



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

January 30, 2024

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) 2023 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 that reads "Dianna Tickner".

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 2023

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

Reporting Year: 4th Quarter 2022 through 3rd Quarter 2023

Approved by:  Director, Decommissioning and Demolition
Name 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 10/2/2023
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 potential to disrupt the operation and safety of the CCR unit	Based on a review of the CCR unit's records and visual observation during the on-site inspection, there was no appearance of an actual or potential structural weakness of the CCR unit, nor an existing condition that is disrupting or would disrupt the operation and safety of the unit.

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: 1/07/2024

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	623.77'
P010	Piezometer	616.71'
P012	Piezometer	621.87'
P014	Piezometer	612.78'

35 IAC § 845.540 (b)(2)(C)						
Since previous inspection:	Approximate Depth / Elevation					
	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, 2024

Project No.
1940103649-004

**2023 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**

**2023 35 I.A.C. § 845 ANNUAL GROUNDWATER
MONITORING AND CORRECTIVE ACTION REPORT
COFFEEN POWER PLANT ASH POND NO. 2**

Project name **Coffeen Power Plant Ash Pond No. 2**
Project no. **1940103649-004**
Recipient **Illinois Power Generating Company**
Document type **Annual Groundwater Monitoring and Corrective Action Report**
Version **FINAL**
Date **January 31, 2024**
Prepared by **Kristen L. Theesfeld**
Checked by **Lauren D. Cook**
Approved by **Brian G. Hennings, PG**
Description **Annual Report required by 35 I.A.C. § 845**

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TABLES (IN TEXT)

Table A 35 I.A.C. § 845 Monitoring Program Summary for 2023

TABLES (ATTACHED)

Table 1 Field Parameters and Analytical Results – Quarter 2, 2023
Field Parameters and Analytical Results – Quarter 3, 2023

Table 2 Comparison of Statistical Results to GWPS – Quarter 2, 2023
Comparison of Statistical Results to GWPS – Quarter 3, 2023

FIGURES (ATTACHED)

Figure 1 Monitoring Well Location Map

Figure 2 GWPS Exceedance Map Uppermost Aquifer, Quarters 2-3, 2023

Figure 3 GWPS Exceedance Map Lower Confining Unit, Quarters 2-3, 2023

Figure 4 Potentiometric Surface Map, April 30, 2023

Figure 5 Potentiometric Surface Map, May 30, 2023

Figure 6 Potentiometric Surface Map, June 8, 2023

Figure 7 Potentiometric Surface Map, July 8, 2023

Figure 8 Potentiometric Surface Map, August 8, 2023

Figure 9 Potentiometric Surface Map, September 25, 2023

Figure 10 Potentiometric Surface Map, October 24 and 25, 2023

Figure 11 Potentiometric Surface Map, November 13, 2023

Figure 12 Potentiometric Surface Map, December 18, 2023

ATTACHMENTS

Attachment A Groundwater Elevation Data

Attachment B Alternative Source Demonstrations and IEPA Denial Letters

Attachment C Corrective Measures Assessment Extension Request and IEPA Approval Letter

Attachment D Comparison of Statistical Results to Background – Quarter 2, 2023
Comparison of Statistical Results to Background – Quarter 3, 2023

ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
AP2	Ash Pond No. 2
CCA	compliance commitment agreement
CCR	coal combustion residuals
CMA	assessment of corrective measures
CPP	Coffeen Power Plant
E001	Quarter 2, 2023 sampling event
E002	Quarter 3, 2023 sampling event
E003	Quarter 4, 2023 sampling event
GWPS	groundwater protection standard
ID	identification
IEPA	Illinois Environmental Protection Agency
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
TDS	total dissolved solids

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.

AP2 was closed in accordance with the Closure and Post Closure Care Plan submitted to IEPA in January 2017. IEPA approved the Closure and Post-Closure Care Plan on January 30, 2018. Closure construction began in August of 2019 and was completed in November of 2020.

As required by 35 I.A.C. § 845, an operating permit application for AP2 was submitted by Illinois Power Generating Company (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 compliance commitment agreement (CCA) with 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. All available groundwater monitoring data collected in 2023 is summarized in **Table 1** (field parameters and analytical results) and **Attachment A** (groundwater elevation data)¹. 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]), statistically derived values for constituent concentrations observed at compliance monitoring wells were compared with the groundwater protection standards (GWPSs) described in 35 I.A.C. § 845.600 to determine exceedances of the GWPS (**Table 2**). The following GWPS exceedances were determined in 2023²:

- Boron in G401, G402, G404, and G405
- Cobalt in G401
- pH in G401
- Sulfate in G401, G402, 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. The ASDs were denied by IEPA on January 11, 2024 (**Attachment B**). Therefore, the GWPS exceedances will be addressed in accordance with 35 I.A.C. § 845.660. The assessment of corrective measures (CMA) was initiated on January 14, 2024. A CMA extension request was submitted to

¹ Analytical data received after December 31, 2023 will be reported in the Quarter 4, 2023 Groundwater Monitoring Data and Detected Exceedances Report.

² GWPS exceedances determined after January 31, 2024 will be reported in the Quarter 4, 2023 Groundwater Monitoring Data and Detected Exceedances Report.

IEPA on January 15, 2024 and was approved on January 17, 2024 (**Attachment C**). Because the CMA is in progress, a remedy has not yet been selected under 35 I.A.C. § 845.670 and remedial activities have not been initiated under 35 I.A.C. § 845.780 in 2023.

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

1. INTRODUCTION

This report has been prepared by Ramboll Americas Engineering Solutions, Inc. (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 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 12**).
- 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 D**).
- 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 that provides 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 AP2 for calendar year 2023.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

AP2 was closed in accordance with the Closure and Post Closure Care Plan submitted to IEPA in January 2017. IEPA approved the Closure and Post-Closure Care Plan on January 30, 2018. Closure construction began in August of 2019 and was completed in November of 2020.

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 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. 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.

As noted in the **Executive Summary** and **Section 3.2**, GWPS exceedances were determined for AP2 in 2023. ASDs were completed for the cobalt GWPS exceedance at G401 and for the sulfate and TDS GWPS exceedances at G407. The ASDs were denied by IEPA on January 11, 2024 (**Attachment B**). Therefore, the GWPS exceedances will be addressed in accordance with 35 I.A.C. § 845.660. The CMA was initiated on January 14, 2024. A CMA extension request was submitted to IEPA on January 15, 2024 and was approved on January 17, 2024 (**Attachment C**). Because the CMA is in progress, a remedy has not yet been selected under 35 I.A.C. § 845.670 and remedial activities have not been initiated under 35 I.A.C. § 845.780 in 2023.

3. KEY ACTIONS COMPLETED IN 2023

The proposed 35 I.A.C. § 845 monitoring system is presented in **Figure 1**. No wells were installed or decommissioned in 2023.

Monitoring well inspections and redevelopment of the monitoring wells that were not sampled in 2022 were also completed prior to initiating groundwater monitoring in the second quarter of 2023.

Pressure transducers equipped with data loggers were deployed in monitoring system monitoring wells for measurement of monthly water level elevations as required by 35 I.A.C. § 845.650(b)(2). **Attachment A** summarizes the groundwater elevation data collected in 2023. Potentiometric surfaces for April through December 2023 are included in **Figures 4 through 12**.³

A summary of the samples collected in 2023 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 beginning in the second quarter of 2023.⁴ 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 2023 is included in **Table A** on the following page. **Table 1** is a summary of the field parameters and analytical results from the 2023 sampling events. Laboratory analytical reports and field data sheets were provided in the quarterly Groundwater Monitoring Data and Detected Exceedances Reports for Quarter 2 and Quarter 3 (Ramboll, 2023b; Ramboll, 2023c); 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, 2023 will be reported in the Quarter 4, 2023 Groundwater Monitoring Data and Detected Exceedances Report.

³ Staff gage SG-04 was observed as damaged in October 2023; no groundwater elevations were recorded.

⁴ Compliance monitoring well G1001 was indicated as dry during August 2023 and no groundwater sample was collected.

Table A. 35 I.A.C. § 845 Monitoring Program Summary for 2023

Event ID	Sampling Dates ^{1, 2, 3}	Analytical Data Receipt Date ⁴	Exceedance Determination Date	ASD Completion Date	Required CMA Initiation Date ⁵
E001	May 31, 2023 June 6 - 8, 2023	August 17, 2023	October 16, 2023	December 15, 2023	January 14, 2024
E002 ⁶	August 10 – 11 and 14, 2023	November 21, 2023	January 20, 2024	TBD	TBD
E003	November 17 and 20 – 21, 2023	January 10, 2024	TBD	TBD	TBD

Notes:

ASD: Alternative Source Demonstration

CMA: assessment of corrective measures

NA: not applicable

TBD: to be determined in 2024

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: G1001, G401, G402, G403, G404, G405, G406, and G407

⁴ Analytical data received after December 31, 2023 and GWPS exceedances determined after January 31, 2024 will be reported in the Quarter 4, 2023 Groundwater Monitoring Data and Detected Exceedances Report.

⁵ Exceedances for events E002 and E003 may be incorporated into the CMA initiated after event E001 on a case by case basis, as opposed to generating a new CMA.

⁶ Compliance monitoring well G1001 was indicated as dry during August 2023 and no groundwater sample was collected.

3.2 Exceedances of GWPS

In accordance with 35 I.A.C. § 845.610(b)(3)(C), the statistically derived values 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 statistical exceedances of the GWPSs were determined and are shown on **Figures 2 and 3**⁵:

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

As allowed in 35 I.A.C. § 845.650(e), an ASD was evaluated for the detected exceedances of the GWPS summarized above.

ASDs were completed for the cobalt GWPS exceedance at G401 and for the sulfate and TDS GWPS exceedances at G407. The ASDs were denied by IEPA on January 11, 2024. The exceedances listed above will be addressed in accordance with 35 I.A.C. § 845.660. The 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. Because the CMA is in progress, a remedy was not selected under 35 I.A.C. § 845.670 and remedial activities have not been initiated under 35 I.A.C. § 845.780 in 2023.

3.3 Exceedances of Background

In accordance with 35 I.A.C. § 845.610(b)(3)(B), groundwater monitoring data were evaluated for statistical exceedances over background levels for the constituents listed in 35 I.A.C. § 845.600. **Attachment D** shows the statistically derived values compared to background levels.

⁵ GWPS exceedances determined after January 31, 2024 will be reported in the Quarter 4, 2023 Groundwater Monitoring Data and Detected Exceedances Report.

4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

Groundwater monitoring commenced in the second quarter of 2023. 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.

Due to malfunctioning pressure transducers, data gaps exist in monthly water level elevations prior to the fourth quarter. Monthly depth to water measurements were collected manually in the fourth quarter. Pressure transducers were refurbished and were redeployed in December 2023. SG-04 located on the unnamed tributary was destroyed following a rain event in October 2023; alternative construction methods for monitoring at this location are being evaluated.

5. KEY ACTIVITIES PLANNED FOR 2024

The following key activities are planned for 2024:

- 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 2024 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 (*i.e.*, assessment of corrective measures) will be met.
- The CMA process will continue in accordance with 35 I.A.C. § 845.660 in 2024. A CMA extension request was submitted to IEPA January 15, 2024 and was approved on January 17, 2024. The CMA will be submitted to IEPA on or before June 12, 2024.

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.

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

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2023. 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances, 2023 Quarter 2, Ash Pond No. 2, Coffeen Power Plant, Coffeen, Illinois. October 16, 2023.

Ramboll Americas Engineering Solutions, Inc. (Ramboll), 2024. 35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances, 2024 Quarter 3, Ash Pond No. 2, Coffeen Power Plant, Coffeen, Illinois. January 20, 2024.

TABLES

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 2, 2023

845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G270	Background	E001	06/08/2023	Antimony, total	0.00043 U	mg/L
G270	Background	E001	06/08/2023	Arsenic, total	0.00110	mg/L
G270	Background	E001	06/08/2023	Barium, total	0.0640	mg/L
G270	Background	E001	06/08/2023	Beryllium, total	0.00059 U	mg/L
G270	Background	E001	06/08/2023	Boron, total	0.0140	mg/L
G270	Background	E001	06/08/2023	Cadmium, total	0.00074 U	mg/L
G270	Background	E001	06/08/2023	Calcium, total	57.0	mg/L
G270	Background	E001	06/08/2023	Chloride, total	8.30	mg/L
G270	Background	E001	06/08/2023	Chromium, total	0.0028 U	mg/L
G270	Background	E001	06/08/2023	Cobalt, total	0.00064 J	mg/L
G270	Background	E001	06/08/2023	Dissolved Oxygen	11.0	mg/L
G270	Background	E001	06/08/2023	Fluoride, total	0.298	mg/L
G270	Background	E001	06/08/2023	Lead, total	0.00051 J	mg/L
G270	Background	E001	06/08/2023	Lithium, total	0.005 U	mg/L
G270	Background	E001	06/08/2023	Mercury, total	0.00014 U	mg/L
G270	Background	E001	06/08/2023	Molybdenum, total	0.00120	mg/L
G270	Background	E001	06/08/2023	Oxidation Reduction Potential	61.0	mV
G270	Background	E001	06/08/2023	pH (field)	6.6	SU
G270	Background	E001	06/08/2023	Radium 226 + Radium 228, total	0.485	pCi/L
G270	Background	E001	06/08/2023	Selenium, total	0.00074 U	mg/L
G270	Background	E001	06/08/2023	Specific Conductance @ 25C (field)	782	micromhos/cm
G270	Background	E001	06/08/2023	Sulfate, total	54.0	mg/L
G270	Background	E001	06/08/2023	Temperature	14.6	degrees C
G270	Background	E001	06/08/2023	Thallium, total	0.00038 U	mg/L
G270	Background	E001	06/08/2023	Total Dissolved Solids	500	mg/L
G270	Background	E001	06/08/2023	Turbidity, field	54.6	NTU
G280	Background	E001	06/08/2023	Antimony, total	0.00043 U	mg/L
G280	Background	E001	06/08/2023	Arsenic, total	0.00077 J	mg/L
G280	Background	E001	06/08/2023	Barium, total	0.0490	mg/L
G280	Background	E001	06/08/2023	Beryllium, total	0.00059 U	mg/L
G280	Background	E001	06/08/2023	Boron, total	0.0200	mg/L
G280	Background	E001	06/08/2023	Cadmium, total	0.00074 U	mg/L
G280	Background	E001	06/08/2023	Calcium, total	79.0	mg/L
G280	Background	E001	06/08/2023	Chloride, total	71.0	mg/L
G280	Background	E001	06/08/2023	Chromium, total	0.0028 U	mg/L
G280	Background	E001	06/08/2023	Cobalt, total	0.00048 U	mg/L
G280	Background	E001	06/08/2023	Dissolved Oxygen	2.00	mg/L
G280	Background	E001	06/08/2023	Fluoride, total	0.339	mg/L
G280	Background	E001	06/08/2023	Lead, total	0.00064 J	mg/L
G280	Background	E001	06/08/2023	Lithium, total	0.005 U	mg/L
G280	Background	E001	06/08/2023	Mercury, total	0.00014 U	mg/L
G280	Background	E001	06/08/2023	Molybdenum, total	0.00097 J	mg/L
G280	Background	E001	06/08/2023	Oxidation Reduction Potential	190	mV
G280	Background	E001	06/08/2023	pH (field)	7.3	SU
G280	Background	E001	06/08/2023	Radium 226 + Radium 228, total	0.839	pCi/L
G280	Background	E001	06/08/2023	Selenium, total	0.00074 U	mg/L

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 2, 2023

845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G280	Background	E001	06/08/2023	Specific Conductance @ 25C (field)	902	micromhos/cm
G280	Background	E001	06/08/2023	Sulfate, total	91.0	mg/L
G280	Background	E001	06/08/2023	Temperature	15.4	degrees C
G280	Background	E001	06/08/2023	Thallium, total	0.00038 U	mg/L
G280	Background	E001	06/08/2023	Total Dissolved Solids	590	mg/L
G280	Background	E001	06/08/2023	Turbidity, field	46.1	NTU
G281	Background	E001	06/08/2023	Antimony, total	0.00043 U	mg/L
G281	Background	E001	06/08/2023	Arsenic, total	0.00093 J	mg/L
G281	Background	E001	06/08/2023	Barium, total	0.0710	mg/L
G281	Background	E001	06/08/2023	Beryllium, total	0.00059 U	mg/L
G281	Background	E001	06/08/2023	Boron, total	0.0071 U	mg/L
G281	Background	E001	06/08/2023	Cadmium, total	0.00074 U	mg/L
G281	Background	E001	06/08/2023	Calcium, total	130	mg/L
G281	Background	E001	06/08/2023	Chloride, total	75.0	mg/L
G281	Background	E001	06/08/2023	Chromium, total	0.0028 U	mg/L
G281	Background	E001	06/08/2023	Cobalt, total	0.00099 J	mg/L
G281	Background	E001	06/08/2023	Dissolved Oxygen	0.950	mg/L
G281	Background	E001	06/08/2023	Fluoride, total	0.253	mg/L
G281	Background	E001	06/08/2023	Lead, total	0.00053 J	mg/L
G281	Background	E001	06/08/2023	Lithium, total	0.005 U	mg/L
G281	Background	E001	06/08/2023	Mercury, total	0.00014 U	mg/L
G281	Background	E001	06/08/2023	Molybdenum, total	0.00074 U	mg/L
G281	Background	E001	06/08/2023	Oxidation Reduction Potential	11.0	mV
G281	Background	E001	06/08/2023	pH (field)	6.8	SU
G281	Background	E001	06/08/2023	Radium 226 + Radium 228, total	0	pCi/L
G281	Background	E001	06/08/2023	Selenium, total	0.00074 U	mg/L
G281	Background	E001	06/08/2023	Specific Conductance @ 25C (field)	1,350	micromhos/cm
G281	Background	E001	06/08/2023	Sulfate, total	140	mg/L
G281	Background	E001	06/08/2023	Temperature	18.4	degrees C
G281	Background	E001	06/08/2023	Thallium, total	0.00038 U	mg/L
G281	Background	E001	06/08/2023	Total Dissolved Solids	1,000	mg/L
G281	Background	E001	06/08/2023	Turbidity, field	35.6	NTU
G1001	Compliance	E001	06/07/2023	Antimony, total	0.0021 J	mg/L
G1001	Compliance	E001	06/07/2023	Arsenic, total	0.00069 U	mg/L
G1001	Compliance	E001	06/07/2023	Barium, total	0.0710	mg/L
G1001	Compliance	E001	06/07/2023	Beryllium, total	0.00059 U	mg/L
G1001	Compliance	E001	06/07/2023	Boron, total	0.950	mg/L
G1001	Compliance	E001	06/07/2023	Cadmium, total	0.00074 U	mg/L
G1001	Compliance	E001	06/07/2023	Calcium, total	140	mg/L
G1001	Compliance	E001	06/07/2023	Chloride, total	15.0	mg/L
G1001	Compliance	E001	06/07/2023	Chromium, total	0.0028 U	mg/L
G1001	Compliance	E001	06/07/2023	Cobalt, total	0.00048 U	mg/L
G1001	Compliance	E001	06/07/2023	Dissolved Oxygen	1.80	mg/L
G1001	Compliance	E001	06/07/2023	Fluoride, total	0.228 J	mg/L
G1001	Compliance	E001	06/07/2023	Lead, total	0.00022 U	mg/L
G1001	Compliance	E001	06/07/2023	Lithium, total	0.0094 J	mg/L

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 COFFEEN POWER PLANT
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 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G1001	Compliance	E001	06/07/2023	Mercury, total	0.0002 U	mg/L
G1001	Compliance	E001	06/07/2023	Molybdenum, total	0.00790	mg/L
G1001	Compliance	E001	06/07/2023	Oxidation Reduction Potential	111	mV
G1001	Compliance	E001	06/07/2023	pH (field)	7.0	SU
G1001	Compliance	E001	06/07/2023	Radium 226 + Radium 228, total	0.917 J+	pCi/L
G1001	Compliance	E001	06/07/2023	Selenium, total	0.00074 U	mg/L
G1001	Compliance	E001	06/07/2023	Specific Conductance @ 25C (field)	1,330	micromhos/cm
G1001	Compliance	E001	06/07/2023	Sulfate, total	180	mg/L
G1001	Compliance	E001	06/07/2023	Temperature	19.1	degrees C
G1001	Compliance	E001	06/07/2023	Thallium, total	0.00038 U	mg/L
G1001	Compliance	E001	06/07/2023	Total Dissolved Solids	830	mg/L
G1001	Compliance	E001	06/07/2023	Turbidity, field	9.20	NTU
G401	Compliance	E001	06/07/2023	Antimony, total	0.00043 U	mg/L
G401	Compliance	E001	06/07/2023	Arsenic, total	0.00069 J	mg/L
G401	Compliance	E001	06/07/2023	Barium, total	0.0100 J+	mg/L
G401	Compliance	E001	06/07/2023	Beryllium, total	0.00059 U	mg/L
G401	Compliance	E001	06/07/2023	Boron, total	3.90	mg/L
G401	Compliance	E001	06/07/2023	Cadmium, total	0.00074 U	mg/L
G401	Compliance	E001	06/07/2023	Calcium, total	490	mg/L
G401	Compliance	E001	06/07/2023	Chloride, total	3.60	mg/L
G401	Compliance	E001	06/07/2023	Chromium, total	0.0028 U	mg/L
G401	Compliance	E001	06/07/2023	Cobalt, total	0.110	mg/L
G401	Compliance	E001	06/07/2023	Dissolved Oxygen	1.10	mg/L
G401	Compliance	E001	06/07/2023	Fluoride, total	0.212 J	mg/L
G401	Compliance	E001	06/07/2023	Lead, total	0.00022 U	mg/L
G401	Compliance	E001	06/07/2023	Lithium, total	0.018 J	mg/L
G401	Compliance	E001	06/07/2023	Mercury, total	0.0002 U	mg/L
G401	Compliance	E001	06/07/2023	Molybdenum, total	0.00074 U	mg/L
G401	Compliance	E001	06/07/2023	Oxidation Reduction Potential	-32.0	mV
G401	Compliance	E001	06/07/2023	pH (field)	6.2	SU
G401	Compliance	E001	06/07/2023	Radium 226 + Radium 228, total	0.628	pCi/L
G401	Compliance	E001	06/07/2023	Selenium, total	0.00074 U	mg/L
G401	Compliance	E001	06/07/2023	Specific Conductance @ 25C (field)	3,130	micromhos/cm
G401	Compliance	E001	06/07/2023	Sulfate, total	2,100	mg/L
G401	Compliance	E001	06/07/2023	Temperature	12.3	degrees C
G401	Compliance	E001	06/07/2023	Thallium, total	0.00038 U	mg/L
G401	Compliance	E001	06/07/2023	Total Dissolved Solids	6,600	mg/L
G401	Compliance	E001	06/07/2023	Turbidity, field	28.8	NTU
G402	Compliance	E001	06/06/2023	Antimony, total	0.00043 U	mg/L
G402	Compliance	E001	06/06/2023	Arsenic, total	0.00340	mg/L
G402	Compliance	E001	06/06/2023	Barium, total	0.0260	mg/L
G402	Compliance	E001	06/06/2023	Beryllium, total	0.00059 U	mg/L
G402	Compliance	E001	06/06/2023	Boron, total	4.90	mg/L
G402	Compliance	E001	06/06/2023	Cadmium, total	0.00074 U	mg/L
G402	Compliance	E001	06/06/2023	Calcium, total	210	mg/L
G402	Compliance	E001	06/06/2023	Chloride, total	3.40	mg/L

