the 2025 Annual Groundwater Monitoring and Corrective Action Report.
 - If an alternative source(s) is not identified to be the cause of the GWPS exceedance, the applicable requirements of 35 I.A.C. § 845.660 will be met.
- A public meeting will be held prior to selection of a remedy in accordance with 35 I.A.C. § 845.660(d).
- A corrective action plan will be submitted to IEPA on or before June 12, 2025 as required by 35 I.A.C. § 845.670.
- Upon selection of a remedy, a permit application will be submitted to IEPA identifying the proposed corrective action.

6. REFERENCES

Illinois Administrative Code, Title 35, Subtitle G, Chapter I, Subchapter J, Part 845: Standards for The Disposal Of Coal Combustion Residuals In Surface Impoundments, effective April 21, 2021.

Geosyntec Consultants, Inc., 2023. Alternative Source Demonstration, Ash Pond No. 2, Coffeen Power Plant, Coffeen, Illinois, IEPA ID No. W1350150004-02, 35 I.A.C. § 845.650. December 2023. <https://www.luminant.com/documents/ccr/il-ccr/Coffeen/2023/2023%2012%2015%20Coffeen%20AP2%20845.650%20Cobalt%20ASD-W1350150004%E2%80%90002.pdf>

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2021. *Groundwater Monitoring Plan*. Coffeen Power Plant, Ash Pond No. 2, Coffeen, Illinois. IPGC. October 25, 2021.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2024a. 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances, 2024 Quarter 1, Ash Pond No. 2, Coffeen Power Plant, Coffeen, Illinois. June 7, 2024. <https://www.luminant.com/documents/ccr/il-ccr/Coffeen/2024/2024-Coffeen%20AP2%202024%201st%20qtr%2035%20IAC%20845%20GW%20report-Coffeen-Ash%20Pond%202-W1350150004%E2%80%90002.pdf>

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2024b. 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances, 2024 Quarter 2, Ash Pond No. 2, Coffeen Power Plant, Coffeen, Illinois. August 16, 2024. <https://www.luminant.com/documents/ccr/il-ccr/Coffeen/2024/2024-Coffeen%20AP2%202024%202nd%20qtr%2035%20IAC%20845%20GW%20report-Coffeen-Ash%20Pond%202-W1350150004%E2%80%90002.pdf>

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 202

TABLES

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 1, 2024
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G270	Background	E004	02/19/2024	Antimony, total	0.0007 U	mg/L
G270	Background	E004	02/19/2024	Arsenic, total	0.00150 J+	mg/L
G270	Background	E004	02/19/2024	Barium, total	0.0631	mg/L
G270	Background	E004	02/19/2024	Beryllium, total	0.0002 U	mg/L
G270	Background	E004	02/19/2024	Boron, total	0.02 UJ	mg/L
G270	Background	E004	02/19/2024	Cadmium, total	0.0002 U	mg/L
G270	Background	E004	02/19/2024	Calcium, total	58.9	mg/L
G270	Background	E004	02/19/2024	Chloride, total	12.0	mg/L
G270	Background	E004	02/19/2024	Chromium, total	0.00480 J+	mg/L
G270	Background	E004	02/19/2024	Cobalt, total	0.00140 J+	mg/L
G270	Background	E004	02/19/2024	Dissolved Oxygen	2.98	mg/L
G270	Background	E004	02/19/2024	Fluoride, total	0.340	mg/L
G270	Background	E004	02/19/2024	Lead, total	0.00200	mg/L
G270	Background	E004	02/19/2024	Lithium, total	0.00480	mg/L
G270	Background	E004	02/19/2024	Mercury, total	0.00006 U	mg/L
G270	Background	E004	02/19/2024	Molybdenum, total	0.0015 UJ	mg/L
G270	Background	E004	02/19/2024	Oxidation Reduction Potential	147	mV
G270	Background	E004	02/19/2024	pH (field)	7.2	SU
G270	Background	E004	02/19/2024	Radium 226 + Radium		