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 2, 2023

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COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G402	Compliance	E001	06/06/2023	Chromium, total	0.0034 J	mg/L
G402	Compliance	E001	06/06/2023	Cobalt, total	0.00350	mg/L
G402	Compliance	E001	06/06/2023	Dissolved Oxygen	8.60	mg/L
G402	Compliance	E001	06/06/2023	Fluoride, total	0.187 J	mg/L
G402	Compliance	E001	06/06/2023	Lead, total	0.00200	mg/L
G402	Compliance	E001	06/06/2023	Lithium, total	0.019 J	mg/L
G402	Compliance	E001	06/06/2023	Mercury, total	0.00014 U	mg/L
G402	Compliance	E001	06/06/2023	Molybdenum, total	0.00230	mg/L
G402	Compliance	E001	06/06/2023	Oxidation Reduction Potential	182	mV
G402	Compliance	E001	06/06/2023	pH (field)	6.6	SU
G402	Compliance	E001	06/06/2023	Radium 226 + Radium 228, total	1.22	pCi/L
G402	Compliance	E001	06/06/2023	Selenium, total	0.00074 U	mg/L
G402	Compliance	E001	06/06/2023	Specific Conductance @ 25C (field)	1,720	micromhos/cm
G402	Compliance	E001	06/06/2023	Sulfate, total	580	mg/L
G402	Compliance	E001	06/06/2023	Temperature	23.2	degrees C
G402	Compliance	E001	06/06/2023	Thallium, total	0.00038 U	mg/L
G402	Compliance	E001	06/06/2023	Total Dissolved Solids	1,400	mg/L
G402	Compliance	E001	06/06/2023	Turbidity, field	109	NTU
G403	Compliance	E001	06/07/2023	Antimony, total	0.00043 U	mg/L
G403	Compliance	E001	06/07/2023	Arsenic, total	0.00069 U	mg/L
G403	Compliance	E001	06/07/2023	Barium, total	0.120	mg/L
G403	Compliance	E001	06/07/2023	Beryllium, total	0.00059 U	mg/L
G403	Compliance	E001	06/07/2023	Boron, total	0.0350	mg/L
G403	Compliance	E001	06/07/2023	Cadmium, total	0.00074 U	mg/L
G403	Compliance	E001	06/07/2023	Calcium, total	78.0	mg/L
G403	Compliance	E001	06/07/2023	Chloride, total	6.20	mg/L
G403	Compliance	E001	06/07/2023	Chromium, total	0.0028 U	mg/L
G403	Compliance	E001	06/07/2023	Cobalt, total	0.00076 J	mg/L
G403	Compliance	E001	06/07/2023	Dissolved Oxygen	1.60	mg/L
G403	Compliance	E001	06/07/2023	Fluoride, total	0.261	mg/L
G403	Compliance	E001	06/07/2023	Lead, total	0.00022 U	mg/L
G403	Compliance	E001	06/07/2023	Lithium, total	0.005 U	mg/L
G403	Compliance	E001	06/07/2023	Mercury, total	0.0002 U	mg/L
G403	Compliance	E001	06/07/2023	Molybdenum, total	0.00076 J	mg/L
G403	Compliance	E001	06/07/2023	Oxidation Reduction Potential	40.7	mV
G403	Compliance	E001	06/07/2023	pH (field)	7.0	SU
G403	Compliance	E001	06/07/2023	Radium 226 + Radium 228, total	0.910 J+	pCi/L
G403	Compliance	E001	06/07/2023	Selenium, total	0.00074 U	mg/L
G403	Compliance	E001	06/07/2023	Specific Conductance @ 25C (field)	719	micromhos/cm
G403	Compliance	E001	06/07/2023	Sulfate, total	66.0	mg/L
G403	Compliance	E001	06/07/2023	Temperature	15.8	degrees C
G403	Compliance	E001	06/07/2023	Thallium, total	0.00038 U	mg/L
G403	Compliance	E001	06/07/2023	Total Dissolved Solids	400	mg/L
G403	Compliance	E001	06/07/2023	Turbidity, field	31.1	NTU
G404	Compliance	E001	06/07/2023	Antimony, total	0.00043 U	mg/L
G404	Compliance	E001	06/07/2023	Arsenic, total	0.00069 U	mg/L

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 2, 2023

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 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G404	Compliance	E001	06/07/2023	Barium, total	0.0190	mg/L
G404	Compliance	E001	06/07/2023	Beryllium, total	0.00059 U	mg/L
G404	Compliance	E001	06/07/2023	Boron, total	9.30	mg/L
G404	Compliance	E001	06/07/2023	Cadmium, total	0.00074 U	mg/L
G404	Compliance	E001	06/07/2023	Calcium, total	230	mg/L
G404	Compliance	E001	06/07/2023	Chloride, total	140	mg/L
G404	Compliance	E001	06/07/2023	Chromium, total	0.0028 U	mg/L
G404	Compliance	E001	06/07/2023	Cobalt, total	0.00048 U	mg/L
G404	Compliance	E001	06/07/2023	Dissolved Oxygen	0.160	mg/L
G404	Compliance	E001	06/07/2023	Fluoride, total	0.067 J	mg/L
G404	Compliance	E001	06/07/2023	Lead, total	0.00022 U	mg/L
G404	Compliance	E001	06/07/2023	Lithium, total	0.0062 J	mg/L
G404	Compliance	E001	06/07/2023	Mercury, total	0.0002 U	mg/L
G404	Compliance	E001	06/07/2023	Molybdenum, total	0.00074 U	mg/L
G404	Compliance	E001	06/07/2023	Oxidation Reduction Potential	79.2	mV
G404	Compliance	E001	06/07/2023	pH (field)	6.8	SU
G404	Compliance	E001	06/07/2023	Radium 226 + Radium 228, total	1.36 J+	pCi/L
G404	Compliance	E001	06/07/2023	Selenium, total	0.00074 U	mg/L
G404	Compliance	E001	06/07/2023	Specific Conductance @ 25C (field)	2,113	micromhos/cm
G404	Compliance	E001	06/07/2023	Sulfate, total	700	mg/L
G404	Compliance	E001	06/07/2023	Temperature	17.3	degrees C
G404	Compliance	E001	06/07/2023	Thallium, total	0.00038 U	mg/L
G404	Compliance	E001	06/07/2023	Total Dissolved Solids	1,300	mg/L
G404	Compliance	E001	06/07/2023	Turbidity, field	10.1	NTU
G405	Compliance	E001	06/06/2023	Antimony, total	0.00082 J	mg/L
G405	Compliance	E001	06/06/2023	Arsenic, total	0.00071 J	mg/L
G405	Compliance	E001	06/06/2023	Barium, total	0.0130	mg/L
G405	Compliance	E001	06/06/2023	Beryllium, total	0.00059 U	mg/L
G405	Compliance	E001	06/06/2023	Boron, total	9.50	mg/L
G405	Compliance	E001	06/06/2023	Cadmium, total	0.00074 U	mg/L
G405	Compliance	E001	06/06/2023	Calcium, total	250	mg/L
G405	Compliance	E001	06/06/2023	Chloride, total	8.90	mg/L
G405	Compliance	E001	06/06/2023	Chromium, total	0.0028 U	mg/L
G405	Compliance	E001	06/06/2023	Cobalt, total	0.00087 J	mg/L
G405	Compliance	E001	06/06/2023	Dissolved Oxygen	1.80	mg/L
G405	Compliance	E001	06/06/2023	Fluoride, total	0.161 J	mg/L
G405	Compliance	E001	06/06/2023	Lead, total	0.00063 J	mg/L
G405	Compliance	E001	06/06/2023	Lithium, total	0.0051 J	mg/L
G405	Compliance	E001	06/06/2023	Mercury, total	0.00014 U	mg/L
G405	Compliance	E001	06/06/2023	Molybdenum, total	0.00120	mg/L
G405	Compliance	E001	06/06/2023	Oxidation Reduction Potential	68.0	mV
G405	Compliance	E001	06/06/2023	pH (field)	6.8	SU
G405	Compliance	E001	06/06/2023	Radium 226 + Radium 228, total	1.68 J	pCi/L
G405	Compliance	E001	06/06/2023	Selenium, total	0.00120	mg/L
G405	Compliance	E001	06/06/2023	Specific Conductance @ 25C (field)	2,130	micromhos/cm
G405	Compliance	E001	06/06/2023	Sulfate, total	1,000	mg/L

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 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G405	Compliance	E001	06/06/2023	Temperature	19.7	degrees C
G405	Compliance	E001	06/06/2023	Thallium, total	0.00038 U	mg/L
G405	Compliance	E001	06/06/2023	Total Dissolved Solids	1,700	mg/L
G405	Compliance	E001	06/06/2023	Turbidity, field	7.10	NTU
G406	Compliance	E001	05/31/2023	Antimony, total	0.00043 U	mg/L
G406	Compliance	E001	05/31/2023	Arsenic, total	0.00069 U	mg/L
G406	Compliance	E001	05/31/2023	Barium, total	0.0130	mg/L
G406	Compliance	E001	05/31/2023	Beryllium, total	0.00059 U	mg/L
G406	Compliance	E001	05/31/2023	Boron, total	1.40	mg/L
G406	Compliance	E001	05/31/2023	Cadmium, total	0.00074 U	mg/L
G406	Compliance	E001	05/31/2023	Calcium, total	190	mg/L
G406	Compliance	E001	05/31/2023	Chloride, total	4.8 U	mg/L
G406	Compliance	E001	05/31/2023	Chromium, total	0.0028 U	mg/L
G406	Compliance	E001	05/31/2023	Cobalt, total	0.00052 J	mg/L
G406	Compliance	E001	05/31/2023	Dissolved Oxygen	2.70	mg/L
G406	Compliance	E001	05/31/2023	Fluoride, total	0.204 J	mg/L
G406	Compliance	E001	05/31/2023	Lead, total	0.00022 U	mg/L
G406	Compliance	E001	05/31/2023	Lithium, total	0.0098 J	mg/L
G406	Compliance	E001	05/31/2023	Mercury, total	0.00014 U	mg/L
G406	Compliance	E001	05/31/2023	Molybdenum, total	0.00074 U	mg/L
G406	Compliance	E001	05/31/2023	Oxidation Reduction Potential	166	mV
G406	Compliance	E001	05/31/2023	pH (field)	6.5	SU
G406	Compliance	E001	05/31/2023	Radium 226 + Radium 228, total	0.262	pCi/L
G406	Compliance	E001	05/31/2023	Selenium, total	0.00074 U	mg/L
G406	Compliance	E001	05/31/2023	Specific Conductance @ 25C (field)	1,410	micromhos/cm
G406	Compliance	E001	05/31/2023	Sulfate, total	480	mg/L
G406	Compliance	E001	05/31/2023	Temperature	21.2	degrees C
G406	Compliance	E001	05/31/2023	Thallium, total	0.00038 U	mg/L
G406	Compliance	E001	05/31/2023	Total Dissolved Solids	1,100	mg/L
G406	Compliance	E001	05/31/2023	Turbidity, field	0 U	NTU
G407	Compliance	E001	05/31/2023	Antimony, total	0.00043 U	mg/L
G407	Compliance	E001	05/31/2023	Arsenic, total	0.00073 J	mg/L
G407	Compliance	E001	05/31/2023	Barium, total	0.0120	mg/L
G407	Compliance	E001	05/31/2023	Beryllium, total	0.00059 U	mg/L
G407	Compliance	E001	05/31/2023	Boron, total	0.0900	mg/L
G407	Compliance	E001	05/31/2023	Cadmium, total	0.00074 U	mg/L
G407	Compliance	E001	05/31/2023	Calcium, total	270	mg/L
G407	Compliance	E001	05/31/2023	Chloride, total	17.0	mg/L
G407	Compliance	E001	05/31/2023	Chromium, total	0.0028 U	mg/L
G407	Compliance	E001	05/31/2023	Cobalt, total	0.0007 J	mg/L
G407	Compliance	E001	05/31/2023	Dissolved Oxygen	4.30	mg/L
G407	Compliance	E001	05/31/2023	Fluoride, total	0.129 J	mg/L
G407	Compliance	E001	05/31/2023	Lead, total	0.00022 U	mg/L
G407	Compliance	E001	05/31/2023	Lithium, total	0.0390	mg/L
G407	Compliance	E001	05/31/2023	Mercury, total	0.00014 U	mg/L
G407	Compliance	E001	05/31/2023	Molybdenum, total	0.00130	mg/L

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 2, 2023

845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G407	Compliance	E001	05/31/2023	Oxidation Reduction Potential	162	mV
G407	Compliance	E001	05/31/2023	pH (field)	6.6	SU
G407	Compliance	E001	05/31/2023	Radium 226 + Radium 228, total	0.792 J+	pCi/L
G407	Compliance	E001	05/31/2023	Selenium, total	0.00074 U	mg/L
G407	Compliance	E001	05/31/2023	Specific Conductance @ 25C (field)	2,460	micromhos/cm
G407	Compliance	E001	05/31/2023	Sulfate, total	1,100	mg/L
G407	Compliance	E001	05/31/2023	Temperature	19.2	degrees C
G407	Compliance	E001	05/31/2023	Thallium, total	0.00038 U	mg/L
G407	Compliance	E001	05/31/2023	Total Dissolved Solids	2,000	mg/L
G407	Compliance	E001	05/31/2023	Turbidity, field	5.60	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.

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 3, 2023

845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G270	Background	E002	08/14/2023	Antimony, total	0.0008 U	mg/L
G270	Background	E002	08/14/2023	Arsenic, total	0.0004 U	mg/L
G270	Background	E002	08/14/2023	Barium, total	0.0467	mg/L
G270	Background	E002	08/14/2023	Beryllium, total	0.0002 U	mg/L
G270	Background	E002	08/14/2023	Boron, total	0.0092 U	mg/L
G270	Background	E002	08/14/2023	Cadmium, total	0.0002 U	mg/L
G270	Background	E002	08/14/2023	Calcium, total	57.9	mg/L
G270	Background	E002	08/14/2023	Chloride, total	13.0	mg/L
G270	Background	E002	08/14/2023	Chromium, total	0.0009 J	mg/L
G270	Background	E002	08/14/2023	Cobalt, total	0.0003 J	mg/L
G270	Background	E002	08/14/2023	Dissolved Oxygen	1.64	mg/L
G270	Background	E002	08/14/2023	Fluoride, total	0.350 J+	mg/L
G270	Background	E002	08/14/2023	Lead, total	0.0006 U	mg/L
G270	Background	E002	08/14/2023	Lithium, total	0.0029 J	mg/L
G270	Background	E002	08/14/2023	Mercury, total	0.00009 U	mg/L
G270	Background	E002	08/14/2023	Molybdenum, total	0.0008 J	mg/L
G270	Background	E002	08/14/2023	Oxidation Reduction Potential	78.0	mV
G270	Background	E002	08/14/2023	pH (field)	6.8	SU
G270	Background	E002	08/14/2023	Radium 226 + Radium 228, total	0.661	pCi/L
G270	Background	E002	08/14/2023	Selenium, total	0.0006 U	mg/L
G270	Background	E002	08/14/2023	Specific Conductance @ 25C (field)	936	micromhos/cm
G270	Background	E002	08/14/2023	Sulfate, total	48.0 J+	mg/L
G270	Background	E002	08/14/2023	Temperature	15.2	degrees C
G270	Background	E002	08/14/2023	Thallium, total	0.001 U	mg/L
G270	Background	E002	08/14/2023	Total Dissolved Solids	426	mg/L
G270	Background	E002	08/14/2023	Turbidity, field	5.30	NTU
G280	Background	E002	08/14/2023	Antimony, total	0.0009 J	mg/L
G280	Background	E002	08/14/2023	Arsenic, total	0.0004 U	mg/L
G280	Background	E002	08/14/2023	Barium, total	0.0531	mg/L
G280	Background	E002	08/14/2023	Beryllium, total	0.0002 U	mg/L
G280	Background	E002	08/14/2023	Boron, total	0.0092 U	mg/L
G280	Background	E002	08/14/2023	Cadmium, total	0.0002 U	mg/L
G280	Background	E002	08/14/2023	Calcium, total	79.5	mg/L
G280	Background	E002	08/14/2023	Chloride, total	70.0	mg/L
G280	Background	E002	08/14/2023	Chromium, total	0.0013 J	mg/L
G280	Background	E002	08/14/2023	Cobalt, total	0.0003 J	mg/L
G280	Background	E002	08/14/2023	Dissolved Oxygen	1.01	mg/L
G280	Background	E002	08/14/2023	Fluoride, total	0.310 J+	mg/L
G280	Background	E002	08/14/2023	Lead, total	0.0006 U	mg/L
G280	Background	E002	08/14/2023	Lithium, total	0.00440	mg/L
G280	Background	E002	08/14/2023	Mercury, total	0.00006 U	mg/L
G280	Background	E002	08/14/2023	Molybdenum, total	0.0006 J	mg/L
G280	Background	E002	08/14/2023	Oxidation Reduction Potential	31.0	mV
G280	Background	E002	08/14/2023	pH (field)	7.4	SU
G280	Background	E002	08/14/2023	Radium 226 + Radium 228, total	0.609	pCi/L
G280	Background	E002	08/14/2023	Selenium, total	0.0006 U	mg/L

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 3, 2023

845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G280	Background	E002	08/14/2023	Specific Conductance @ 25C (field)	1,480	micromhos/cm
G280	Background	E002	08/14/2023	Sulfate, total	91.0	mg/L
G280	Background	E002	08/14/2023	Temperature	15.5	degrees C
G280	Background	E002	08/14/2023	Thallium, total	0.001 U	mg/L
G280	Background	E002	08/14/2023	Total Dissolved Solids	594	mg/L
G280	Background	E002	08/14/2023	Turbidity, field	8.50	NTU
G281	Background	E002	08/14/2023	Antimony, total	0.0008 U	mg/L
G281	Background	E002	08/14/2023	Arsenic, total	0.0004 U	mg/L
G281	Background	E002	08/14/2023	Barium, total	0.0707	mg/L
G281	Background	E002	08/14/2023	Beryllium, total	0.0002 U	mg/L
G281	Background	E002	08/14/2023	Boron, total	0.0092 U	mg/L
G281	Background	E002	08/14/2023	Cadmium, total	0.0002 U	mg/L
G281	Background	E002	08/14/2023	Calcium, total	137	mg/L
G281	Background	E002	08/14/2023	Chloride, total	88.0	mg/L
G281	Background	E002	08/14/2023	Chromium, total	0.0007 U	mg/L
G281	Background	E002	08/14/2023	Cobalt, total	0.0004 J	mg/L
G281	Background	E002	08/14/2023	Dissolved Oxygen	1.74	mg/L
G281	Background	E002	08/14/2023	Fluoride, total	0.300 J+	mg/L
G281	Background	E002	08/14/2023	Lead, total	0.0006 U	mg/L
G281	Background	E002	08/14/2023	Lithium, total	0.00420	mg/L
G281	Background	E002	08/14/2023	Mercury, total	0.00006 U	mg/L
G281	Background	E002	08/14/2023	Molybdenum, total	0.0006 U	mg/L
G281	Background	E002	08/14/2023	Oxidation Reduction Potential	102	mV
G281	Background	E002	08/14/2023	pH (field)	6.8	SU
G281	Background	E002	08/14/2023	Radium 226 + Radium 228, total	0.667	pCi/L
G281	Background	E002	08/14/2023	Selenium, total	0.0006 U	mg/L
G281	Background	E002	08/14/2023	Specific Conductance @ 25C (field)	1,740	micromhos/cm
G281	Background	E002	08/14/2023	Sulfate, total	268	mg/L
G281	Background	E002	08/14/2023	Temperature	18.6	degrees C
G281	Background	E002	08/14/2023	Thallium, total	0.001 U	mg/L
G281	Background	E002	08/14/2023	Total Dissolved Solids	930	mg/L
G281	Background	E002	08/14/2023	Turbidity, field	6.40	NTU
G401	Compliance	E002	08/11/2023	Antimony, total	0.0006 U	mg/L
G401	Compliance	E002	08/11/2023	Arsenic, total	0.0009 J	mg/L
G401	Compliance	E002	08/11/2023	Barium, total	0.0118	mg/L
G401	Compliance	E002	08/11/2023	Beryllium, total	0.0002 U	mg/L
G401	Compliance	E002	08/11/2023	Boron, total	4.24	mg/L
G401	Compliance	E002	08/11/2023	Cadmium, total	0.0003 J	mg/L
G401	Compliance	E002	08/11/2023	Calcium, total	509	mg/L
G401	Compliance	E002	08/11/2023	Chloride, total	3 J	mg/L
G401	Compliance	E002	08/11/2023	Chromium, total	0.0007 U	mg/L
G401	Compliance	E002	08/11/2023	Cobalt, total	0.156	mg/L
G401	Compliance	E002	08/11/2023	Dissolved Oxygen	0.500	mg/L
G401	Compliance	E002	08/11/2023	Fluoride, total	0.190 J+	mg/L
G401	Compliance	E002	08/11/2023	Lead, total	0.0006 U	mg/L
G401	Compliance	E002	08/11/2023	Lithium, total	0.0257	mg/L

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 3, 2023

845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G401	Compliance	E002	08/11/2023	Mercury, total	0.00006 U	mg/L
G401	Compliance	E002	08/11/2023	Molybdenum, total	0.0006 U	mg/L
G401	Compliance	E002	08/11/2023	Oxidation Reduction Potential	-30.0	mV
G401	Compliance	E002	08/11/2023	pH (field)	6.0	SU
G401	Compliance	E002	08/11/2023	Radium 226 + Radium 228, total	0.549	pCi/L
G401	Compliance	E002	08/11/2023	Selenium, total	0.0006 U	mg/L
G401	Compliance	E002	08/11/2023	Specific Conductance @ 25C (field)	4,910	micromhos/cm
G401	Compliance	E002	08/11/2023	Sulfate, total	1,900	mg/L
G401	Compliance	E002	08/11/2023	Temperature	17.5	degrees C
G401	Compliance	E002	08/11/2023	Thallium, total	0.001 U	mg/L
G401	Compliance	E002	08/11/2023	Total Dissolved Solids	3,040	mg/L
G401	Compliance	E002	08/11/2023	Turbidity, field	6.80	NTU
G402	Compliance	E002	08/11/2023	Antimony, total	0.0006 U	mg/L
G402	Compliance	E002	08/11/2023	Arsenic, total	0.00410	mg/L
G402	Compliance	E002	08/11/2023	Barium, total	0.0290	mg/L
G402	Compliance	E002	08/11/2023	Beryllium, total	0.0002 U	mg/L
G402	Compliance	E002	08/11/2023	Boron, total	5.71	mg/L
G402	Compliance	E002	08/11/2023	Cadmium, total	0.0002 U	mg/L
G402	Compliance	E002	08/11/2023	Calcium, total	212	mg/L
G402	Compliance	E002	08/11/2023	Chloride, total	3 J	mg/L
G402	Compliance	E002	08/11/2023	Chromium, total	0.00340	mg/L
G402	Compliance	E002	08/11/2023	Cobalt, total	0.00240	mg/L
G402	Compliance	E002	08/11/2023	Dissolved Oxygen	8.19	mg/L
G402	Compliance	E002	08/11/2023	Fluoride, total	0.340 J+	mg/L
G402	Compliance	E002	08/11/2023	Lead, total	0.00250	mg/L
G402	Compliance	E002	08/11/2023	Lithium, total	0.0240	mg/L
G402	Compliance	E002	08/11/2023	Mercury, total	0.00006 U	mg/L
G402	Compliance	E002	08/11/2023	Molybdenum, total	0.00240	mg/L
G402	Compliance	E002	08/11/2023	Oxidation Reduction Potential	23.0	mV
G402	Compliance	E002	08/11/2023	pH (field)	7.3	SU
G402	Compliance	E002	08/11/2023	Radium 226 + Radium 228, total	1.28	pCi/L
G402	Compliance	E002	08/11/2023	Selenium, total	0.0006 U	mg/L
G402	Compliance	E002	08/11/2023	Specific Conductance @ 25C (field)	2,820	micromhos/cm
G402	Compliance	E002	08/11/2023	Sulfate, total	601	mg/L
G402	Compliance	E002	08/11/2023	Temperature	18.1	degrees C
G402	Compliance	E002	08/11/2023	Thallium, total	0.001 U	mg/L
G402	Compliance	E002	08/11/2023	Total Dissolved Solids	1,340	mg/L
G402	Compliance	E002	08/11/2023	Turbidity, field	81.0	NTU
G403	Compliance	E002	08/11/2023	Antimony, total	0.0006 U	mg/L
G403	Compliance	E002	08/11/2023	Arsenic, total	0.0005 J	mg/L
G403	Compliance	E002	08/11/2023	Barium, total	0.118	mg/L
G403	Compliance	E002	08/11/2023	Beryllium, total	0.0002 U	mg/L
G403	Compliance	E002	08/11/2023	Boron, total	0.0287 J+	mg/L
G403	Compliance	E002	08/11/2023	Cadmium, total	0.0002 U	mg/L
G403	Compliance	E002	08/11/2023	Calcium, total	77.7	mg/L
G403	Compliance	E002	08/11/2023	Chloride, total	5.00	mg/L

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 3, 2023

845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G403	Compliance	E002	08/11/2023	Chromium, total	0.0008 J	mg/L
G403	Compliance	E002	08/11/2023	Cobalt, total	0.00250	mg/L
G403	Compliance	E002	08/11/2023	Dissolved Oxygen	3.06	mg/L
G403	Compliance	E002	08/11/2023	Fluoride, total	0.310 J+	mg/L
G403	Compliance	E002	08/11/2023	Lead, total	0.0006 U	mg/L
G403	Compliance	E002	08/11/2023	Lithium, total	0.00400	mg/L
G403	Compliance	E002	08/11/2023	Mercury, total	0.00006 U	mg/L
G403	Compliance	E002	08/11/2023	Molybdenum, total	0.0006 J	mg/L
G403	Compliance	E002	08/11/2023	Oxidation Reduction Potential	-8.00	mV
G403	Compliance	E002	08/11/2023	pH (field)	7.1	SU
G403	Compliance	E002	08/11/2023	Radium 226 + Radium 228, total	0.984 J+	pCi/L
G403	Compliance	E002	08/11/2023	Selenium, total	0.0006 U	mg/L
G403	Compliance	E002	08/11/2023	Specific Conductance @ 25C (field)	1,170	micromhos/cm
G403	Compliance	E002	08/11/2023	Sulfate, total	60.0 J	mg/L
G403	Compliance	E002	08/11/2023	Temperature	18.7	degrees C
G403	Compliance	E002	08/11/2023	Thallium, total	0.001 U	mg/L
G403	Compliance	E002	08/11/2023	Total Dissolved Solids	412	mg/L
G403	Compliance	E002	08/11/2023	Turbidity, field	8.30	NTU
G404	Compliance	E002	08/14/2023	Antimony, total	0.00110	mg/L
G404	Compliance	E002	08/14/2023	Arsenic, total	0.00110	mg/L
G404	Compliance	E002	08/14/2023	Barium, total	0.0420	mg/L
G404	Compliance	E002	08/14/2023	Beryllium, total	0.0002 U	mg/L
G404	Compliance	E002	08/14/2023	Boron, total	14.4	mg/L
G404	Compliance	E002	08/14/2023	Cadmium, total	0.0002 J	mg/L
G404	Compliance	E002	08/14/2023	Calcium, total	216	mg/L
G404	Compliance	E002	08/14/2023	Chloride, total	73.0	mg/L
G404	Compliance	E002	08/14/2023	Chromium, total	0.00210	mg/L
G404	Compliance	E002	08/14/2023	Cobalt, total	0.00330	mg/L
G404	Compliance	E002	08/14/2023	Dissolved Oxygen	0.480	mg/L
G404	Compliance	E002	08/14/2023	Fluoride, total	0.180 J+	mg/L
G404	Compliance	E002	08/14/2023	Lead, total	0.0006 J	mg/L
G404	Compliance	E002	08/14/2023	Lithium, total	0.00950	mg/L
G404	Compliance	E002	08/14/2023	Mercury, total	0.00016 J	mg/L
G404	Compliance	E002	08/14/2023	Molybdenum, total	0.0011 J	mg/L
G404	Compliance	E002	08/14/2023	Oxidation Reduction Potential	66.0	mV
G404	Compliance	E002	08/14/2023	pH (field)	6.8	SU
G404	Compliance	E002	08/14/2023	Radium 226 + Radium 228, total	1.11	pCi/L
G404	Compliance	E002	08/14/2023	Selenium, total	0.0006 U	mg/L
G404	Compliance	E002	08/14/2023	Specific Conductance @ 25C (field)	2,820	micromhos/cm
G404	Compliance	E002	08/14/2023	Sulfate, total	678	mg/L
G404	Compliance	E002	08/14/2023	Temperature	19.4	degrees C
G404	Compliance	E002	08/14/2023	Thallium, total	0.001 U	mg/L
G404	Compliance	E002	08/14/2023	Total Dissolved Solids	1,600	mg/L
G404	Compliance	E002	08/14/2023	Turbidity, field	5.20	NTU
G405	Compliance	E002	08/11/2023	Antimony, total	0.00120	mg/L
G405	Compliance	E002	08/11/2023	Arsenic, total	0.00100	mg/L

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 3, 2023

845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G405	Compliance	E002	08/11/2023	Barium, total	0.0158	mg/L
G405	Compliance	E002	08/11/2023	Beryllium, total	0.0002 U	mg/L
G405	Compliance	E002	08/11/2023	Boron, total	10.8	mg/L
G405	Compliance	E002	08/11/2023	Cadmium, total	0.0002 U	mg/L
G405	Compliance	E002	08/11/2023	Calcium, total	253	mg/L
G405	Compliance	E002	08/11/2023	Chloride, total	14.0	mg/L
G405	Compliance	E002	08/11/2023	Chromium, total	0.0007 U	mg/L
G405	Compliance	E002	08/11/2023	Cobalt, total	0.00110	mg/L
G405	Compliance	E002	08/11/2023	Dissolved Oxygen	1.83	mg/L
G405	Compliance	E002	08/11/2023	Fluoride, total	0.420 J+	mg/L
G405	Compliance	E002	08/11/2023	Lead, total	0.0006 U	mg/L
G405	Compliance	E002	08/11/2023	Lithium, total	0.00340	mg/L
G405	Compliance	E002	08/11/2023	Mercury, total	0.00006 U	mg/L
G405	Compliance	E002	08/11/2023	Molybdenum, total	0.0008 J	mg/L
G405	Compliance	E002	08/11/2023	Oxidation Reduction Potential	-21.0	mV
G405	Compliance	E002	08/11/2023	pH (field)	7.1	SU
G405	Compliance	E002	08/11/2023	Radium 226 + Radium 228, total	0.598	pCi/L
G405	Compliance	E002	08/11/2023	Selenium, total	0.0006 U	mg/L
G405	Compliance	E002	08/11/2023	Specific Conductance @ 25C (field)	3,390	micromhos/cm
G405	Compliance	E002	08/11/2023	Sulfate, total	916	mg/L
G405	Compliance	E002	08/11/2023	Temperature	18.2	degrees C
G405	Compliance	E002	08/11/2023	Thallium, total	0.001 U	mg/L
G405	Compliance	E002	08/11/2023	Total Dissolved Solids	1,790	mg/L
G405	Compliance	E002	08/11/2023	Turbidity, field	4.70	NTU
G406	Compliance	E002	08/11/2023	Antimony, total	0.0006 U	mg/L
G406	Compliance	E002	08/11/2023	Arsenic, total	0.0004 U	mg/L
G406	Compliance	E002	08/11/2023	Barium, total	0.0139	mg/L
G406	Compliance	E002	08/11/2023	Beryllium, total	0.0002 U	mg/L
G406	Compliance	E002	08/11/2023	Boron, total	1.54	mg/L
G406	Compliance	E002	08/11/2023	Cadmium, total	0.0002 U	mg/L
G406	Compliance	E002	08/11/2023	Calcium, total	193	mg/L
G406	Compliance	E002	08/11/2023	Chloride, total	4.00 J	mg/L
G406	Compliance	E002	08/11/2023	Chromium, total	0.0007 U	mg/L
G406	Compliance	E002	08/11/2023	Cobalt, total	0.0008 J	mg/L
G406	Compliance	E002	08/11/2023	Dissolved Oxygen	2.27	mg/L
G406	Compliance	E002	08/11/2023	Fluoride, total	0.330 J+	mg/L
G406	Compliance	E002	08/11/2023	Lead, total	0.0006 U	mg/L
G406	Compliance	E002	08/11/2023	Lithium, total	0.0121	mg/L
G406	Compliance	E002	08/11/2023	Mercury, total	0.00006 U	mg/L
G406	Compliance	E002	08/11/2023	Molybdenum, total	0.0006 U	mg/L
G406	Compliance	E002	08/11/2023	Oxidation Reduction Potential	81.0	mV
G406	Compliance	E002	08/11/2023	pH (field)	6.7	SU
G406	Compliance	E002	08/11/2023	Radium 226 + Radium 228, total	0.588	pCi/L
G406	Compliance	E002	08/11/2023	Selenium, total	0.0006 U	mg/L
G406	Compliance	E002	08/11/2023	Specific Conductance @ 25C (field)	2,270	micromhos/cm
G406	Compliance	E002	08/11/2023	Sulfate, total	482	mg/L

TABLE 1.
FIELD PARAMETERS AND ANALYTICAL RESULTS - QUARTER 3, 2023

845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	Well Type	Event	Date	Parameter	Result	Unit
G406	Compliance	E002	08/11/2023	Temperature	16.9	degrees C
G406	Compliance	E002	08/11/2023	Thallium, total	0.001 U	mg/L
G406	Compliance	E002	08/11/2023	Total Dissolved Solids	1,070	mg/L
G406	Compliance	E002	08/11/2023	Turbidity, field	4.10	NTU
G407	Compliance	E002	08/10/2023	Antimony, total	0.0008 U	mg/L
G407	Compliance	E002	08/10/2023	Arsenic, total	0.0004 U	mg/L
G407	Compliance	E002	08/10/2023	Barium, total	0.0132	mg/L
G407	Compliance	E002	08/10/2023	Beryllium, total	0.0002 U	mg/L
G407	Compliance	E002	08/10/2023	Boron, total	0.0614 J+	mg/L
G407	Compliance	E002	08/10/2023	Cadmium, total	0.0002 U	mg/L
G407	Compliance	E002	08/10/2023	Calcium, total	230	mg/L
G407	Compliance	E002	08/10/2023	Chloride, total	11.0	mg/L
G407	Compliance	E002	08/10/2023	Chromium, total	0.0007 U	mg/L
G407	Compliance	E002	08/10/2023	Cobalt, total	0.0008 J	mg/L
G407	Compliance	E002	08/10/2023	Dissolved Oxygen	0.800	mg/L
G407	Compliance	E002	08/10/2023	Fluoride, total	0.320 J+	mg/L
G407	Compliance	E002	08/10/2023	Lead, total	0.0006 U	mg/L
G407	Compliance	E002	08/10/2023	Lithium, total	0.0402	mg/L
G407	Compliance	E002	08/10/2023	Mercury, total	0.00006 U	mg/L
G407	Compliance	E002	08/10/2023	Molybdenum, total	0.0014 J	mg/L
G407	Compliance	E002	08/10/2023	Oxidation Reduction Potential	12.0	mV
G407	Compliance	E002	08/10/2023	pH (field)	6.8	SU
G407	Compliance	E002	08/10/2023	Radium 226 + Radium 228, total	0.684	pCi/L
G407	Compliance	E002	08/10/2023	Selenium, total	0.0006 U	mg/L
G407	Compliance	E002	08/10/2023	Specific Conductance @ 25C (field)	3,980	micromhos/cm
G407	Compliance	E002	08/10/2023	Sulfate, total	956	mg/L
G407	Compliance	E002	08/10/2023	Temperature	19.2	degrees C
G407	Compliance	E002	08/10/2023	Thallium, total	0.001 U	mg/L
G407	Compliance	E002	08/10/2023	Total Dissolved Solids	1,870	mg/L
G407	Compliance	E002	08/10/2023	Turbidity, field	9.80	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 high.

U = The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 2, 2023
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G1001	LCU	E001	Antimony, total	mg/L	02/15/23 - 06/07/23	2	100	Most recent sample	0.003	0.006	Standard	No Exceedance
G1001	LCU	E001	Arsenic, total	mg/L	02/15/23 - 06/07/23	2	50	Most recent sample	0.001	0.010	Standard	No Exceedance
G1001	LCU	E001	Barium, total	mg/L	02/15/23 - 06/07/23	2	0	Most recent sample	0.071	2.0	Standard	No Exceedance
G1001	LCU	E001	Beryllium, total	mg/L	02/15/23 - 06/07/23	2	50	Most recent sample	0.001	0.004	Standard	No Exceedance
G1001	LCU	E001	Boron, total	mg/L	05/12/21 - 06/07/23	3	0	Most recent sample	0.95	2	Standard	No Exceedance
G1001	LCU	E001	Cadmium, total	mg/L	02/15/23 - 06/07/23	2	100	Most recent sample	0.001	0.005	Standard	No Exceedance
G1001	LCU	E001	Chloride, total	mg/L	05/12/21 - 06/07/23	3	0	Most recent sample	15	200	Standard	No Exceedance
G1001	LCU	E001	Chromium, total	mg/L	02/15/23 - 06/07/23	2	50	Most recent sample	0.004	0.1	Standard	No Exceedance
G1001	LCU	E001	Cobalt, total	mg/L	05/12/21 - 06/07/23	3	67	Most recent sample	0.002	0.006	Standard	No Exceedance
G1001	LCU	E001	Fluoride, total	mg/L	02/15/23 - 06/07/23	2	100	Most recent sample	0.25	4.0	Standard	No Exceedance
G1001	LCU	E001	Lead, total	mg/L	02/15/23 - 06/07/23	2	50	Most recent sample	0.001	0.0120	Background	No Exceedance
G1001	LCU	E001	Lithium, total	mg/L	05/12/21 - 06/07/23	3	33	Most recent sample	0.02	0.04	Standard	No Exceedance
G1001	LCU	E001	Mercury, total	mg/L	02/15/23 - 06/07/23	2	100	Most recent sample	0.0002	0.002	Standard	No Exceedance
G1001	LCU	E001	Molybdenum, total	mg/L	02/15/23 - 06/07/23	2	0	Most recent sample	0.0079	0.1	Standard	No Exceedance
G1001	LCU	E001	pH (field)	SU	02/15/23 - 06/07/23	2	0	Most recent sample	7.0/7.0	6.5/9.0	Standard/Standard	No Exceedance
G1001	LCU	E001	Radium 226 + Radium 228, total	pCi/L	02/15/23 - 06/07/23	2	0	Most recent sample	0.917	5	Standard	No Exceedance
G1001	LCU	E001	Selenium, total	mg/L	02/15/23 - 06/07/23	2	50	Most recent sample	0.001	0.05	Standard	No Exceedance
G1001	LCU	E001	Sulfate, total	mg/L	05/12/21 - 06/07/23	3	0	Most recent sample	180	400	Standard	No Exceedance
G1001	LCU	E001	Thallium, total	mg/L	02/15/23 - 06/07/23	2	100	Most recent sample	0.001	0.002	Standard	No Exceedance
G1001	LCU	E001	Total Dissolved Solids	mg/L	02/15/23 - 06/07/23	2	0	Most recent sample	830	1,200	Standard	No Exceedance
G401	UA	E001	Antimony, total	mg/L	11/21/15 - 06/07/23	22	100	All ND - Last	0.003	0.006	Standard	No Exceedance
G401	UA	E001	Arsenic, total	mg/L	11/21/15 - 06/07/23	25	52	CB around T-S line	-0.019	0.010	Standard	No Exceedance
G401	UA	E001	Barium, total	mg/L	11/21/15 - 06/07/23	25	0	CB around T-S line	-0.191	2.0	Standard	No Exceedance
G401	UA	E001	Beryllium, total	mg/L	11/21/15 - 06/07/23	24	79	CI around median	0.001	0.004	Standard	No Exceedance
G401	UA	E001	Boron, total	mg/L	11/21/15 - 06/07/23	26	0	CI around median	3.5	2	Standard	Exceedance
G401	UA	E001	Cadmium, total	mg/L	11/21/15 - 06/07/23	25	64	CI around median	0.001	0.005	Standard	No Exceedance
G401	UA	E001	Chloride, total	mg/L	11/21/15 - 06/07/23	26	4	CI around geomean	3.02	200	Standard	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 2, 2023
 845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G401	UA	E001	Chromium, total	mg/L	11/21/15 - 06/07/23	25	64	CI around median	0.004	0.1	Standard	No Exceedance
G401	UA	E001	Cobalt, total	mg/L	11/21/15 - 06/07/23	25	0	CB around linear reg	0.0629	0.006	Standard	Exceedance
G401	UA	E001	Fluoride, total	mg/L	11/21/15 - 06/07/23	26	96	CI around median	0.25	4.0	Standard	No Exceedance
G401	UA	E001	Lead, total	mg/L	11/21/15 - 06/07/23	24	62	CB around T-S line	-0.027	0.0120	Background	No Exceedance
G401	UA	E001	Lithium, total	mg/L	11/21/15 - 06/07/23	27	4	CB around T-S line	-0.0148	0.04	Standard	No Exceedance
G401	UA	E001	Mercury, total	mg/L	11/21/15 - 06/07/23	24	79	CI around median	0.0002	0.002	Standard	No Exceedance
G401	UA	E001	Molybdenum, total	mg/L	11/21/15 - 06/07/23	25	68	CI around median	0.001	0.1	Standard	No Exceedance
G401	UA	E001	pH (field)	SU	11/21/15 - 06/07/23	28	0	CI around mean	5.9/6.1	6.5/9.0	Standard/Standard	Exceedance
G401	UA	E001	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 06/07/23	25	0	CI around median	0.694	5	Standard	No Exceedance
G401	UA	E001	Selenium, total	mg/L	11/21/15 - 06/07/23	25	60	CB around T-S line	-0.00172	0.05	Standard	No Exceedance
G401	UA	E001	Sulfate, total	mg/L	11/21/15 - 06/07/23	26	0	CI around median	2,000	400	Standard	Exceedance
G401	UA	E001	Thallium, total	mg/L	11/21/15 - 06/07/23	22	100	All ND - Last	0.001	0.002	Standard	No Exceedance
G401	UA	E001	Total Dissolved Solids	mg/L	11/21/15 - 06/07/23	26	0	CI around median	2,800	1,200	Standard	Exceedance
G402	UA	E001	Antimony, total	mg/L	11/21/15 - 06/06/23	22	100	All ND - Last	0.003	0.006	Standard	No Exceedance
G402	UA	E001	Arsenic, total	mg/L	11/21/15 - 06/06/23	25	0	CB around linear reg	-0.00557	0.010	Standard	No Exceedance
G402	UA	E001	Barium, total	mg/L	11/21/15 - 06/06/23	25	0	CB around linear reg	-0.00357	2.0	Standard	No Exceedance
G402	UA	E001	Beryllium, total	mg/L	11/21/15 - 06/06/23	24	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G402	UA	E001	Boron, total	mg/L	11/21/15 - 06/06/23	26	0	CB around linear reg	4.43	2	Standard	Exceedance
G402	UA	E001	Cadmium, total	mg/L	11/21/15 - 06/06/23	25	96	Most recent sample	0.001	0.005	Standard	No Exceedance
G402	UA	E001	Chloride, total	mg/L	11/21/15 - 06/06/23	26	15	CI around mean	1.58	200	Standard	No Exceedance
G402	UA	E001	Chromium, total	mg/L	11/21/15 - 06/06/23	25	48	CB around linear reg	-0.00421	0.1	Standard	No Exceedance
G402	UA	E001	Cobalt, total	mg/L	11/21/15 - 06/06/23	25	24	CB around linear reg	-0.00293	0.006	Standard	No Exceedance
G402	UA	E001	Fluoride, total	mg/L	11/21/15 - 06/06/23	26	15	CI around mean	0.295	4.0	Standard	No Exceedance
G402	UA	E001	Lead, total	mg/L	11/21/15 - 06/06/23	24	29	CB around linear reg	-0.00445	0.0120	Background	No Exceedance
G402	UA	E001	Lithium, total	mg/L	11/21/15 - 06/06/23	25	4	CB around linear reg	0.0103	0.04	Standard	No Exceedance
G402	UA	E001	Mercury, total	mg/L	11/21/15 - 06/06/23	24	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G402	UA	E001	Molybdenum, total	mg/L	11/21/15 - 06/06/23	25	0	CB around linear reg	0.000959	0.1	Standard	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 2, 2023
 845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G402	UA	E001	pH (field)	SU	11/21/15 - 06/06/23	26	0	CI around mean	6.7/6.8	6.5/9.0	Standard/Standard	No Exceedance
G402	UA	E001	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 06/06/23	25	0	CI around median	0.522	5	Standard	No Exceedance
G402	UA	E001	Selenium, total	mg/L	11/21/15 - 06/06/23	25	76	CB around T-S line	0.000296	0.05	Standard	No Exceedance
G402	UA	E001	Sulfate, total	mg/L	11/21/15 - 06/06/23	26	0	CB around T-S line	442	400	Standard	Exceedance
G402	UA	E001	Thallium, total	mg/L	11/21/15 - 06/06/23	22	100	All ND - Last	0.001	0.002	Standard	No Exceedance
G402	UA	E001	Total Dissolved Solids	mg/L	11/21/15 - 06/06/23	26	0	CB around linear reg	1,310	1,200	Standard	Exceedance
G403	UA	E001	Antimony, total	mg/L	11/23/15 - 06/07/23	22	100	All ND - Last	0.003	0.006	Standard	No Exceedance
G403	UA	E001	Arsenic, total	mg/L	11/23/15 - 06/07/23	25	56	CB around T-S line	0.000103	0.010	Standard	No Exceedance
G403	UA	E001	Barium, total	mg/L	11/23/15 - 06/07/23	25	0	CB around T-S line	0.0758	2.0	Standard	No Exceedance
G403	UA	E001	Beryllium, total	mg/L	11/23/15 - 06/07/23	24	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G403	UA	E001	Boron, total	mg/L	11/23/15 - 06/07/23	26	19	CI around geomean	0.0154	2	Standard	No Exceedance
G403	UA	E001	Cadmium, total	mg/L	11/23/15 - 06/07/23	25	100	All ND - Last	0.001	0.005	Standard	No Exceedance
G403	UA	E001	Chloride, total	mg/L	11/23/15 - 06/07/23	26	0	CB around linear reg	4.15	200	Standard	No Exceedance
G403	UA	E001	Chromium, total	mg/L	11/23/15 - 06/07/23	25	92	CI around median	0.004	0.1	Standard	No Exceedance
G403	UA	E001	Cobalt, total	mg/L	11/23/15 - 06/07/23	25	60	CI around median	0.002	0.006	Standard	No Exceedance
G403	UA	E001	Fluoride, total	mg/L	11/23/15 - 06/07/23	26	12	CB around T-S line	0.187	4.0	Standard	No Exceedance
G403	UA	E001	Lead, total	mg/L	11/23/15 - 06/07/23	24	88	CI around median	0.001	0.0120	Background	No Exceedance
G403	UA	E001	Lithium, total	mg/L	11/23/15 - 06/07/23	25	100	All ND - Last	0.02	0.04	Standard	No Exceedance
G403	UA	E001	Mercury, total	mg/L	11/23/15 - 06/07/23	24	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G403	UA	E001	Molybdenum, total	mg/L	11/23/15 - 06/07/23	25	72	CB around T-S line	0.000926	0.1	Standard	No Exceedance
G403	UA	E001	pH (field)	SU	11/23/15 - 06/07/23	26	0	CI around mean	6.8/7.0	6.5/9.0	Standard/Standard	No Exceedance
G403	UA	E001	Radium 226 + Radium 228, total	pCi/L	11/23/15 - 06/07/23	25	0	CI around mean	0.583	5	Standard	No Exceedance
G403	UA	E001	Selenium, total	mg/L	11/23/15 - 06/07/23	25	96	CI around median	0.001	0.05	Standard	No Exceedance
G403	UA	E001	Sulfate, total	mg/L	11/23/15 - 06/07/23	26	0	CB around T-S line	49.1	400	Standard	No Exceedance
G403	UA	E001	Thallium, total	mg/L	11/23/15 - 06/07/23	22	100	All ND - Last	0.001	0.002	Standard	No Exceedance
G403	UA	E001	Total Dissolved Solids	mg/L	11/23/15 - 06/07/23	26	0	CB around linear reg	376	1,200	Standard	No Exceedance
G404	UA	E001	Antimony, total	mg/L	11/21/15 - 06/07/23	22	100	All ND - Last	0.003	0.006	Standard	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 2, 2023
 845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G404	UA	E001	Arsenic, total	mg/L	11/21/15 - 06/07/23	25	88	CI around median	0.001	0.010	Standard	No Exceedance
G404	UA	E001	Barium, total	mg/L	11/21/15 - 06/07/23	25	0	CB around linear reg	0.0188	2.0	Standard	No Exceedance
G404	UA	E001	Beryllium, total	mg/L	11/21/15 - 06/07/23	24	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G404	UA	E001	Boron, total	mg/L	11/21/15 - 06/07/23	26	0	CB around linear reg	5.52	2	Standard	Exceedance
G404	UA	E001	Cadmium, total	mg/L	11/21/15 - 06/07/23	25	100	All ND - Last	0.001	0.005	Standard	No Exceedance
G404	UA	E001	Chloride, total	mg/L	11/21/15 - 06/07/23	26	0	CB around linear reg	133	200	Standard	No Exceedance
G404	UA	E001	Chromium, total	mg/L	11/21/15 - 06/07/23	25	100	All ND - Last	0.004	0.1	Standard	No Exceedance
G404	UA	E001	Cobalt, total	mg/L	11/21/15 - 06/07/23	25	96	CI around median	0.002	0.006	Standard	No Exceedance
G404	UA	E001	Fluoride, total	mg/L	11/21/15 - 06/07/23	26	82	CI around median	0.25	4.0	Standard	No Exceedance
G404	UA	E001	Lead, total	mg/L	11/21/15 - 06/07/23	24	96	CI around median	0.001	0.0120	Background	No Exceedance
G404	UA	E001	Lithium, total	mg/L	11/21/15 - 06/07/23	25	88	CB around T-S line	0.0166	0.04	Standard	No Exceedance
G404	UA	E001	Mercury, total	mg/L	11/21/15 - 06/07/23	24	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G404	UA	E001	Molybdenum, total	mg/L	11/21/15 - 06/07/23	25	100	All ND - Last	0.001	0.1	Standard	No Exceedance
G404	UA	E001	pH (field)	SU	11/21/15 - 06/07/23	26	0	CB around linear reg	6.4/6.8	6.5/9.0	Standard/Standard	No Exceedance
G404	UA	E001	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 06/07/23	25	0	CI around mean	0.605	5	Standard	No Exceedance
G404	UA	E001	Selenium, total	mg/L	11/21/15 - 06/07/23	25	100	All ND - Last	0.001	0.05	Standard	No Exceedance
G404	UA	E001	Sulfate, total	mg/L	11/21/15 - 06/07/23	26	0	CB around linear reg	422	400	Standard	Exceedance
G404	UA	E001	Thallium, total	mg/L	11/21/15 - 06/07/23	22	100	All ND - Last	0.001	0.002	Standard	No Exceedance
G404	UA	E001	Total Dissolved Solids	mg/L	11/21/15 - 06/07/23	26	0	CB around linear reg	1,250	1,200	Standard	Exceedance
G405	UA	E001	Antimony, total	mg/L	11/21/15 - 06/06/23	22	100	All ND - Last	0.003	0.006	Standard	No Exceedance
G405	UA	E001	Arsenic, total	mg/L	11/21/15 - 06/06/23	25	35	CB around T-S line	-0.00241	0.010	Standard	No Exceedance
G405	UA	E001	Barium, total	mg/L	11/21/15 - 06/06/23	25	0	CB around linear reg	0.00689	2.0	Standard	No Exceedance
G405	UA	E001	Beryllium, total	mg/L	11/21/15 - 06/06/23	24	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G405	UA	E001	Boron, total	mg/L	11/21/15 - 06/06/23	26	0	CI around mean	9.19	2	Standard	Exceedance
G405	UA	E001	Cadmium, total	mg/L	11/21/15 - 06/06/23	25	96	CI around median	0.001	0.005	Standard	No Exceedance
G405	UA	E001	Chloride, total	mg/L	11/21/15 - 06/06/23	26	0	CB around T-S line	-2.09	200	Standard	No Exceedance
G405	UA	E001	Chromium, total	mg/L	11/21/15 - 06/06/23	25	88	CI around median	0.004	0.1	Standard	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 2, 2023
 845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G405	UA	E001	Cobalt, total	mg/L	11/21/15 - 06/06/23	25	73	CB around T-S line	0.00129	0.006	Standard	No Exceedance
G405	UA	E001	Fluoride, total	mg/L	11/21/15 - 06/06/23	26	11	CB around linear reg	0.208	4.0	Standard	No Exceedance
G405	UA	E001	Lead, total	mg/L	11/21/15 - 06/06/23	24	48	CB around T-S line	-0.00135	0.0120	Background	No Exceedance
G405	UA	E001	Lithium, total	mg/L	11/21/15 - 06/06/23	25	96	CB around T-S line	0.01	0.04	Standard	No Exceedance
G405	UA	E001	Mercury, total	mg/L	11/21/15 - 06/06/23	24	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G405	UA	E001	Molybdenum, total	mg/L	11/21/15 - 06/06/23	25	38	CI around median	0.001	0.1	Standard	No Exceedance
G405	UA	E001	pH (field)	SU	11/21/15 - 06/06/23	26	0	CI around mean	6.8/7.0	6.5/9.0	Standard/Standard	No Exceedance
G405	UA	E001	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 06/06/23	25	0	CI around median	0.541	5	Standard	No Exceedance
G405	UA	E001	Selenium, total	mg/L	11/21/15 - 06/06/23	25	88	CI around median	0.001	0.05	Standard	No Exceedance
G405	UA	E001	Sulfate, total	mg/L	11/21/15 - 06/06/23	26	0	CB around linear reg	412	400	Standard	Exceedance
G405	UA	E001	Thallium, total	mg/L	11/21/15 - 06/06/23	22	100	All ND - Last	0.001	0.002	Standard	No Exceedance
G405	UA	E001	Total Dissolved Solids	mg/L	11/21/15 - 06/06/23	26	0	CI around mean	1,530	1,200	Standard	Exceedance
G406	UA	E001	Antimony, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.003	0.006	Standard	No Exceedance
G406	UA	E001	Arsenic, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.001	0.010	Standard	No Exceedance
G406	UA	E001	Barium, total	mg/L	10/14/20 - 05/31/23	11	0	CI around median	0.012	2.0	Standard	No Exceedance
G406	UA	E001	Beryllium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G406	UA	E001	Boron, total	mg/L	10/14/20 - 05/31/23	11	0	CI around median	1.4	2	Standard	No Exceedance
G406	UA	E001	Cadmium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.005	Standard	No Exceedance
G406	UA	E001	Chloride, total	mg/L	10/14/20 - 05/31/23	11	18	CI around mean	2.94	200	Standard	No Exceedance
G406	UA	E001	Chromium, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.004	0.1	Standard	No Exceedance
G406	UA	E001	Cobalt, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.002	0.006	Standard	No Exceedance
G406	UA	E001	Fluoride, total	mg/L	10/14/20 - 05/31/23	11	18	CI around geomean	0.269	4.0	Standard	No Exceedance
G406	UA	E001	Lead, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.001	0.0120	Background	No Exceedance
G406	UA	E001	Lithium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.02	0.04	Standard	No Exceedance
G406	UA	E001	Mercury, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G406	UA	E001	Molybdenum, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.001	0.1	Standard	No Exceedance
G406	UA	E001	pH (field)	SU	10/14/20 - 05/31/23	11	0	CI around mean	6.5/6.7	6.5/9.0	Standard/Standard	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 2, 2023
 845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G406	UA	E001	Radium 226 + Radium 228, total	pCi/L	10/14/20 - 05/31/23	11	0	CI around mean	0.184	5	Standard	No Exceedance
G406	UA	E001	Selenium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.05	Standard	No Exceedance
G406	UA	E001	Sulfate, total	mg/L	10/14/20 - 05/31/23	11	0	CI around median	450	400	Standard	Exceedance
G406	UA	E001	Thallium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.002	Standard	No Exceedance
G406	UA	E001	Total Dissolved Solids	mg/L	10/14/20 - 05/31/23	11	0	CI around mean	992	1,200	Standard	No Exceedance
G407	UA	E001	Antimony, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.003	0.006	Standard	No Exceedance
G407	UA	E001	Arsenic, total	mg/L	10/14/20 - 05/31/23	11	82	CI around median	0.001	0.010	Standard	No Exceedance
G407	UA	E001	Barium, total	mg/L	10/14/20 - 05/31/23	11	0	CI around median	0.012	2.0	Standard	No Exceedance
G407	UA	E001	Beryllium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G407	UA	E001	Boron, total	mg/L	10/14/20 - 05/31/23	11	0	CI around mean	0.0718	2	Standard	No Exceedance
G407	UA	E001	Cadmium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.005	Standard	No Exceedance
G407	UA	E001	Chloride, total	mg/L	10/14/20 - 05/31/23	11	0	CI around mean	11.4	200	Standard	No Exceedance
G407	UA	E001	Chromium, total	mg/L	10/14/20 - 05/31/23	11	82	CI around median	0.004	0.1	Standard	No Exceedance
G407	UA	E001	Cobalt, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.002	0.006	Standard	No Exceedance
G407	UA	E001	Fluoride, total	mg/L	10/14/20 - 05/31/23	11	27	CI around geomean	0.254	4.0	Standard	No Exceedance
G407	UA	E001	Lead, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.001	0.0120	Background	No Exceedance
G407	UA	E001	Lithium, total	mg/L	10/14/20 - 05/31/23	11	0	CI around mean	0.0388	0.04	Standard	No Exceedance
G407	UA	E001	Mercury, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G407	UA	E001	Molybdenum, total	mg/L	10/14/20 - 05/31/23	11	9	CI around median	0.0012	0.1	Standard	No Exceedance
G407	UA	E001	pH (field)	SU	10/14/20 - 05/31/23	11	0	CI around mean	6.5/6.7	6.5/9.0	Standard/Standard	No Exceedance
G407	UA	E001	Radium 226 + Radium 228, total	pCi/L	10/14/20 - 05/31/23	11	0	CI around mean	0.103	5	Standard	No Exceedance
G407	UA	E001	Selenium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.05	Standard	No Exceedance
G407	UA	E001	Sulfate, total	mg/L	10/14/20 - 05/31/23	11	0	CI around median	440	400	Standard	Exceedance
G407	UA	E001	Thallium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.002	Standard	No Exceedance
G407	UA	E001	Total Dissolved Solids	mg/L	10/14/20 - 05/31/23	11	0	CI around mean	1,920	1,200	Standard	Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 2, 2023