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 1, 2024
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G280	Background	E004	02/20/2024	Specific Conductance @ 25C (field)	883	micromhos/cm
G280	Background	E004	02/20/2024	Sulfate, total	101	mg/L
G280	Background	E004	02/20/2024	Temperature	12.2	degrees C
G280	Background	E004	02/20/2024	Thallium, total	0.001 U	mg/L
G280	Background	E004	02/20/2024	Total Dissolved Solids	530	mg/L
G280	Background	E004	02/20/2024	Turbidity, field	27.0	NTU
G281	Background	E004	02/15/2024	Antimony, total	0.0004 U	mg/L
G281	Background	E004	02/15/2024	Arsenic, total	0.001 UJ	mg/L
G281	Background	E004	02/15/2024	Barium, total	0.0785	mg/L
G281	Background	E004	02/15/2024	Beryllium, total	0.0002 U	mg/L
G281	Background	E004	02/15/2024	Boron, total	0.02 UJ	mg/L
G281	Background	E004	02/15/2024	Cadmium, total	0.0002 U	mg/L
G281	Background	E004	02/15/2024	Calcium, total	151	mg/L
G281	Background	E004	02/15/2024	Chloride, total	75.0	mg/L
G281	Background	E004	02/15/2024	Chromium, total	0.00310 J+	mg/L
G281	Background	E004	02/15/2024	Cobalt, total	0.001 UJ	mg/L
G281	Background	E004	02/15/2024	Dissolved Oxygen	2.53	mg/L
G281	Background	E004	02/15/2024	Fluoride, total	0.270	mg/L
G281	Background	E004	02/15/2024	Lead, total	0.001	

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 1, 2024
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G407	Compliance	E004	02/20/2024	Oxidation Reduction Potential	141	mV
G407	Compliance	E004	02/20/2024	pH (field)	6.8	SU
G407	Compliance	E004	02/20/2024	Radium 226 + Radium 228, total	0.644	pCi/L
G407	Compliance	E004	02/20/2024	Selenium, total	0.0006 U	mg/L
G407	Compliance	E004	02/20/2024	Specific Conductance @ 25C (field)	1,850	micromhos/cm
G407	Compliance	E004	02/20/2024	Sulfate, total	1,130	mg/L
G407	Compliance	E004	02/20/2024	Temperature	13.0	degrees C
G407	Compliance	E004	02/20/2024	Thallium, total	0.001 U	mg/L
G407	Compliance	E004	02/20/2024	Total Dissolved Solids	1,900 J-	mg/L
G407	Compliance	E004	02/20/2024	Turbidity, field	6.80	NTU

Notes:
C = Celsius
cm = centimeter
mg/L = milligrams per liter
mV = millivolts
NTU = Nephelometric Turbidity Units
pCi/L = picocuries per liter
SU = Standard Units
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J- = The result is an estimated quantity, but the result may be biased low.
J+ = The result is an estimated quantity, but the result may be biased high.
U = The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 2, 2024
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G407	Compliance	E005	04/29/2024	Oxidation Reduction Potential	97.0	mV
G407	Compliance	E005	04/29/2024	pH (field)	6.7	SU
G407	Compliance	E005	04/29/2024	Radium 226 + Radium 228, total	0.42	pCi/L
G407	Compliance	E005	04/29/2024	Selenium, total	0.0006 U	mg/L
G407	Compliance	E005	04/29/2024	Specific Conductance @ 25C (field)	2,210	micromhos/cm
G407	Compliance	E005	04/29/2024	Sulfate, total	966	mg/L
G407	Compliance	E005	04/29/2024	Temperature	14.8	degrees C
G407	Compliance	E005	04/29/2024	Thallium, total	0.001 U	mg/L
G407	Compliance	E005	04/29/2024	Total Dissolved Solids	1,910	mg/L
G407	Compliance	E005	04/29/2024	Turbidity, field	71.0	NTU

Notes:
C = Celsius
cm = centimeter
mg/L = milligrams per liter
mV = millivolts
NTU = Nephelometric Turbidity Units
pCi/L = picocuries per liter
SU = Standard Units
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+ = The result is an estimated quantity, but the result may be biased high.
U = The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 3, 2024
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G407	Compliance	E006	08/01/2024	Oxidation Reduction Potential	215	mV
G407	Compliance	E006	08/01/2024	pH (field)	6.8	SU
G407	Compliance	E006	08/01/2024	Radium 226 + Radium 228, total	3.4	pCi/L
G407	Compliance	E006	08/01/2024	Selenium, total	0.0006 U	mg/L
G407	Compliance	E006	08/01/2024	Specific Conductance @ 25C (field)	2,110	micromhos/cm
G407	Compliance	E006	08/01/2024	Sulfate, total	952	mg/L
G407	Compliance	E006	08/01/2024	Temperature	17.4	degrees C
G407	Compliance	E006	08/01/2024	Thallium, total	0.001 U	mg/L
G407	Compliance	E006	08/01/2024	Total Dissolved Solids	1,770	mg/L
G407	Compliance	E006	08/01/2024	Turbidity, field	29.0	NTU