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)

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 3, 2023
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G401	UA	E002	Antimony, total	mg/L	11/21/15 - 08/11/23	23	100	All ND - Last	0.001	0.006	Standard	No Exceedance
G401	UA	E002	Arsenic, total	mg/L	11/21/15 - 08/11/23	26	54	CB around T-S line	-0.0164	0.010	Standard	No Exceedance
G401	UA	E002	Barium, total	mg/L	11/21/15 - 08/11/23	26	0	CB around T-S line	-0.155	2.0	Standard	No Exceedance
G401	UA	E002	Beryllium, total	mg/L	11/21/15 - 08/11/23	25	80	CI around median	0.001	0.004	Standard	No Exceedance
G401	UA	E002	Boron, total	mg/L	11/21/15 - 08/11/23	27	0	CI around median	3.5	2	Standard	Exceedance
G401	UA	E002	Cadmium, total	mg/L	11/21/15 - 08/11/23	26	65	CB around T-S line	-0.0016	0.005	Standard	No Exceedance
G401	UA	E002	Chloride, total	mg/L	11/21/15 - 08/11/23	27	7	CI around geomean	2.96	200	Standard	No Exceedance
G401	UA	E002	Chromium, total	mg/L	11/21/15 - 08/11/23	26	65	CB around T-S line	-0.0295	0.1	Standard	No Exceedance
G401	UA	E002	Cobalt, total	mg/L	11/21/15 - 08/11/23	26	0	CB around linear reg	0.0656	0.006	Standard	Exceedance
G401	UA	E002	Fluoride, total	mg/L	11/21/15 - 08/11/23	27	93	CI around median	0.25	4.0	Standard	No Exceedance
G401	UA	E002	Lead, total	mg/L	11/21/15 - 08/11/23	25	64	CB around T-S line	-0.0302	0.0120	Background	No Exceedance
G401	UA	E002	Lithium, total	mg/L	11/21/15 - 08/11/23	28	4	CB around T-S line	-0.00812	0.04	Standard	No Exceedance
G401	UA	E002	Mercury, total	mg/L	11/21/15 - 08/11/23	25	80	CI around median	0.0002	0.002	Standard	No Exceedance
G401	UA	E002	Molybdenum, total	mg/L	11/21/15 - 08/11/23	26	69	CI around median	0.001	0.1	Standard	No Exceedance
G401	UA	E002	pH (field)	SU	11/21/15 - 08/11/23	29	0	CI around mean	5.9/6.1	6.5/9.0	Standard/Standard	Exceedance
G401	UA	E002	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 08/11/23	26	0	CI around median	0.694	5	Standard	No Exceedance
G401	UA	E002	Selenium, total	mg/L	11/21/15 - 08/11/23	26	62	CB around T-S line	-0.00152	0.05	Standard	No Exceedance
G401	UA	E002	Sulfate, total	mg/L	11/21/15 - 08/11/23	27	0	CI around median	2,000	400	Standard	Exceedance
G401	UA	E002	Thallium, total	mg/L	11/21/15 - 08/11/23	23	100	All ND - Last	0.002	0.002	Standard	No Exceedance
G401	UA	E002	Total Dissolved Solids	mg/L	11/21/15 - 08/11/23	27	0	CI around median	2,800	1,200	Standard	Exceedance
G402	UA	E002	Antimony, total	mg/L	11/21/15 - 08/11/23	23	100	All ND - Last	0.001	0.006	Standard	No Exceedance
G402	UA	E002	Arsenic, total	mg/L	11/21/15 - 08/11/23	26	0	CB around linear reg	-0.00512	0.010	Standard	No Exceedance
G402	UA	E002	Barium, total	mg/L	11/21/15 - 08/11/23	26	0	CB around linear reg	-0.00217	2.0	Standard	No Exceedance
G402	UA	E002	Beryllium, total	mg/L	11/21/15 - 08/11/23	25	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G402	UA	E002	Boron, total	mg/L	11/21/15 - 08/11/23	27	0	CB around linear reg	4.5	2	Standard	Exceedance
G402	UA	E002	Cadmium, total	mg/L	11/21/15 - 08/11/23	26	96	Most recent sample	0.001	0.005	Standard	No Exceedance
G402	UA	E002	Chloride, total	mg/L	11/21/15 - 08/11/23	27	18	CI around mean	1.58	200	Standard	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 3, 2023
 845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G402	UA	E002	Chromium, total	mg/L	11/21/15 - 08/11/23	26	46	CB around linear reg	-0.00394	0.1	Standard	No Exceedance
G402	UA	E002	Cobalt, total	mg/L	11/21/15 - 08/11/23	26	23	CB around linear reg	-0.00277	0.006	Standard	No Exceedance
G402	UA	E002	Fluoride, total	mg/L	11/21/15 - 08/11/23	27	15	CI around median	0.295	4.0	Standard	No Exceedance
G402	UA	E002	Lead, total	mg/L	11/21/15 - 08/11/23	25	28	CB around linear reg	-0.00413	0.0120	Background	No Exceedance
G402	UA	E002	Lithium, total	mg/L	11/21/15 - 08/11/23	26	4	CB around linear reg	0.0108	0.04	Standard	No Exceedance
G402	UA	E002	Mercury, total	mg/L	11/21/15 - 08/11/23	25	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G402	UA	E002	Molybdenum, total	mg/L	11/21/15 - 08/11/23	26	0	CB around linear reg	0.00103	0.1	Standard	No Exceedance
G402	UA	E002	pH (field)	SU	11/21/15 - 08/11/23	27	0	CB around linear reg	6.8/7.1	6.5/9.0	Standard/Standard	No Exceedance
G402	UA	E002	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 08/11/23	26	0	CI around median	0.547	5	Standard	No Exceedance
G402	UA	E002	Selenium, total	mg/L	11/21/15 - 08/11/23	26	77	CB around T-S line	0.000439	0.05	Standard	No Exceedance
G402	UA	E002	Sulfate, total	mg/L	11/21/15 - 08/11/23	27	0	CB around T-S line	427	400	Standard	Exceedance
G402	UA	E002	Thallium, total	mg/L	11/21/15 - 08/11/23	23	100	All ND - Last	0.002	0.002	Standard	No Exceedance
G402	UA	E002	Total Dissolved Solids	mg/L	11/21/15 - 08/11/23	27	0	CB around linear reg	1,300	1,200	Standard	Exceedance
G403	UA	E002	Antimony, total	mg/L	11/23/15 - 08/11/23	23	100	All ND - Last	0.001	0.006	Standard	No Exceedance
G403	UA	E002	Arsenic, total	mg/L	11/23/15 - 08/11/23	26	58	CB around T-S line	0.000177	0.010	Standard	No Exceedance
G403	UA	E002	Barium, total	mg/L	11/23/15 - 08/11/23	26	0	CB around T-S line	0.0779	2.0	Standard	No Exceedance
G403	UA	E002	Beryllium, total	mg/L	11/23/15 - 08/11/23	25	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G403	UA	E002	Boron, total	mg/L	11/23/15 - 08/11/23	27	18	CI around geomean	0.0157	2	Standard	No Exceedance
G403	UA	E002	Cadmium, total	mg/L	11/23/15 - 08/11/23	26	100	All ND - Last	0.001	0.005	Standard	No Exceedance
G403	UA	E002	Chloride, total	mg/L	11/23/15 - 08/11/23	27	0	CB around linear reg	4.22	200	Standard	No Exceedance
G403	UA	E002	Chromium, total	mg/L	11/23/15 - 08/11/23	26	92	CB around T-S line	0.00358	0.1	Standard	No Exceedance
G403	UA	E002	Cobalt, total	mg/L	11/23/15 - 08/11/23	26	58	CI around median	0.002	0.006	Standard	No Exceedance
G403	UA	E002	Fluoride, total	mg/L	11/23/15 - 08/11/23	27	11	CB around T-S line	0.188	4.0	Standard	No Exceedance
G403	UA	E002	Lead, total	mg/L	11/23/15 - 08/11/23	25	88	CI around median	0.001	0.0120	Background	No Exceedance
G403	UA	E002	Lithium, total	mg/L	11/23/15 - 08/11/23	26	96	CB around T-S line	0.01	0.04	Standard	No Exceedance
G403	UA	E002	Mercury, total	mg/L	11/23/15 - 08/11/23	25	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G403	UA	E002	Molybdenum, total	mg/L	11/23/15 - 08/11/23	26	73	CI around median	0.001	0.1	Standard	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 3, 2023
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 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G403	UA	E002	pH (field)	SU	11/23/15 - 08/11/23	27	0	CI around mean	6.8/7.0	6.5/9.0	Standard/Standard	No Exceedance
G403	UA	E002	Radium 226 + Radium 228, total	pCi/L	11/23/15 - 08/11/23	26	0	CI around mean	0.598	5	Standard	No Exceedance
G403	UA	E002	Selenium, total	mg/L	11/23/15 - 08/11/23	26	96	CI around median	0.001	0.05	Standard	No Exceedance
G403	UA	E002	Sulfate, total	mg/L	11/23/15 - 08/11/23	27	0	CB around T-S line	51.1	400	Standard	No Exceedance
G403	UA	E002	Thallium, total	mg/L	11/23/15 - 08/11/23	23	100	All ND - Last	0.002	0.002	Standard	No Exceedance
G403	UA	E002	Total Dissolved Solids	mg/L	11/23/15 - 08/11/23	27	0	CB around linear reg	380	1,200	Standard	No Exceedance
G404	UA	E002	Antimony, total	mg/L	11/21/15 - 08/14/23	23	96	CI around median	0.003	0.006	Standard	No Exceedance
G404	UA	E002	Arsenic, total	mg/L	11/21/15 - 08/14/23	26	85	CI around median	0.001	0.010	Standard	No Exceedance
G404	UA	E002	Barium, total	mg/L	11/21/15 - 08/14/23	26	0	CB around linear reg	0.02	2.0	Standard	No Exceedance
G404	UA	E002	Beryllium, total	mg/L	11/21/15 - 08/14/23	25	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G404	UA	E002	Boron, total	mg/L	11/21/15 - 08/14/23	27	0	CB around linear reg	6.35	2	Standard	Exceedance
G404	UA	E002	Cadmium, total	mg/L	11/21/15 - 08/14/23	26	100	All ND - Last	0.001	0.005	Standard	No Exceedance
G404	UA	E002	Chloride, total	mg/L	11/21/15 - 08/14/23	27	0	CB around linear reg	121	200	Standard	No Exceedance
G404	UA	E002	Chromium, total	mg/L	11/21/15 - 08/14/23	26	96	CI around median	0.004	0.1	Standard	No Exceedance
G404	UA	E002	Cobalt, total	mg/L	11/21/15 - 08/14/23	26	93	CI around median	0.002	0.006	Standard	No Exceedance
G404	UA	E002	Fluoride, total	mg/L	11/21/15 - 08/14/23	27	79	CI around median	0.25	4.0	Standard	No Exceedance
G404	UA	E002	Lead, total	mg/L	11/21/15 - 08/14/23	25	96	CI around median	0.001	0.0120	Background	No Exceedance
G404	UA	E002	Lithium, total	mg/L	11/21/15 - 08/14/23	26	85	CB around T-S line	0.01	0.04	Standard	No Exceedance
G404	UA	E002	Mercury, total	mg/L	11/21/15 - 08/14/23	25	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G404	UA	E002	Molybdenum, total	mg/L	11/21/15 - 08/14/23	26	100	All ND - Last	0.0015	0.1	Standard	No Exceedance
G404	UA	E002	pH (field)	SU	11/21/15 - 08/14/23	27	0	CB around linear reg	6.5/6.8	6.5/9.0	Standard/Standard	No Exceedance
G404	UA	E002	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 08/14/23	26	0	CI around mean	0.625	5	Standard	No Exceedance
G404	UA	E002	Selenium, total	mg/L	11/21/15 - 08/14/23	26	100	All ND - Last	0.001	0.05	Standard	No Exceedance
G404	UA	E002	Sulfate, total	mg/L	11/21/15 - 08/14/23	27	0	CB around linear reg	452	400	Standard	Exceedance
G404	UA	E002	Thallium, total	mg/L	11/21/15 - 08/14/23	23	100	All ND - Last	0.002	0.002	Standard	No Exceedance
G404	UA	E002	Total Dissolved Solids	mg/L	11/21/15 - 08/14/23	27	0	CB around linear reg	1,300	1,200	Standard	Exceedance
G405	UA	E002	Antimony, total	mg/L	11/21/15 - 08/11/23	23	96	CI around median	0.003	0.006	Standard	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 3, 2023
 845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G405	UA	E002	Arsenic, total	mg/L	11/21/15 - 08/11/23	26	33	CB around T-S line	-0.00274	0.010	Standard	No Exceedance
G405	UA	E002	Barium, total	mg/L	11/21/15 - 08/11/23	26	0	CB around linear reg	0.0071	2.0	Standard	No Exceedance
G405	UA	E002	Beryllium, total	mg/L	11/21/15 - 08/11/23	25	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G405	UA	E002	Boron, total	mg/L	11/21/15 - 08/11/23	27	0	CI around mean	9.25	2	Standard	Exceedance
G405	UA	E002	Cadmium, total	mg/L	11/21/15 - 08/11/23	26	96	CI around median	0.001	0.005	Standard	No Exceedance
G405	UA	E002	Chloride, total	mg/L	11/21/15 - 08/11/23	27	0	CB around T-S line	-3.13	200	Standard	No Exceedance
G405	UA	E002	Chromium, total	mg/L	11/21/15 - 08/11/23	26	89	CI around median	0.004	0.1	Standard	No Exceedance
G405	UA	E002	Cobalt, total	mg/L	11/21/15 - 08/11/23	26	70	CB around T-S line	0.00114	0.006	Standard	No Exceedance
G405	UA	E002	Fluoride, total	mg/L	11/21/15 - 08/11/23	27	11	CB around linear reg	0.22	4.0	Standard	No Exceedance
G405	UA	E002	Lead, total	mg/L	11/21/15 - 08/11/23	25	50	CB around T-S line	-0.000982	0.0120	Background	No Exceedance
G405	UA	E002	Lithium, total	mg/L	11/21/15 - 08/11/23	26	92	CB around T-S line	0.01	0.04	Standard	No Exceedance
G405	UA	E002	Mercury, total	mg/L	11/21/15 - 08/11/23	25	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G405	UA	E002	Molybdenum, total	mg/L	11/21/15 - 08/11/23	26	41	CI around median	0.001	0.1	Standard	No Exceedance
G405	UA	E002	pH (field)	SU	11/21/15 - 08/11/23	27	0	CI around mean	6.8/7.0	6.5/9.0	Standard/Standard	No Exceedance
G405	UA	E002	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 08/11/23	26	0	CI around median	0.598	5	Standard	No Exceedance
G405	UA	E002	Selenium, total	mg/L	11/21/15 - 08/11/23	26	89	CI around median	0.001	0.05	Standard	No Exceedance
G405	UA	E002	Sulfate, total	mg/L	11/21/15 - 08/11/23	27	0	CB around linear reg	436	400	Standard	Exceedance
G405	UA	E002	Thallium, total	mg/L	11/21/15 - 08/11/23	23	100	All ND - Last	0.002	0.002	Standard	No Exceedance
G405	UA	E002	Total Dissolved Solids	mg/L	11/21/15 - 08/11/23	27	0	CI around mean	1,540	1,200	Standard	Exceedance
G406	UA	E002	Antimony, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.001	0.006	Standard	No Exceedance
G406	UA	E002	Arsenic, total	mg/L	10/14/20 - 08/11/23	12	92	CI around median	0.001	0.010	Standard	No Exceedance
G406	UA	E002	Barium, total	mg/L	10/14/20 - 08/11/23	12	0	CI around median	0.012	2.0	Standard	No Exceedance
G406	UA	E002	Beryllium, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G406	UA	E002	Boron, total	mg/L	10/14/20 - 08/11/23	12	0	CI around median	1.4	2	Standard	No Exceedance
G406	UA	E002	Cadmium, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.001	0.005	Standard	No Exceedance
G406	UA	E002	Chloride, total	mg/L	10/14/20 - 08/11/23	12	17	CI around mean	3.05	200	Standard	No Exceedance
G406	UA	E002	Chromium, total	mg/L	10/14/20 - 08/11/23	12	92	CI around median	0.004	0.1	Standard	No Exceedance

TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 3, 2023
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G406	UA	E002	Cobalt, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.001	0.006	Standard	No Exceedance
G406	UA	E002	Fluoride, total	mg/L	10/14/20 - 08/11/23	12	17	CI around geomean	0.268	4.0	Standard	No Exceedance
G406	UA	E002	Lead, total	mg/L	10/14/20 - 08/11/23	12	92	CI around median	0.001	0.0120	Background	No Exceedance
G406	UA	E002	Lithium, total	mg/L	10/14/20 - 08/11/23	12	92	CI around median	0.02	0.04	Standard	No Exceedance
G406	UA	E002	Mercury, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G406	UA	E002	Molybdenum, total	mg/L	10/14/20 - 08/11/23	12	92	CI around median	0.001	0.1	Standard	No Exceedance
G406	UA	E002	pH (field)	SU	10/14/20 - 08/11/23	12	0	CI around mean	6.5/6.7	6.5/9.0	Standard/Standard	No Exceedance
G406	UA	E002	Radium 226 + Radium 228, total	pCi/L	10/14/20 - 08/11/23	12	0	CI around mean	0.226	5	Standard	No Exceedance
G406	UA	E002	Selenium, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.001	0.05	Standard	No Exceedance
G406	UA	E002	Sulfate, total	mg/L	10/14/20 - 08/11/23	12	0	CI around median	450	400	Standard	Exceedance
G406	UA	E002	Thallium, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.002	0.002	Standard	No Exceedance
G406	UA	E002	Total Dissolved Solids	mg/L	10/14/20 - 08/11/23	12	0	CI around mean	1,000	1,200	Standard	No Exceedance
G407	UA	E002	Antimony, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.001	0.006	Standard	No Exceedance
G407	UA	E002	Arsenic, total	mg/L	10/14/20 - 08/10/23	12	83	CI around median	0.001	0.010	Standard	No Exceedance
G407	UA	E002	Barium, total	mg/L	10/14/20 - 08/10/23	12	0	CI around median	0.012	2.0	Standard	No Exceedance
G407	UA	E002	Beryllium, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.001	0.004	Standard	No Exceedance
G407	UA	E002	Boron, total	mg/L	10/14/20 - 08/10/23	12	0	CI around mean	0.07	2	Standard	No Exceedance
G407	UA	E002	Cadmium, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.001	0.005	Standard	No Exceedance
G407	UA	E002	Chloride, total	mg/L	10/14/20 - 08/10/23	12	0	CI around mean	11.3	200	Standard	No Exceedance
G407	UA	E002	Chromium, total	mg/L	10/14/20 - 08/10/23	12	83	CI around median	0.004	0.1	Standard	No Exceedance
G407	UA	E002	Cobalt, total	mg/L	10/14/20 - 08/10/23	12	92	CI around median	0.002	0.006	Standard	No Exceedance
G407	UA	E002	Fluoride, total	mg/L	10/14/20 - 08/10/23	12	25	CI around geomean	0.259	4.0	Standard	No Exceedance
G407	UA	E002	Lead, total	mg/L	10/14/20 - 08/10/23	12	92	CI around median	0.001	0.0120	Background	No Exceedance
G407	UA	E002	Lithium, total	mg/L	10/14/20 - 08/10/23	12	0	CI around mean	0.0389	0.04	Standard	No Exceedance
G407	UA	E002	Mercury, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.0002	0.002	Standard	No Exceedance
G407	UA	E002	Molybdenum, total	mg/L	10/14/20 - 08/10/23	12	17	CI around median	0.0012	0.1	Standard	No Exceedance
G407	UA	E002	pH (field)	SU	10/14/20 - 08/10/23	12	0	CI around mean	6.6/6.8	6.5/9.0	Standard/Standard	No Exceedance

**TABLE 2.
COMPARISON OF STATISTICAL RESULTS TO GWPS - QUARTER 3, 2023**

845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	GWPS	GWPS Source	Compliance Result
G407	UA	E002	Radium 226 + Radium 228, total	pCi/L	10/14/20 - 08/10/23	12	0	CI around mean	0.162	5	Standard	No Exceedance
G407	UA	E002	Selenium, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.001	0.05	Standard	No Exceedance
G407	UA	E002	Sulfate, total	mg/L	10/14/20 - 08/10/23	12	0	CI around median	440	400	Standard	Exceedance
G407	UA	E002	Thallium, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.002	0.002	Standard	No Exceedance
G407	UA	E002	Total Dissolved Solids	mg/L	10/14/20 - 08/10/23	12	0	CI around mean	1,910	1,200	Standard	Exceedance

Notes:

Compliance Result:

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

Exceedance: The statistical result exceeded the GWPS.

HSU = hydrostratigraphic 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)

FIGURES



- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- STAFF GAGE, RIVER
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY



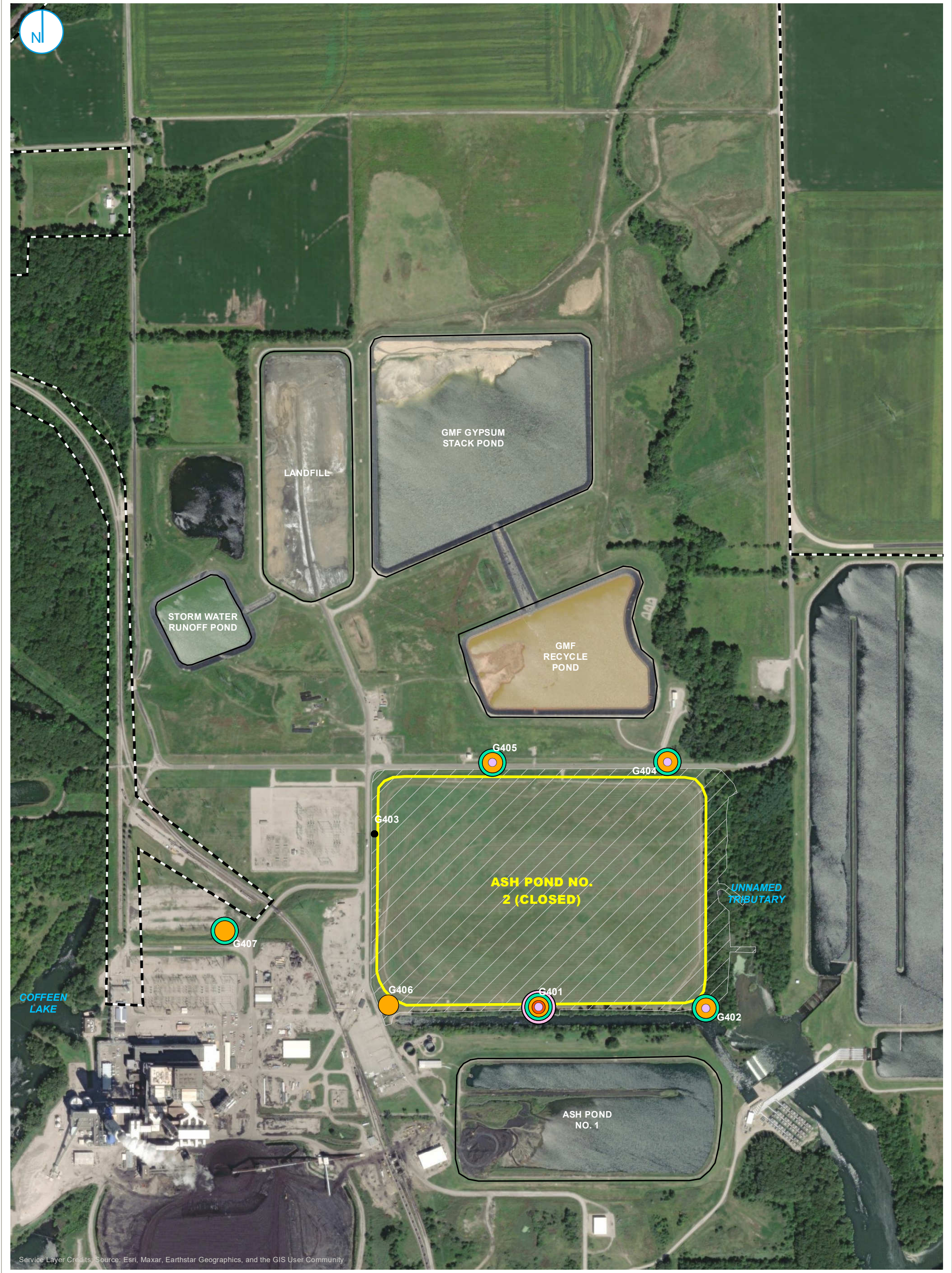
MONITORING WELL LOCATION MAP

2023 ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
ASH POND NO.2
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.





Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

- TOTAL BORON EXCEEDANCE
- TOTAL COBALT EXCEEDANCE
- TOTAL SULFATE EXCEEDANCE
- TOTAL DISSOLVED SOLIDS EXCEEDANCE
- pH EXCEEDANCE
- COMPLIANCE WELL WITHOUT EXCEEDANCE
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

0 275 550 Feet

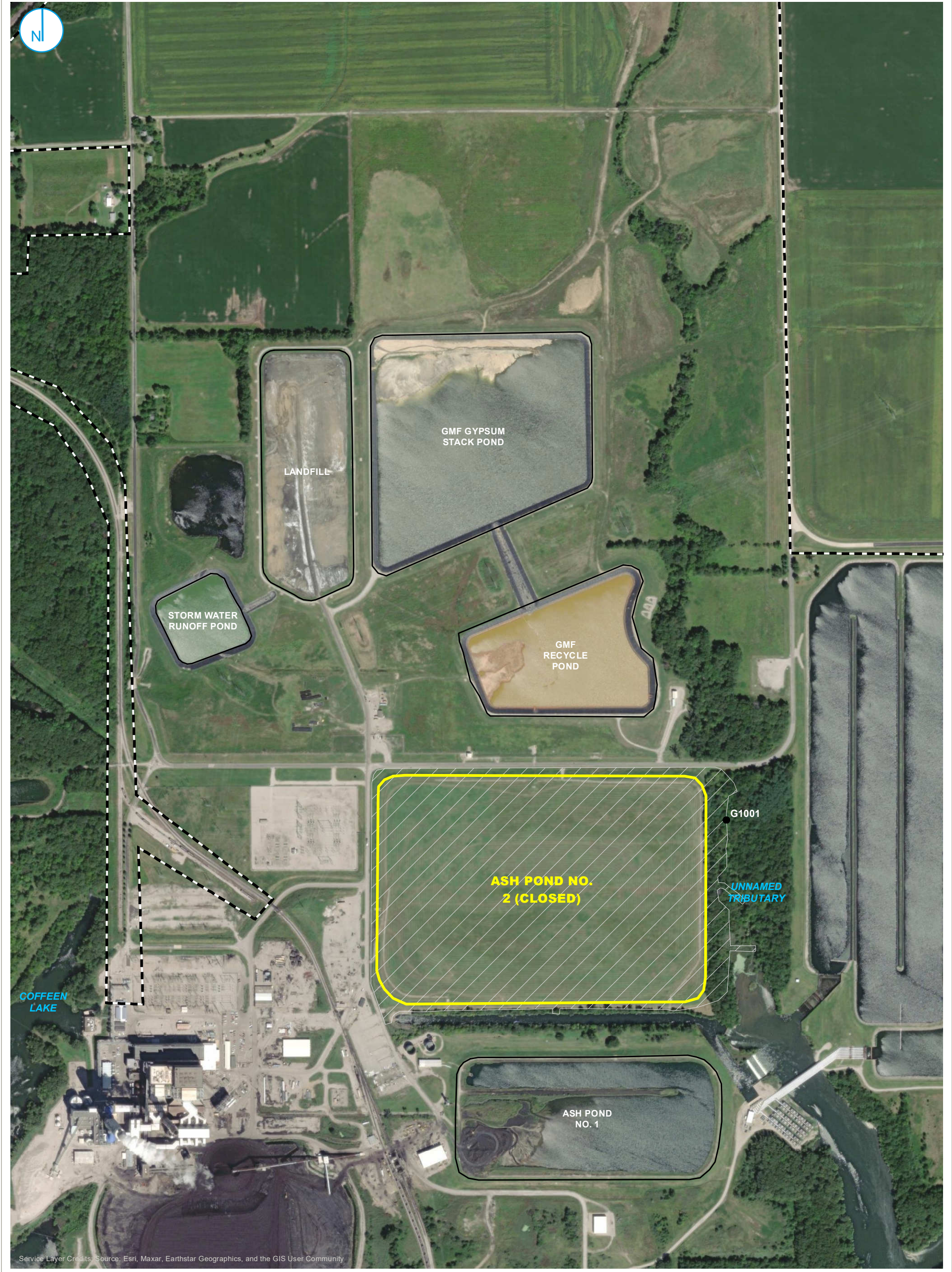
**GWPS EXCEEDANCE MAP
UPPERMOST AQUIFER
QUARTERS 2-3, 2023**

**2023 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT
ASH POND NO. 2
COFFEEN POWER PLANT
COFFEEN, ILLINOIS**

FIGURE 2

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.





Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

- COMPLIANCE WELL WITHOUT EXCEEDANCE
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- ▨ LIMITS OF FINAL COVER
- ⋯ PROPERTY BOUNDARY

**GWPS EXCEEDANCE MAP
LOWER CONFINING UNIT
QUARTERS 2-3, 2023**

FIGURE 3

**2023 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT**
ASH POND NO. 2
 COFFEEN POWER PLANT
 COFFEEN, ILLINOIS

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.



0 275 550
 Feet



Service Layer Credits: World Imagery, State of Missouri, Maxar

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- SOURCE SAMPLE LOCATION
- LEACHATE WELL
- STAFF GAGE; RIVER
- STAFF GAGE, CCR UNIT

- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- PROPERTY BOUNDARY

POTENTIOMETRIC SURFACE MAP APRIL 30, 2023

2023 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT
ASH POND NO. 2
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

FIGURE 4

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.



0 325 650
Feet

NOTES:
1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)



Service Layer Credits: World Imagery, State of Missouri, Maxar

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- PORE WATER WELL
- ⊕ LEACHATE WELL
- MONITORING WELL
- ⊕ STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER

- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- ➔ GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

POTENTIOMETRIC SURFACE MAP JUNE 8, 2023

FIGURE 6

2023 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT
ASH POND NO. 2
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.



0 325 650
Feet

NOTES:
1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)



Service Layer Credits: World Imagery, State of Missouri, Maxar

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- PORE WATER WELL
- LEACHATE WELL
- MONITORING WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER

- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

NOTES:
 1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
 2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 325 650
 Feet

POTENTIOMETRIC SURFACE MAP JULY 8, 2023

**2023 ANNUAL GROUNDWATER MONITORING
 AND CORRECTIVE ACTION REPORT
 ASH POND NO. 2
 COFFEEN POWER PLANT
 COFFEEN, ILLINOIS**

FIGURE 7

RAMBOLL AMERICAS
 ENGINEERING SOLUTIONS, INC.





Service Layer Credits: World Imagery, State of Missouri, Maxar

- | | | | |
|--|----------------------------|--|---|
| | COMPLIANCE MONITORING WELL | | GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88) |
| | BACKGROUND WELL | | INFERRED GROUNDWATER ELEVATION CONTOUR |
| | LEACHATE WELL | | GROUNDWATER FLOW DIRECTION |
| | MONITORING WELL | | REGULATED UNIT (SUBJECT UNIT) |
| | STAFF GAGE, CCR UNIT | | SITE FEATURE |
| | STAFF GAGE, RIVER | | LIMITS OF FINAL COVER |
| | | | PROPERTY BOUNDARY |

NOTES:

- ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
- ELEVATIONS IN BRACKETS WERE OBTAINED OUTSIDE OF THE 24-HOUR PERIOD FROM INITIATION OF DEPTH TO GROUNDWATER MEASUREMENTS BUT WITHIN THE SAME SAMPLING EVENT.
- ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)



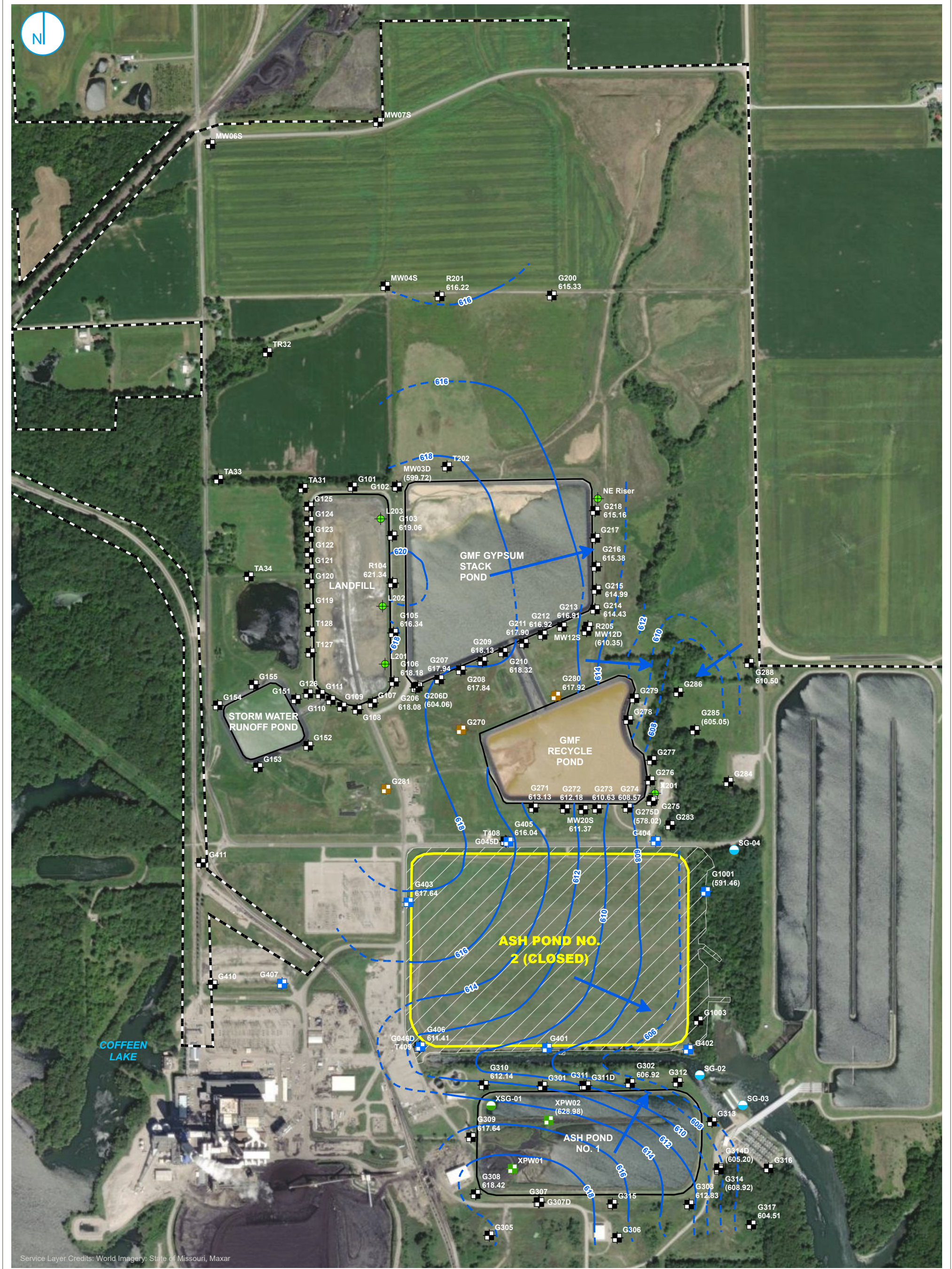
**POTENTIOMETRIC SURFACE MAP
AUGUST 8, 2023**

**2023 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT
ASH POND NO. 2
COFFEEN POWER PLANT
COFFEEN, ILLINOIS**

FIGURE 8

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.





Service Layer Credits: World Imagery, State of Missouri, Maxar

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- PORE WATER WELL
- LEACHATE WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER

- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

NOTES:
 1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
 2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

POTENTIOMETRIC SURFACE MAP SEPTEMBER 25, 2023

**2023 ANNUAL GROUNDWATER MONITORING
 AND CORRECTIVE ACTION REPORT
 ASH POND NO. 2
 COFFEEN POWER PLANT
 COFFEEN, ILLINOIS**

FIGURE 9

RAMBOLL AMERICAS
 ENGINEERING SOLUTIONS, INC.





Service Layer Credits: World Imagery, State of Missouri, Maxar

- COMPLIANCE MONITORING WELL
- BACKGROUND WELL
- PORE WATER WELL
- LEACHATE WELL
- MONITORING WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER

- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

NOTES:
 1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
 2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

0 325 650
 Feet

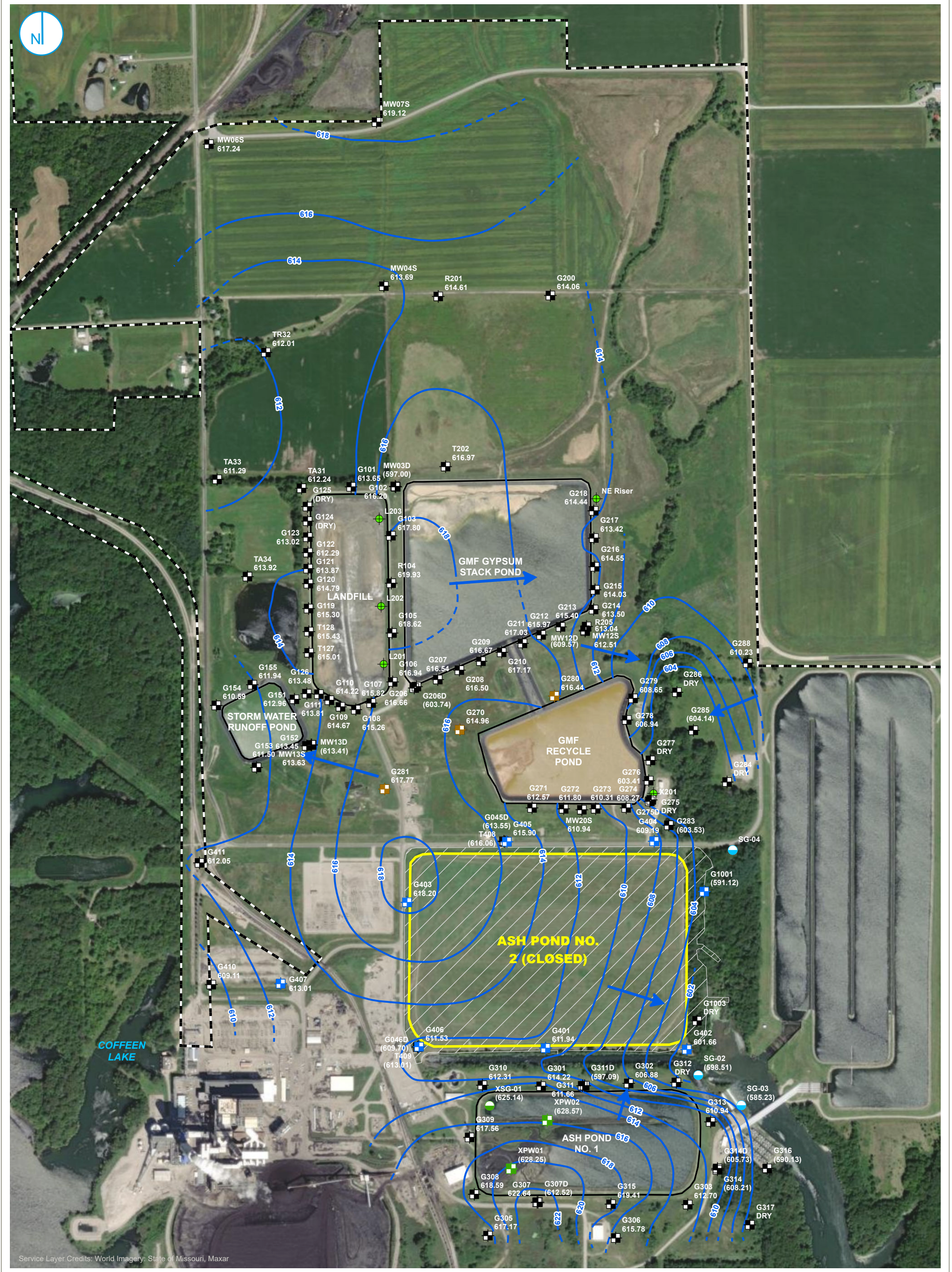
POTENTIOMETRIC SURFACE MAP OCTOBER 24 AND 25, 2023

**2023 ANNUAL GROUNDWATER MONITORING
 AND CORRECTIVE ACTION REPORT
 ASH POND NO. 2
 COFFEEN POWER PLANT
 COFFEEN, ILLINOIS**

FIGURE 10

RAMBOLL AMERICAS
 ENGINEERING SOLUTIONS, INC.