Notes:
C = Celsius
cm = centimeter
mg/L = milligrams per liter
Missing Code (if applicable):
NR¹ = Select parameters were not analyzed.
NS¹ = This well has been, or will be, abandoned; therefore, a sample was not collected.
NS² = Well either needs or was undergoing maintenance, therefore, a sample was not collected.
NS³ = A sample was not collected because the location was inaccessible.
NS⁴ = The location could not be found, therefore a sample was not collected.
NS⁵ = A sample was not collected because of damage to the well.
NS⁶ = A sample was not collected because of pump issues.
NS⁷ = A sample was not collected because the well was either dry or was purged dry and did not recover.
PM¹ = Select parameters were not analyzed as the well purged dry during sample collection and did not sufficiently recover to sample for all parameters.
mV = millivolts
NTU = Nephelometric Turbidity Units
pCi/L = picocuries per liter
SU = Standard Units
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 4, 2024
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G407	Compliance	E007	11/04/2024	Oxidation Reduction Potential	29.0	mV
G407	Compliance	E007	11/04/2024	pH (field)	6.6	SU
G407	Compliance	E007	11/04/2024	Radium 226 + Radium 228, total	0.0857	pCi/L
G407	Compliance	E007	11/04/2024	Selenium, total	0.0006 U	mg/L
G407	Compliance	E007	11/04/2024	Specific Conductance @ 25C (field)	1,710	micromhos/cm
G407	Compliance	E007	11/04/2024	Sulfate, total	977	mg/L
G407	Compliance	E007	11/04/2024	Temperature	17.3	degrees C
G407	Compliance	E007	11/04/2024	Thallium, total	0.001 U	mg/L
G407	Compliance	E007	11/04/2024	Total Dissolved Solids	1,830	mg/L
G407	Compliance	E007	11/04/2024	Turbidity, field	2.60	NTU

Notes:
C = Celsius
cm = centimeter
Events:
E007 = Quarter 4, 2024 sampling event
mg/L = milligrams per liter
mV = millivolts
NTU = Nephelometric Turbidity Units
pCi/L = picocuries per liter
Result Code (if applicable):
NR¹ = Parameter not analyzed.
NS¹ = Well has been, or will be, abandoned; therefore, a sample was not collected.
NS² = Well either needs or was undergoing maintenance; therefore, a sample was not collected.
NS³ = The location was not accessible; therefore, a sample was not collected.
NS⁴ = The location could not be found; therefore, a sample was not collected.
NS⁵ = The location was damaged; therefore, a sample was not collected.
NS⁶ = Sampling pump could not yield a sample.
NS⁷ = Well was either dry or purged dry and did not recover sufficiently to yield adequate volume for a sample.
NS⁸ = A sample was not collected.
PM¹ = Parameter not analyzed as the well purged dry during sample collection and did not sufficiently recover to yield adequate sample volume for analysis.
Result qualifiers as defined in the United States Environmental Protection Agency’s *National Functional Guidelines for Inorganic Superfund Methods Data Review*, EPA 542-R-20-006. November 2020.:
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
U = The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
SU = Standard Units

TABLE 2.
EVALUATION OF COMPLIANCE - QUARTER 1, 2024
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Notes:

Compliance Result:

No Exceedance: the statistical result did not exceed the GWPS.

Exceedance: The statistical result exceeded the GWPS.

HSU = hydrostratigraphic unit:

LCU = Lower Confining Unit

UA = Uppermost Aquifer

mg/L = milligrams per liter

ND = non-detect

pCi/L = picocuries per liter

SU = standard units

Sample Count = number of samples from Sampled Date Range used to calculate the Statistical Result

Statistical Calculation = method used to calculate the statistical result:

All ND - Last = All results were below the reporting limit, and the last determined reporting limit is shown

CB around T-S line = Confidence band around Thiel-Sen line

CB around linear reg = Confidence band around linear regression

CI around geomean = Confidence interval around the geometric mean

CI around mean = Confidence interval around the mean

CI around median = Confidence interval around the median

Most recent sample = Result for the most recently collected sample used due to insufficient data

Statistical Result = calculated in accordance with the Statistical Analysis Plan using constituent concentrations observed at each monitoring well during all sampling events within the specified date range

For pH, the values presented are the lower / upper limits

GWPS = Groundwater Protection Standard

GWPS Source:

Standard = standard specified in 35 I.A.C. § 845.600(a)(1)

Background = background concentration (see cover page for additional information)