Service Layer Credits: World Imagery, State of Missouri, Maxar

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- PORE WATER WELL
- LEACHATE WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER

- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

NOTES:
 1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
 2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

**POTENTIOMETRIC SURFACE MAP
 NOVEMBER 13, 2023**

**2023 ANNUAL GROUNDWATER MONITORING
 AND CORRECTIVE ACTION REPORT
 ASH POND NO. 2
 COFFEEN POWER PLANT
 COFFEEN, ILLINOIS**

FIGURE 11

RAMBOLL AMERICAS
 ENGINEERING SOLUTIONS, INC.



0 320 640 Feet



Service Layer Credits: World Imagery, State of Missouri, Maxar

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- MONITORING WELL
- PORE WATER WELL
- LEACHATE WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER

- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- ➔ GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

NOTES:
 1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
 2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

**POTENTIOMETRIC SURFACE MAP
 DECEMBER 18, 2023**

**2023 ANNUAL GROUNDWATER MONITORING
 AND CORRECTIVE ACTION REPORT
 ASH POND NO. 2
 COFFEEN POWER PLANT
 COFFEEN, ILLINOIS**

FIGURE 12

RAMBOLL AMERICAS
 ENGINEERING SOLUTIONS, INC.



ATTACHMENTS

**ATTACHMENT A
GROUNDWATER ELEVATION DATA**

**ATTACHMENT A
GROUNDWATER ELEVATION DATA**

2023 35 I.A.C. § 845 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

COFFEEN POWER PLANT

ASH POND NO. 2

COFFEEN, IL

Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G1001	Compliance	LCU	04/30/2023	6.53	591.07
G1001	Compliance	LCU	05/30/2023	6.61	590.99
G1001	Compliance	LCU	08/08/2023	6.32	591.29
G1001	Compliance	LCU	09/25/2023	6.14	591.46
G1001	Compliance	LCU	10/24/2023	6.20	591.41
G1001	Compliance	LCU	11/13/2023	6.49	591.12
G1001	Compliance	LCU	12/18/2023	5.88	591.73
G270	Background	UA	04/30/2023	2.83	623.02
G270	Background	UA	05/30/2023	5.06	620.79
G270	Background	UA	08/14/2023	[8.52]	[617.34]
G270	Background	UA	10/25/2023	10.92	614.94
G270	Background	UA	11/13/2023	10.90	614.96
G270	Background	UA	12/18/2023	9.84	616.02
G280	Background	UA	04/30/2023	3.52	621.82
G280	Background	UA	05/30/2023	3.96	621.38
G280	Background	UA	08/08/2023	5.80	619.55
G280	Background	UA	09/25/2023	7.42	617.92
G280	Background	UA	10/25/2023	8.56	616.79
G280	Background	UA	11/13/2023	8.91	616.44
G280	Background	UA	12/18/2023	9.04	616.31
G281	Background	UA	04/30/2023	6.44	619.91
G281	Background	UA	05/30/2023	6.64	619.71
G281	Background	UA	08/08/2023	6.39	619.97
G281	Background	UA	10/24/2023	8.64	617.72
G281	Background	UA	11/13/2023	8.59	617.77
G281	Background	UA	12/18/2023	6.83	619.53
G401	Compliance	UA	05/30/2023	21.72	603.85
G401	Compliance	UA	08/08/2023	21.75	603.82
G401	Compliance	UA	10/24/2023	21.66	603.91
G401	Compliance	UA	11/13/2023	13.63	611.94
G402	Compliance	UA	04/30/2023	9.59	603.77
G402	Compliance	UA	05/30/2023	10.56	602.80
G402	Compliance	UA	06/08/2023	10.94	602.43
G402	Compliance	UA	07/08/2023	11.08	602.29
G402	Compliance	UA	08/08/2023	11.65	601.72
G402	Compliance	UA	10/24/2023	12.01	601.36
G402	Compliance	UA	11/13/2023	11.71	601.66
G402	Compliance	UA	12/18/2023	11.48	601.89
G403	Compliance	UA	04/30/2023	7.09	619.37
G403	Compliance	UA	05/30/2023	8.13	618.33
G403	Compliance	UA	06/08/2023	8.74	617.73
G403	Compliance	UA	07/08/2023	7.21	619.26
G403	Compliance	UA	08/08/2023	7.45	619.02
G403	Compliance	UA	09/25/2023	8.82	617.64
G403	Compliance	UA	10/24/2023	8.62	617.85
G403	Compliance	UA	11/13/2023	8.27	618.20

**ATTACHMENT A
GROUNDWATER ELEVATION DATA**

2023 35 I.A.C. § 845 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

COFFEEN POWER PLANT

ASH POND NO. 2

COFFEEN, IL

Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G403	Compliance	UA	12/18/2023	6.64	619.83
G404	Compliance	UA	04/30/2023	4.64	611.02
G404	Compliance	UA	05/30/2023	5.42	610.24
G404	Compliance	UA	08/14/2023	[5.62]	[610.05]
G404	Compliance	UA	10/24/2023	7.09	608.58
G404	Compliance	UA	11/13/2023	6.48	609.19
G404	Compliance	UA	12/18/2023	4.70	610.97
G405	Compliance	UA	04/30/2023	6.53	617.09
G405	Compliance	UA	05/30/2023	6.83	616.79
G405	Compliance	UA	06/08/2023	7.08	616.55
G405	Compliance	UA	07/08/2023	6.59	617.04
G405	Compliance	UA	08/08/2023	6.85	616.78
G405	Compliance	UA	09/25/2023	7.59	616.04
G405	Compliance	UA	10/24/2023	7.84	615.79
G405	Compliance	UA	11/13/2023	7.73	615.90
G405	Compliance	UA	12/18/2023	6.55	617.08
G406	Compliance	UA	04/30/2023	12.48	612.87
G406	Compliance	UA	05/30/2023	13.06	612.29
G406	Compliance	UA	06/08/2023	13.75	611.61
G406	Compliance	UA	07/08/2023	11.92	613.44
G406	Compliance	UA	08/08/2023	11.49	613.87
G406	Compliance	UA	09/25/2023	13.95	611.41
G406	Compliance	UA	10/24/2023	14.08	611.28
G406	Compliance	UA	11/13/2023	13.83	611.53
G406	Compliance	UA	12/18/2023	12.03	613.33
G407	Compliance	UA	04/30/2023	6.91	614.40
G407	Compliance	UA	05/30/2023	7.35	613.96
G407	Compliance	UA	06/08/2023	8.75	612.57
G407	Compliance	UA	07/08/2023	8.22	613.10
G407	Compliance	UA	08/08/2023	8.79	612.53
G407	Compliance	UA	10/24/2023	8.39	612.93
G407	Compliance	UA	11/13/2023	8.31	613.01
G407	Compliance	UA	12/18/2023	6.76	614.56
SG-02	Water Level	SW	05/30/2023	7.47	598.40
SG-02	Water Level	SW	10/24/2023	7.49	598.38
SG-02	Water Level	SW	11/13/2023	7.36	598.51
SG-02	Water Level	SW	12/18/2023	7.31	598.56
SG-03	Water Level	SW	05/30/2023	9.85	585.09
SG-03	Water Level	SW	08/08/2023	9.65	585.29
SG-03	Water Level	SW	10/24/2023	8.96	585.98
SG-03	Water Level	SW	11/13/2023	9.71	585.23
SG-03	Water Level	SW	12/18/2023	8.92	586.02
SG-04	Water Level	SW	05/30/2023	6.41	593.11

Notes:

Due to malfunctioning pressure transducer, data gaps exist in monthly water level elevations prior to the fourth quarter. Monthly depth to water measurements were collected manually in the fourth quarter.

BMP = below measuring point

Bracketing [] indicates that the measurement was obtained outside of the episodic depth to groundwater measurements time frame.

NAVD88 = North American Vertical Datum of 1988

Monitored Unit Abbreviations:

LCU = lower confining unit

SW = surface water

UA = uppermost aquifer

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**ATTACHMENT B
ALTERNATIVE SOURCE DEMONSTRATION AND IEPA
DENIAL LETTER**



engineers | scientists | innovators

Alternative Source Demonstration - G407 Sulfate and Total Dissolved Solids

Coffeen Power Plant Ash Pond No. 2

(Unit ID #102)

IEPA ID: W1350150004-02

35 I.A.C. 845.650

Prepared for

Illinois Power Generating Company

134 Cips Lane

Coffeen, Illinois 62017

Prepared by

Geosyntec Consultants, Inc.

500 W. Wilson Bridge Rd., Suite 250

Worthington, OH 43085

Project Number: GLP8029

December 2023

Alternative Source Demonstration - G407 Sulfate and Total Dissolved Solids

Coffeen Power Plant Ash Pond No. 2

(Unit ID #102)

IEPA ID: W1350150004-02

35 I.A.C. § 845.650

Prepared for

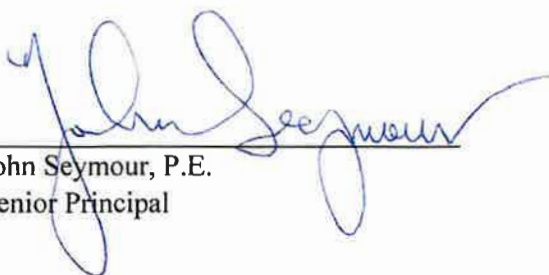
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Expires: 11/30/2025



John Seymour, P.E.
Senior Principal



Project Number: GLP8029

December 2023

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- Figure 2: AP2 Monitoring Well Network Boron Time Series
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- Attachment 2: G407 Boring Log and Well Construction Diagram
- Attachment 3: Compiled Potentiometric Surface Maps
- Attachment 4: Groundwater Model Output

ACRONYMS AND ABBREVIATIONS

ASD	Alternative source demonstration
AP2	Ash Pond No. 2
CCR	Coal combustion residuals
CPP	Coffeen Power Plant
DA	Deep aquifer
EPRI	Electric Power Research Institute
GWPS	Groundwater protection standard
HCR	Hydrogeologic site characterization report
IAC	Illinois Administrative Code
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
LCU	Lower confining unit
LOE	Line of evidence
mg/L	milligrams per liter
NID	National Inventory of Dams
TDS	Total dissolved solids
UA	Uppermost aquifer
UCU	Upper confining unit
USEPA	United States Environmental Protection Agency

1. INTRODUCTION

Geosyntec Consultants, Inc. has prepared this alternative source demonstration (ASD) on behalf of Illinois Power Generating Company (IPGC) regarding the Ash Pond No. 2 coal combustion residuals (CCR) unit at the Coffeen Power Plant (CPP) near Coffeen, Illinois. The ASD is completed pursuant to Illinois Administrative Code (IAC) Title 35, Part 845 (“Standards for the Disposal of CCR in Surface Impoundments”) and was completed by December 15, 2023, within 60 days of determination of the exceedances (October 16, 2023), as required by 35 I.A.C.§ 845.650(e). This report applies specifically to the CCR Unit referred to as Ash Pond No. 2 (AP2), identification (ID) number (No.) 102, IEPA ID No. W1350150004-02, and National Inventory of Dams (NID) ID No. IL50723 and was prepared in conformance with guidance provided in the Electric Power Research Institute (EPRI) guidance for development of ASDs at CCR sites (EPRI 2017), and the United States Environmental Protection Agency (USEPA)’s Solid Waste Disposal Facility Criteria: Technical Manual (USEPA 1993).

An exceedance of sulfate was identified above the site-specific groundwater protection standard (GWPS) of 400 milligrams per liter (mg/L) at monitoring well G407 following the Second Quarter 2023 sampling event. An exceedance of total dissolved solids (TDS) was identified above the site-specific GWPS of 1,200 mg/L at monitoring well G407 following the Second Quarter 2023 sampling event. TDS represents the mass of dissolved material in the water rather than a specific chemical constituent. The TDS exceedance at G407 is controlled by the elevated concentrations of sulfate.

Under 35 IAC 845.650(e), the owner or operator of a CCR surface impoundment may submit a demonstration that a source other than the CCR surface impoundment caused the contamination and the CCR surface impoundment did not contribute to the contamination, or that the exceedance of the groundwater protection standard resulted from error in sampling, analysis, or statistical evaluation, natural variation in groundwater quality, or a change in the potentiometric surface and groundwater flow direction.

Pursuant to 35 IAC 845.650(e), the lines of evidence (LOEs) documented in this ASD demonstrate that a source other than the CPP AP2 CCR unit was the cause of the GWPS exceedances for sulfate and TDS at downgradient monitoring well G407 and that AP2 did not contribute to the exceedance. Anthropogenic impacts associated with CPP operations was identified as the alternative source for elevated sulfate and TDS concentrations at G407.

2. BACKGROUND

2.1 Site Location and Description

The CPP, operated by the IPGC is located in Montgomery County, Illinois approximately two miles south of the City of Coffeen in Section 11, Township 7 North, and Range 7 East. The CPP is located between the two lobes of Coffeen Lake to the west, east, and south, and is bordered by agricultural land to the north. The CPP operated as a coal-fired power plant from 1964 to November 2019 and has five CCR management units. The approximately 1,100-acre Coffeen Lake was built by damming the McDavid Branch of the East Fork of Shoal Creek in 1963 for use as an artificial cooling lake for the CPP. The CPP and vicinity, including G407 and AP2, are located on a peninsula of land between two lobes of Coffeen Lake. Historically, coal mines were operated at depth in the vicinity of the CPP and a US Minerals processing facility is located to the north. An aerial view of the site is shown in shown in **Attachment 1**.

2.2 Description of the CCR Unit

Coffeen AP2 is an unlined surface impoundment with a surface area of approximately 60 acres, with berms up to 47 feet above the surrounding land surface. AP2 was removed from service and capped in the mid-1980s using a two-foot compacted clay and soil cap (Ramboll 2019).

AP2 was recapped starting in 2019 using a geomembrane cover system in accordance with a closure plan submitted to the Illinois Environmental Protection Agency (IEPA; AECOM, 2017). The cover system installation was completed on November 17, 2020. The geomembrane cap design addresses the potential for slope failure and water infiltration into the closed CCR unit by directing the drainage of surface water (i.e., precipitation) off the cover system.

2.3 Geology and Hydrogeology

Significant site investigation has been completed to fully characterize the geology, hydrogeology, and groundwater quality as provided in the AP2 Initial Operating Permit Application (Burns & McDonnell 2021) and the Hydrogeologic Site Characterization Report (HCR) for AP2 (NRT 2017). These materials are incorporated herein.

There are multiple layers of unlithified material present beneath AP2 and above bedrock which are categorized into hydrostratigraphic units listed below (from the surface downward) based on stratigraphic relationships and hydrogeologic characteristics:

- **Upper Confining Unit (UCU):** Composed of the Roxana and Peoria Silts (Loess Unit) and the upper clayey portion of the Hagarstown member which are classified as silts-clayey silts and gravelly clay below the surficial soil.
- **Uppermost Aquifer (UA):** Composed of the Hagarstown Member which is classified as primarily sandy-gravelly silts and clays with beds of sedimentary deposits. Beds consist of thin

(generally less than three feet in thickness), moderate to high permeability sand, silty sand, and sandy silt/clay units.

- **Lower Confining Unit (LCU):** Comprised of the Vandalia Member, Mulberry Grove Member, and Smithboro Member. The LCU in the vicinity of AP2 consists of thick (generally greater than 15 feet), very low permeability sandy to silty till or clay till.
- **Deep Aquifer (DA):** Comprised of sand and sandy silt/clay units of the Yarmouth Soil, which include accretionary deposits of fine sediment and organic materials, typically less than five feet thick and discontinuous across the CPP.

Bedrock is comprised of the Pennsylvanian-age Bond Formation, which consists of limestone and calcareous clays and shale. Geologic cross-sections modified from versions provided in the Hydrogeologic Characterization Report are provided as **Figure 1**. CCR within AP2 is underlain by the UCU in the majority of the footprint.

G407 is screened from 13.8 to 18.6 ft. bgs (604.6 to 600.0 ft elevation [North American Vertical Datum of 1988, NAVD88]). The boring log for G407, provided in **Attachment 2**, indicates that the lithology of the screened interval is a yellowish brown silt with little fine-to coarse-grained sand.

The potentiometric groundwater contours and generalized groundwater flow directions at the site are shown in **Attachment 3**. Groundwater flow in the vicinity of AP2 is generally to the south and east. The groundwater to the west of AP2 is separated from the groundwater flow regime under AP2 by a groundwater divide. More information regarding this groundwater divide is provided in Section 3.1.

The groundwater monitoring well network for AP2 consists of 11 monitoring wells: three background monitoring wells (G270, G280, G281) and eight compliance monitoring locations (G1001, G401, G402, G403, G404, G405, G406, G407) (**Attachment 1**). Monitoring wells within the network are screened in the UA from approximately elevations 600 to 610 ft.

Monitoring well G407 was originally included in the IEPA-approved Closure Plan monitoring well network, which consisted of fourteen groundwater monitoring wells used to monitor the UA, including three background wells (G270, G280, and G281) and eleven compliance wells (G154, G279, G401, G402, G403, G404, G405, G406, G407, G410, and G411) (NRT 2017). Monitoring wells G154, G279, G407, G410, and G411 were included in the IEPA groundwater monitoring plan to monitor sulfate in groundwater that could potentially be attributed to AP2. These wells were monitored in accordance with Water Pollution Control Permit 2020-EA-65027-1 Special Condition No. 6. An Addendum to the Groundwater Monitoring Plan (Ramboll 2021a) submitted with the Operating Permit (Burns & McDonnell 2021) noted that while G407 is on the opposite side of the groundwater divide from AP2, it would continue to be monitored due to the elevated concentrations of sulfate at that location.

3. G407 ASD LINES OF EVIDENCE

Monitoring well G407 and AP2 are located on opposite sides of a groundwater flow divide which presents a barrier to flow from AP2 toward G407. This groundwater divide is evidenced through groundwater potentiometric surface mapping and modeling, site topography, and groundwater chemistry at the site. This groundwater divide prevents groundwater underlying AP2 from migrating to G407; therefore, the sulfate and TDS exceedances are not attributed to AP2, as discussed below.

3.1 LOE #1 Groundwater Does Not Flow from AP2 to G407 due to the Presence of a Groundwater Divide

Compliance well G407 is located directly west of AP2 (**Attachment 1**). Groundwater flow from beneath AP2 has consistently been southeast. Potentiometric surface maps constructed by Ramboll since November 2016 (**Attachment 3**) indicate that groundwater flow from AP2 towards G407 has never been observed, regardless of season (Ramboll 2021b). Groundwater flow at G407 is predominantly southwest and is separated from groundwater flow beneath AP2 by a groundwater divide located near the western edge of AP2 and occasionally centered around G403. This groundwater divide is present in all potentiometric surface maps generated for the monitoring network between 2016 and 2023 (**Attachment 3**) and is likely related to thinning of the Hagarstown Beds under the western portions of AP2 (NRT 2017). The presence of the known groundwater divide indicates that the observed sulfate and TDS exceedances at G407 cannot be contributed to AP2, as G407 is not hydrologically downgradient of AP2.

The most recent groundwater modeling for AP1 and the historical modeling for AP2 completed by Ramboll indicate that at steady state the groundwater divide separates G407 and AP2 in alignment with the observed flow directions from groundwater measurements. CPP and the areas monitored by the well networks are located on a peninsula between two lobes of Coffeen Lake; groundwater naturally flows from the central portions of the peninsula toward the eastern and western lobes of Coffeen Lake. Groundwater potentiometric surface maps (**Attachment 3**) which include monitoring wells present throughout the peninsula clearly illustrate this flow pattern since monitoring under the 40 C.F.R. 257 regulations began in 2015. Calibration of the groundwater flow model also supports the presence of this flow pattern and the groundwater divide located between AP2 and G407 (**Attachment 4**).

Given the presence of this groundwater divide between AP2 and monitoring well G407, impacts from AP2 would not be observed at G407 and the sulfate and TDS exceedances should be attributed to an alternative source.

3.2 LOE #2 The Presence of a Surface Water Divide Further Supports the Presence of a Groundwater Divide

A surface water divide has also been noted in the vicinity of AP2. The CPP and vicinity, including G407 and AP2, are located on a peninsula of land between two lobes of Coffeen Lake. Topography of the land surface determines which direction precipitation (surface water) will drain towards lower elevations (Coffeen Lake). Connecting the high topographic areas within the peninsula defines the location of a surface water divide (**Figure 3**). Surface water present on the west side of

the divide drains toward the west lobe of Coffeen Lake and water that falls on the east side of the divide flows toward the east lobe of Coffeen Lake. As illustrated on **Figure 3**, G407 is located on the west side of the divide and AP2 is located on the east side of the divide; therefore, surface water from AP2 will not flow west in the direction of G407.

Shallow unconfined groundwater flow typically follows topography (flowing from high head to low head) and the attached groundwater potentiometric surface maps confirm that groundwater flows in the same direction as surface water (**Attachment 3**).

3.3 LOE #3 G407 Does Not Contain Elevated Levels of Boron, which is Indicative of AP2 Leachate

The co-located detection of elevated boron and sulfate concentrations has been noted as a key indicator of the presence of CCR constituents related to AP2 (NRT 2017). Boron concentrations at G407 are consistent with background, with reported values ranging between 0.06 and 0.15 mg/L for groundwater sampling events completed between March 2018 and May 2023 (**Figure 2**). This concentration range is substantially lower than concentrations observed at wells which are known to be impacted by AP2, such as G404, which exhibited boron concentrations two orders of magnitude greater than G407 (up to 15.0 mg/L) over the same time interval.

As shown in **Figure 4**, boron concentrations at G407 are comparable to other unimpacted wells within the monitoring network, including the background wells (G270, G280, and G281) and compliance well G403, which is located cross-gradient of AP2 near the center of the groundwater flow divide. Monitoring locations which are located on the same side of the flow divide as AP2 and downgradient of the unit, such as G404 and G405, tend to exhibit much higher boron concentrations which are indicative of impacts from AP2. These results support the presence of the groundwater divide between AP2 and G407.

The lack of elevated boron concentrations at G407 on the west side of the groundwater divide suggests that the sulfate and associated TDS exceedances observed in groundwater at G407 are not attributable to impacts from AP2. Instead, the presence of elevated sulfate may be attributed to a host of anthropogenic sources at the site, such as the historical mining activities, coal storage activities, construction of engineered features such as railroad beds or parking lots, material handling, or similar.

4. CONCLUSIONS

It has been demonstrated that the sulfate and TDS exceedances at G407 are not due to a release from the AP2 CCR unit and that the unit has not contributed to the exceedance, but instead the exceedance is attributed to a source other than AP2. The following summarizes the three LOEs used to support the sulfate and TDS demonstration:

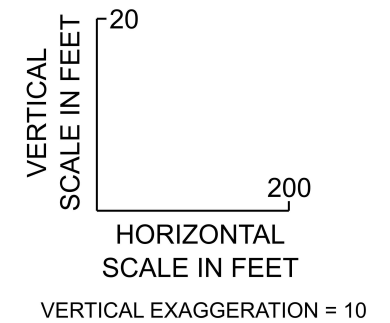
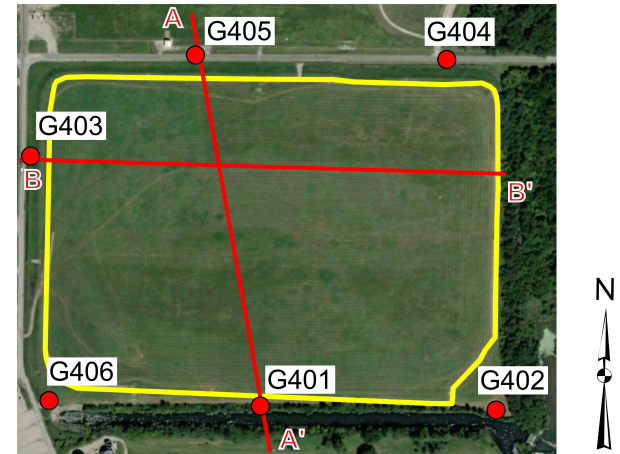
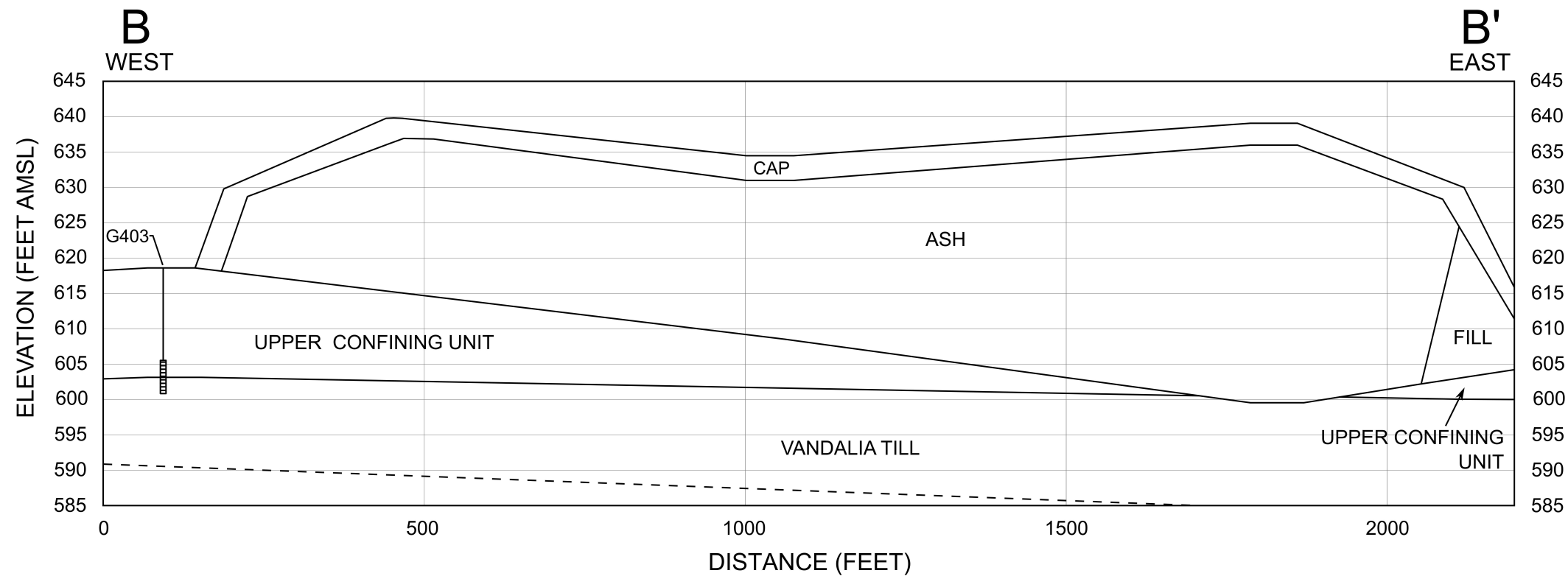
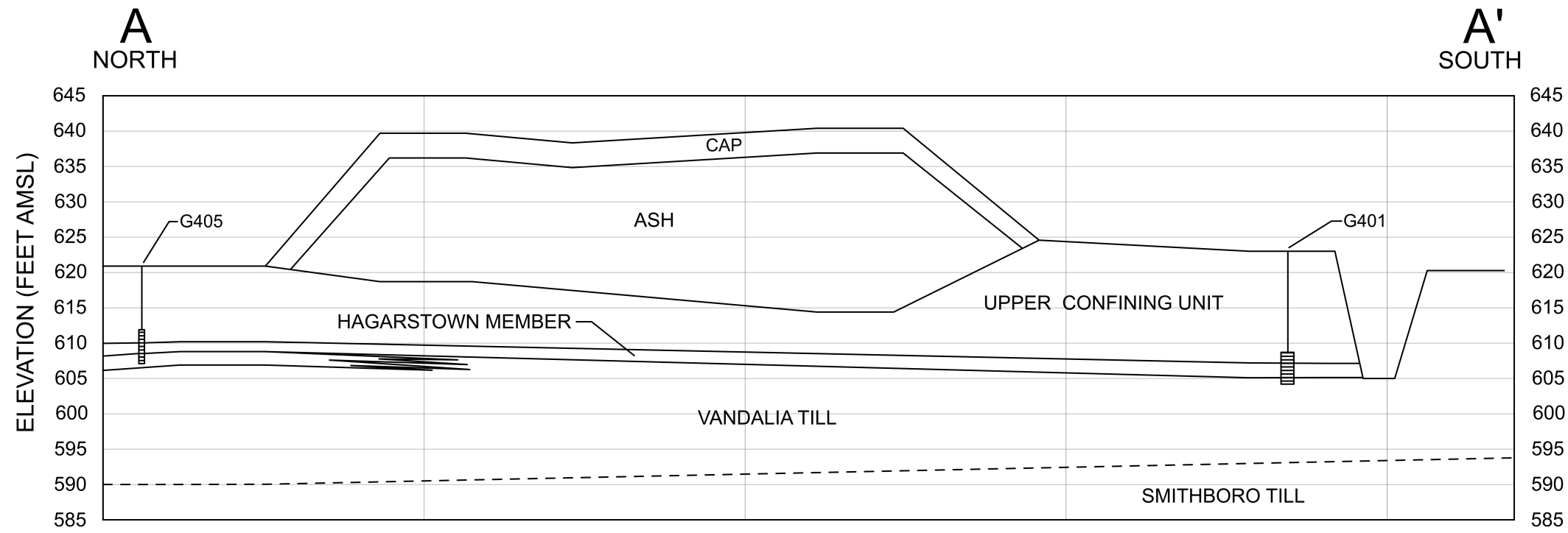
1. Groundwater beneath AP2 does not flow to G407, as demonstrated by temporally consistent potentiometric surface maps of groundwater elevation across the site and groundwater flow modeling showing a groundwater divide between AP2 and the well of concern.
2. The presence of a surface water divide between AP2 and G407 provides further support for the presence of the groundwater divide which prevents potential migration of groundwater from underneath AP2 to the well of concern. Therefore, G407 is not impacted by the AP2 unit.
3. Groundwater at G407 does not contain elevated boron that would indicate impacts from AP2 leachate. The lack of elevated boron at G407 compared to wells in the immediate vicinity of G407 provides further evidence in support of the presence of the groundwater divide between the unit and G407.

The GWPS exceedances of sulfate and TDS at G407 are not attributable CPP AP2, as the groundwater divide at the CPP prevents migration of groundwater along that flow path. Instead, the exceedances are attributed to impacts from anthropogenic industrial activities that have historically occurred at the CPP. This demonstration fulfills the requirements of both 35 IAC 845.650(e) and the technical manual for the Municipal Solid Waste Landfill federal regulatory program (Code of Federal Regulations, Title 40, Section 258).

5. REFERENCES

- AECOM. 2017. *Closure and Post-Closure Care Plan for the Coffeen Ash Pond No. 2 at Illinois Power Generating Company Coffeen Power Station*. January.
- Burns & McDonnell. 2021. *Initial Operating Permit, Coffeen Ash Pond 2*. October.
- Illinois Environmental Protection Agency (IEPA). 2016. *Dynegy Midwest Generation, Inc. – Baldwin Energy Complex: Baldwin Fly Ash Pond System Closure – NPDES Permit No. IL000043*, letter from William Buscher (IEPA) to Rick Diericx (Dynegy Operating Company), dated August 16, 2016.
- Natural Resource Technology, Inc. (NRT). 2017. *Hydrogeologic Site Characterization Report, Ash Pond 2, Coffeen Power Station, Coffeen, Illinois*. January.
- Ramboll. 2021a. *Groundwater Monitoring Plan Addendum for Ash Pond No. 2, Coffeen Power Plant, Coffeen, IL*. Ramboll Americas Engineering Solutions, Inc. October.
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- United States Environmental Protection Agency (USEPA). 1993. *Criteria for Solid Waste Disposal Facilities: A Guide for Owners/Operators*. March.

FIGURES



- Legend**
- Monitoring Wells
 - Pond Outline
 - Well Screen

- Notes**
- Well locations are approximate
 - Geologic cross-sections modified from Hydrogeologic Monitoring Plan (Natural Resource Technology, 2017)
 - Cap thickness is approximate

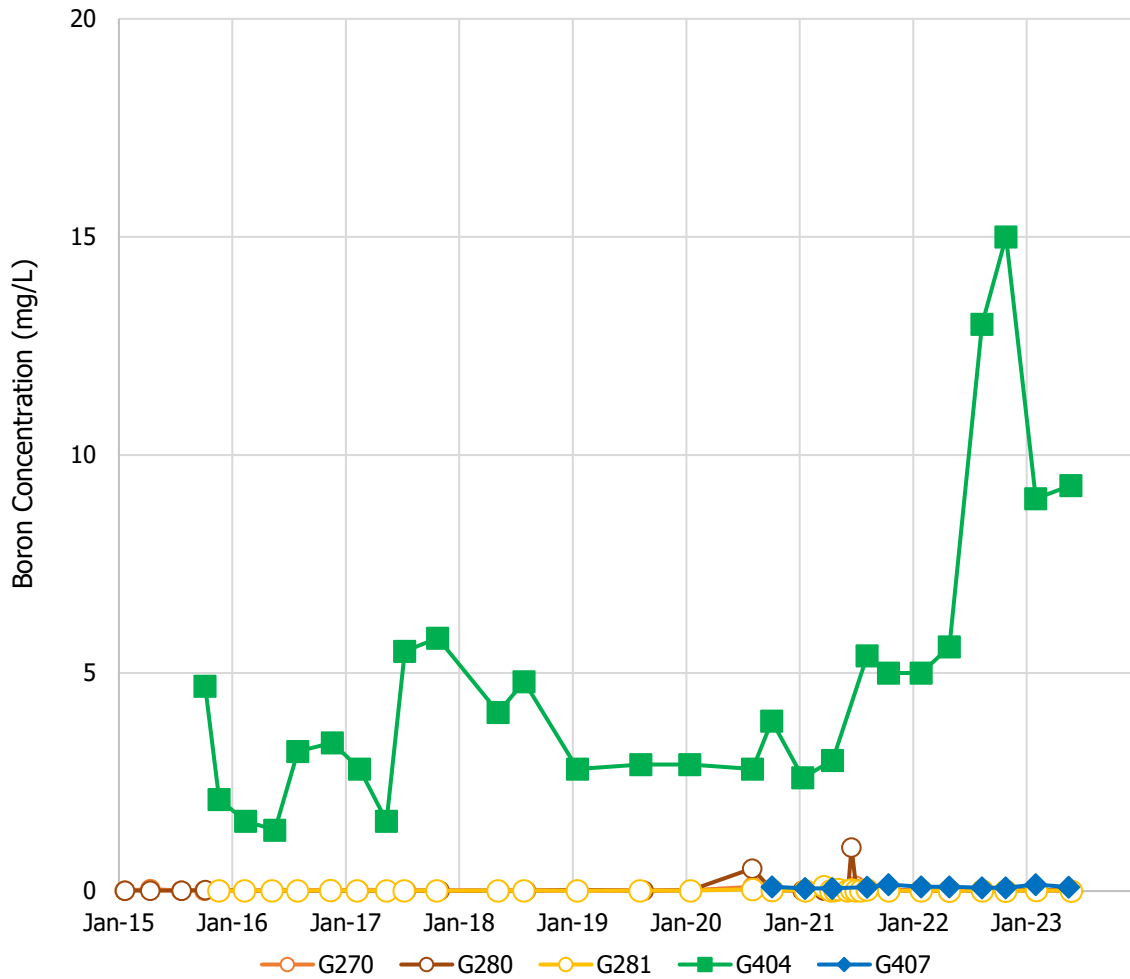
Ash Pond No. 2 Geologic Cross-Section
 134 Cips Lane
 Coffeen, Illinois

Geosyntec
 consultants

Columbus, OH

November 2023

Figure
 1



Notes: Total boron results are shown for unfiltered samples in units of milligrams per liter (mg/L). Monitoring wells G270, G280, and G281 are background wells, denoted on the graph by hollow symbology. Monitoring well G404 has been identified as previously impacted by Ash Pond 2.

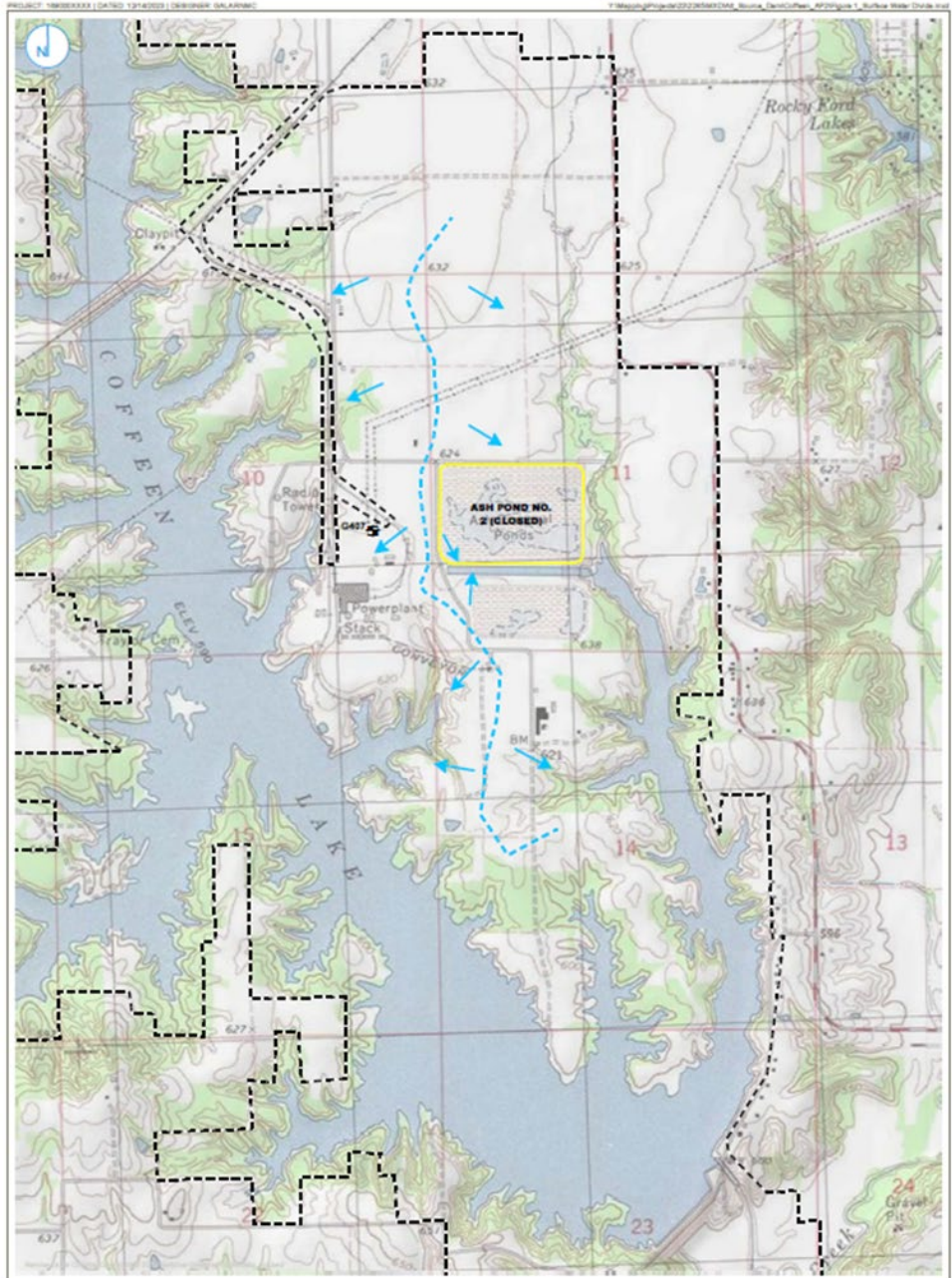
AP2 Monitoring Well Network Boron Time Series



Figure 2

Columbus, OH

December 2023



- REGULATED UNIT (SUBJECT UNIT)
- PROPERTY BOUNDARY
- SURFACE WATER DIVIDE
- FLOW DIRECTION

0 625 1,250 Feet

SURFACE WATER DIVIDE

FIGURE 1

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
RAMBOLL

COFFEEN POWER PLANT
COFFEEN, ILLINOIS

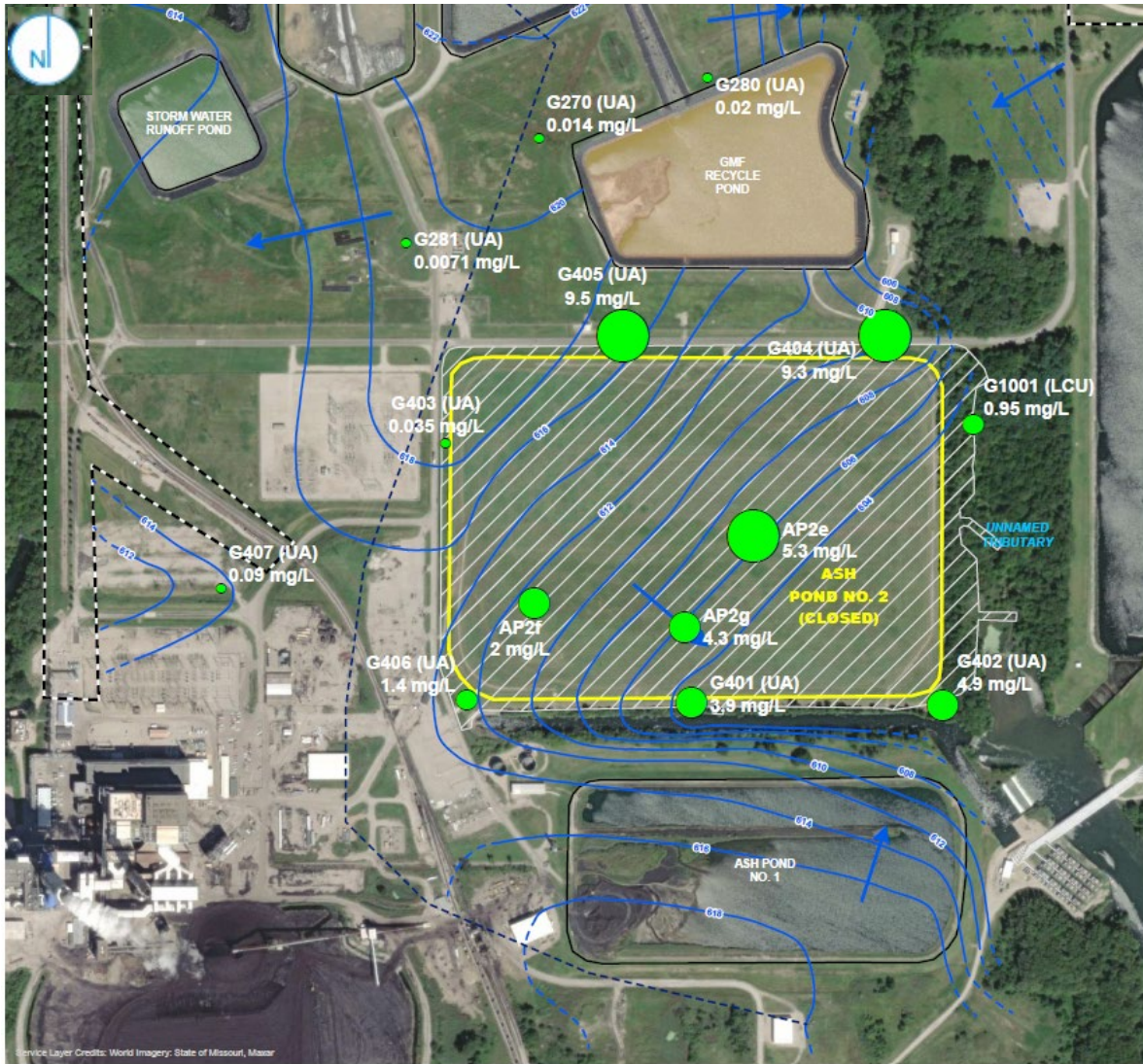
Surface Water Divide

Geosyntec
consultants

Figure
3

Columbus, OH

December 2023



- GROUNDWATER DIVIDE
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

POTENTIOMETRIC SURFACE MAP
MAY 30, 2023

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.



Notes:
 1: Boron concentrations from AP2 porewater samples and the Q2 2023 sampling event correspond with the radius of green circles on the figure. Boron concentration values are provided beneath location names.
 2: AP2 porewater samples were collected in 2016.
 3: Elevations in parentheses were not used for contouring.
 4: Elevation contours shown in feet, North American Vertical Datum of 1988 (NAVD88).

Boron Distribution Relative to Groundwater Flow Direction



Figure
4

Columbus, OH December 2023

ATTACHMENT 1
Proposed 845 Groundwater Monitoring Network

PROJECT: 169000XXXXX | DATED: 10/6/2021 | DESIGNER: STOLZSD
 Y:\Mapping\Projects\2202285\MXD\945_Operating_Permit\Coffeen\AP2_GMP\Figure 2-1_Proposed Monitoring Well Network.mxd



- COMPLIANCE WELL
- BACKGROUND WELL
- MONITORING WELL
- STAFF GAGE
- PART 845 REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY



PROPOSED 845 GROUNDWATER MONITORING WELL NETWORK

FIGURE 2-3

ADDENDUM TO THE GROUNDWATER MONITORING PLAN
ASH POND NO. 2
 COFFEEN POWER PLANT
 COFFEEN, ILLINOIS

RAMBOLL AMERICAS
 ENGINEERING SOLUTIONS, INC.



ATTACHMENT 2
G407 Boring Log and Well Construction
Diagram

FIELD BORING LOG



CLIENT: Natural Resources Technology, Inc.
 Site: Coffeen Power Station - Ash Pond 2
 Location: 134 CIPS Lane, Coffeen, IL 62017
 Project: 16E0080
 DATES: Start: 8/16/2016
 Finish: 8/16/2016
 WEATHER: Rain, (mid-70s)

CONTRACTOR: Bulldog Drilling, Inc.
 Rig mfg/model: CME-750 ATV Drill
 Drilling Method: 4 1/4" Hollow Stem Auger
 FIELD STAFF: Driller: J. Dittmaier
 Helper: M. Hill
 Eng/Geo: K. Theesfeld

BOREHOLE ID: G407
 Well ID: G407
 Surface Elev: 618.35 ft. MSL
 Completion: 20.00 ft. BGS
 Station: 2,513,705.87N
 2,513,705.87E

SAMPLE		TESTING					TOPOGRAPHIC MAP INFORMATION:		WATER LEVEL INFORMATION:				
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Moisture (%)	Dry Den. (lb/ft ³)	Qu (tsf) Qp (tsf) Failure Type	Quadrangle: Coffeen Township: East Fork Section 10, Tier 7 N.; Range 3 W.	▼ = 16.00 - During Drilling ▽ = ▽ =	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
1A	12/24 50%	ss	4-3 3-3 N=6	14		3.50			0	Very dark gray (10YR3/1), wet, medium, SILT with some organics. [Fill]		618	
2A	20/24 83%	ss	2-2 4-4 N=6	18		1.50			2	Gray (10YR6/1), wet, loose, SAND with some gravel and little clay. [Fill]		616	
3A	23/24 96%	ss	1-2 3-4 N=5	19		1.75			4	Yellowish brown (10YR5/6) with 5% dark yellowish brown (10YR3/6) mottles, moist, very stiff, SILT with some clay and trace very fine- to fine-grained sand. Brown (10YR5/3) with 10% yellowish brown (10YR5/6) mottles, moist, stiff, SILT with some clay, little fine- to coarse-grained sand, and trace small gravel.		614	
4A	24/24 100%	ss	1-3 3-5 N=6	19		1.50			6	Brown (10YR5/3) with 25% yellowish brown (10YR5/6) mottles, moist, stiff, CLAY with some silt, trace fine-grained sand and trace small gravel.		612	
5A	21/24 88%	ss	1-2 4-4 N=6	19		0.50			8	Brown (10YR5/3) with 10% yellowish brown (10YR5/6) mottles, moist, stiff, CLAY with some silt, little fine- to coarse-grained sand and trace small gravel.		610	
6A	22/24 92%	ss	1-2 2-1 N=4	17					10	Yellowish brown (10YR5/6) with 25% brown (10YR5/3) mottles, moist, medium, CLAY with few silt, few fine-grained sand, and trace small gravel.		608	
7A	24/24 100%	ss	7-29 33-17 N=62	8					12	Yellowish brown (10YR5/8) with 5% gray (10YR5/1) mottles, moist, very loose, fine-grained SAND with some clay and trace small gravel.		606	
8A	24/24 100%	ss	3-7 12-17 N=19	12		4.50			14	Gray (10YR5/1) with 25% yellowish brown (10YR5/8) mottles, moist, very dense, fine-grained SAND		604	
9A	24/24 100%	ss	4-9 14-20 N=23	13		4.00			16	Brown (10YR5/3), moist, hard, SILT with some clay and little fine- to coarse-grained sand.		602	
10A	24/24 100%	ss	2-8 14-19 N=22	14		4.50			18	Yellowish brown (10YR5/4) with 5% yellowish brown (10YR5/6) and 5% black (10YR2/1) mottles, SILT with some clay and little fine- to coarse-grained sand.		600	
									20	Yellowish brown (10YR5/4) with 5% yellowish brown (10YR5/6), 5% dark gray (10YR4/1) and 5% black (10YR2/1) mottles, moist, hard, SILT with little fine- to coarse-grained sand and trace small gravel.			
										Dark grayish brown (10YR4/2) with 10% dark yellowish brown (10YR3/6) mottles, moist, hard, CLAY with some silt, little fine- to coarse-grained sand and trace small gravel.			

End of Boring = 20.0 ft. BGS

NOTE(S): G407 installed in boring.



Site #: _____ County: Montgomery Well #: G407
Site Name: Coffeen Power Station - Ash Pond 2 Borehole #: G407
State _____
Plane Coordinate: X 2,513,705.9 Y 872,973.4 (or) Latitude: 39° 3' 41.665" Longitude: -89° 24' 7.213"
Surveyed By: Gary C. Rogers IL Registration #: 035-002957
Drilling Contractor: Bulldog Drilling, Inc. Driller: J. Dittmaier
Consulting Firm: Hanson Professional Services Inc. Geologist: Rhonald W. Hasenyager, LPG #196-000246
Drilling Method: Hollow stem auger Drilling Fluid (Type): none
Logged By: Kristen L. Theesfeld Date Started: 8/16/2016 Date Finished: 8/16/2016
Report Form Completed By: Suzanna L. Keim Date: 8/24/2016

ANNULAR SPACE DETAILS

Table with 3 columns: Elevations (MSL)*, Depths (BGS), and (0.01 ft.) descriptions. Includes a central diagram of a well casing and screen assembly. Descriptions include Top of Protective Casing, Top of Riser Pipe, Ground Surface, Top of Annular Sealant, Static Water Level, Top of Seal, Top of Sand Pack, Top of Screen, Bottom of Screen, Bottom of Well, and Bottom of Borehole.

* Referenced to a National Geodetic Datum

CASING MEASUREMENTS

Table with 3 columns: Measurement, Unit, and Value. Measurements include Diameter of Borehole (8.0 inches), ID of Riser Pipe (2.0 inches), Protective Casing Length (5.0 feet), Riser Pipe Length (16.75 feet), Bottom of Screen to End Cap (0.43 feet), Screen Length (4.83 feet), Total Length of Casing (22.01 feet), and Screen Slot Size (0.010 inches).

WELL CONSTRUCTION MATERIALS (Choose one type of material for each area)

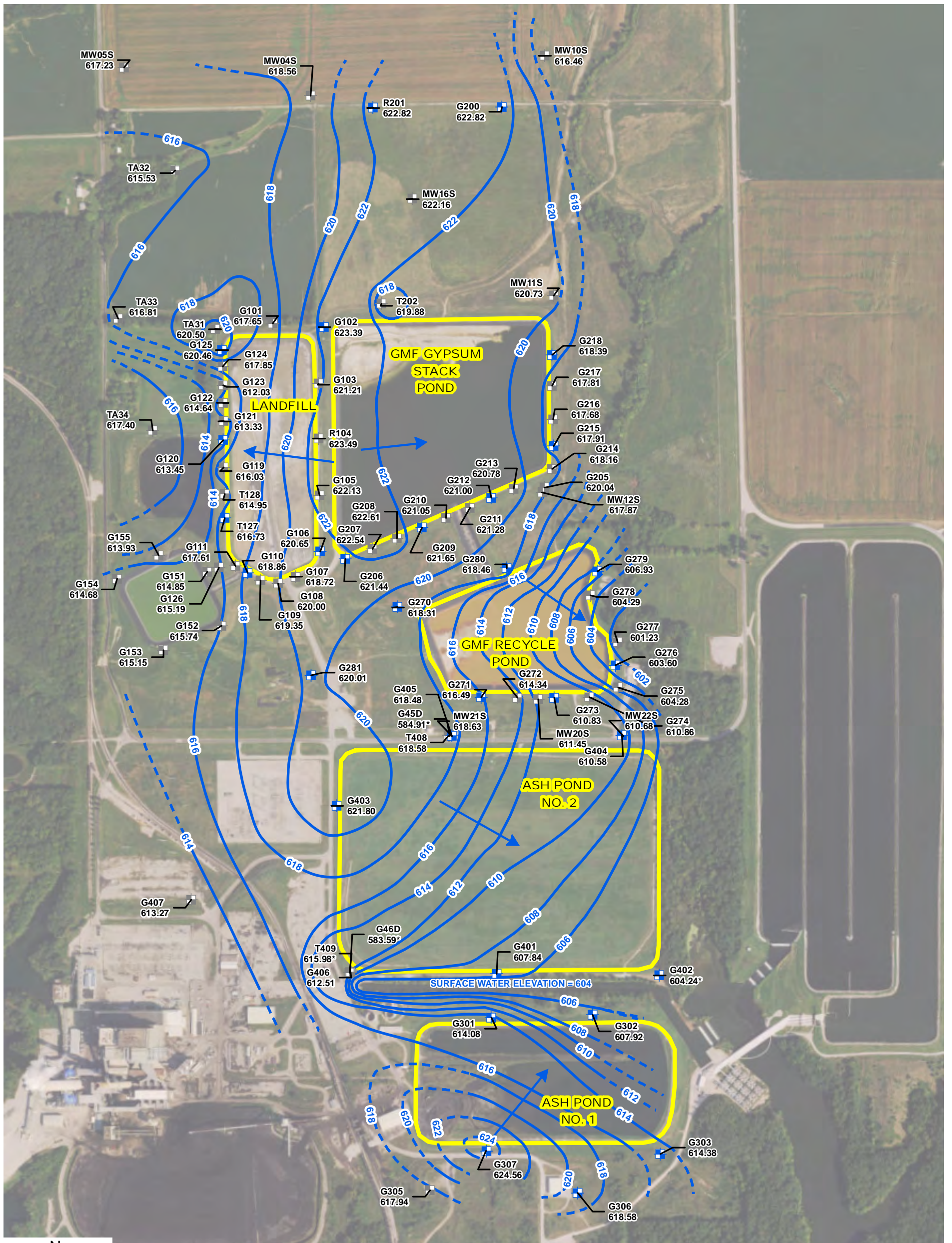
Table with 6 columns: Material Type, SS304, SS316, PTFE, PVC, OTHER. Rows include Protective Casing (Steel), Riser Pipe Above W.T. (PVC), Riser Pipe Below W.T. (PVC), and Screen (PVC).

ATTACHMENT 3

Compiled Potentiometric Surface Maps

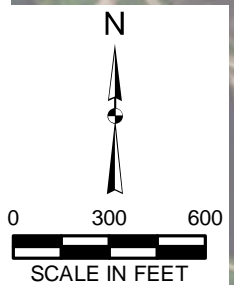
**GROUNDWATER ELEVATION CONTOUR MAPS
MONITORING PERIOD 2016 - 2023**

**LOCATION: COFFEEN POWER PLANT
UNIT NAME: ASH POND NO. 2**



NOTE:
* = NOT USED FOR CONTOURING

- CCR RULE MONITORING WELL LOCATION
- NON-CCR RULE MONITORING WELL LOCATION
- CCR MONITORED UNIT
- POTENTIOMETRIC SURFACE CONTOUR
- INFERRED POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

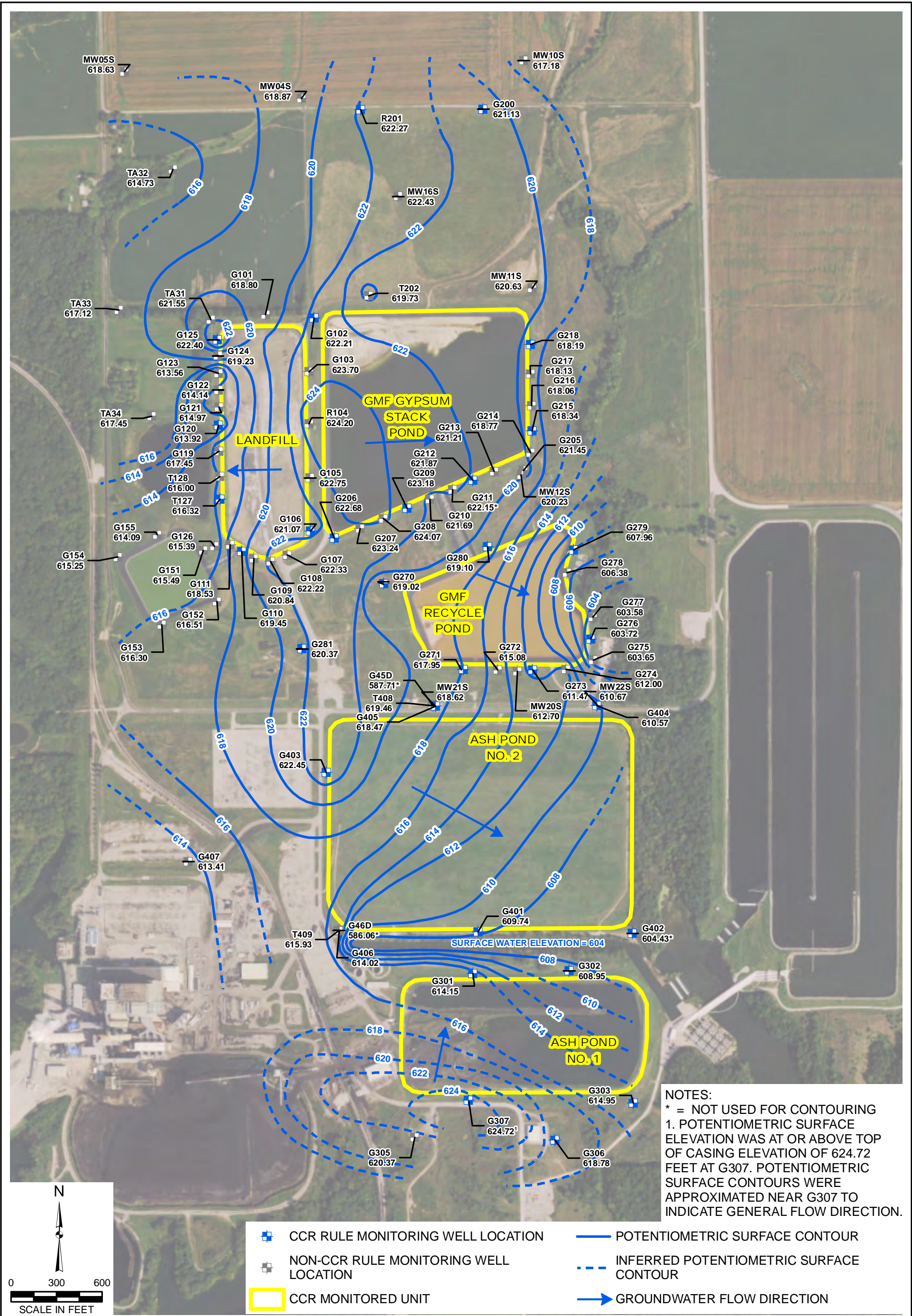


**COFFEEN ASH POND NO. 1 (UNIT ID: 101), COFFEEN ASH POND NO. 2 (UNIT ID: 102),
COFFEEN GMF GYPSUM STACK POND (UNIT ID: 103), COFFEEN GMF RECYCLE POND
(UNIT ID: 104) AND COFFEEN LANDFILL (UNIT ID: 105) UPPERMOST AQUIFER UNIT
GROUNDWATER ELEVATION CONTOUR MAP
ROUND 5: NOVEMBER 12, 2016
DYNEGY CCR RULE GROUNDWATER MONITORING
COFFEEN POWER STATION
COFFEEN, ILLINOIS**

DRAWN BY/DATE:
SDS 3/3/17
REVIEWED BY/DATE:
TBN 3/3/17
APPROVED BY/DATE:
JJW 8/30/17

PROJECT NO: 2285
FIGURE NO: 1
 Natural Resource Technology
AN OBG COMPANY

Y:\Mapping\Projects\2285\GIS\GW_Contours\Round_05\RS_Coffeen_GW_Contours.mxd Author: stolzsd; Date/Time: 9/1/2017, 4:50:27 PM



NOTES:
 * = NOT USED FOR CONTOURING
 1. POTENTIOMETRIC SURFACE ELEVATION WAS AT OR ABOVE TOP OF CASING ELEVATION OF 624.72 FEET AT G307. POTENTIOMETRIC SURFACE CONTOURS WERE APPROXIMATED NEAR G307 TO INDICATE GENERAL FLOW DIRECTION.

- CCR RULE MONITORING WELL LOCATION
- NON-CCR RULE MONITORING WELL LOCATION
- CCR MONITORED UNIT
- POTENTIOMETRIC SURFACE CONTOUR
- INFERRED POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

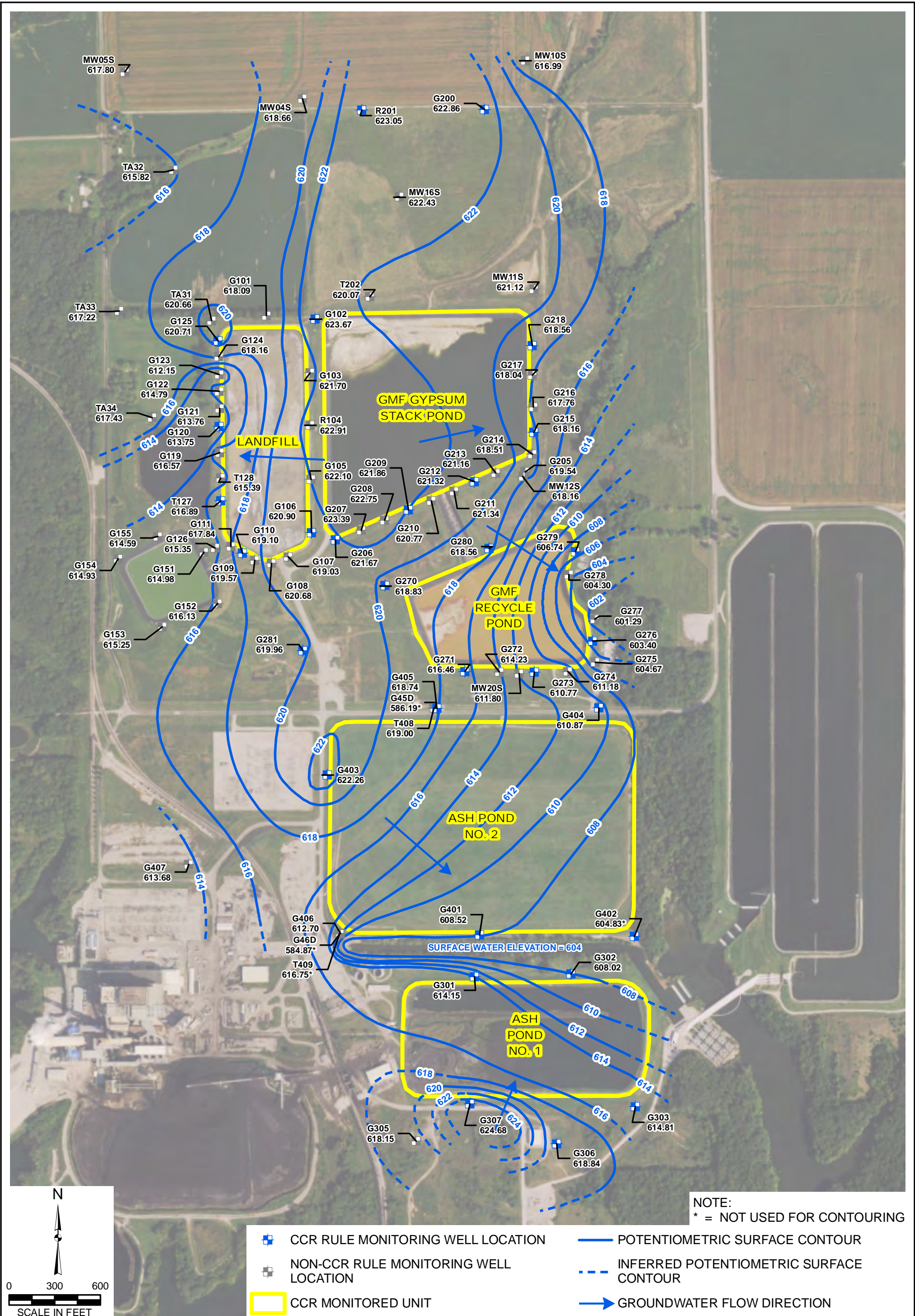
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 SDS 4/14/17
 REVIEWED BY/DATE:
 TBN 4/14/17
 APPROVED BY/DATE:
 JJW 8/30/17

**COFFEEN ASH POND NO. 1 (UNIT ID: 101), COFFEEN ASH POND NO. 2 (UNIT ID: 102),
 COFFEEN GMF GYPSUM STACK POND (UNIT ID: 103), COFFEEN GMF RECYCLE POND
 (UNIT ID: 104) AND COFFEEN LANDFILL (UNIT ID: 105) UPPERMOST AQUIFER UNIT
 GROUNDWATER ELEVATION CONTOUR MAP
 ROUND 6: FEBRUARY 4, 2017
 DYNEGY CCR RULE GROUNDWATER MONITORING
 COFFEEN POWER STATION
 COFFEEN, ILLINOIS**

PROJECT NO: 2285
 FIGURE NO: 1

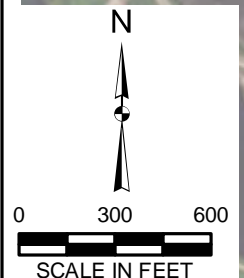
 AN OBG COMPANY

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NOTE:
* = NOT USED FOR CONTOURING

- CCR RULE MONITORING WELL LOCATION
- NON-CCR RULE MONITORING WELL LOCATION
- CCR MONITORED UNIT
- POTENTIOMETRIC SURFACE CONTOUR
- - - INFERRED POTENTIOMETRIC SURFACE CONTOUR
- GROUNDWATER FLOW DIRECTION

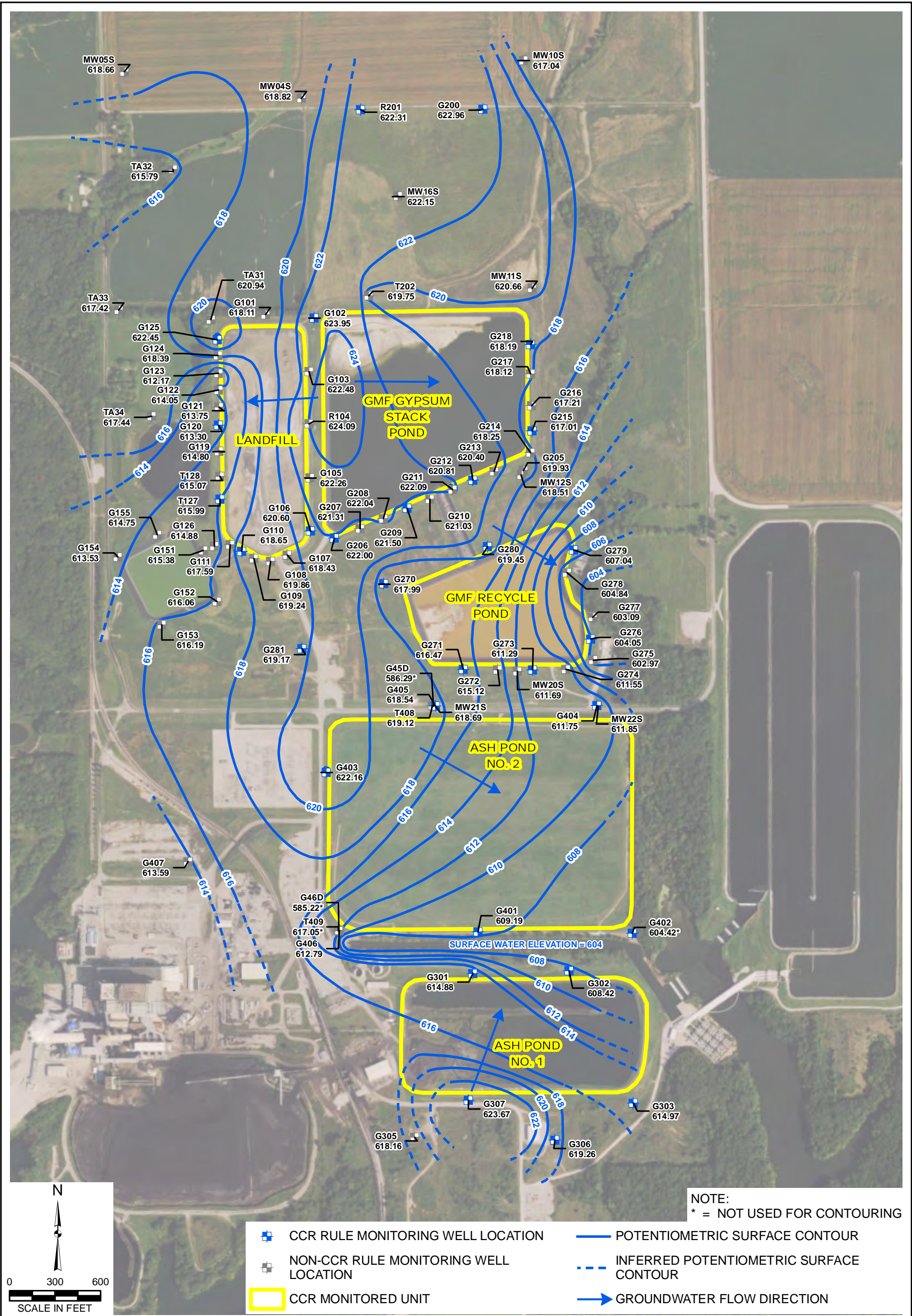


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COFFEEN GMF GYPSUM STACK POND (UNIT ID: 103), COFFEEN GMF RECYCLE POND
(UNIT ID: 104) AND COFFEEN LANDFILL (UNIT ID: 105) UPPERMOST AQUIFER UNIT
GROUNDWATER ELEVATION CONTOUR MAP
ROUND 7: MAY 13, 2017
DYNEGY CCR RULE GROUNDWATER MONITORING
COFFEEN POWER STATION
COFFEEN, ILLINOIS**

DRAWN BY/DATE:
SDS 7/12/17
REVIEWED BY/DATE:
TBN 7/12/17
APPROVED BY/DATE:
JJW 8/30/17

PROJECT NO: 2285
FIGURE NO: 1
 AN OBG COMPANY

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COFFEEN ASH POND NO. 1 (UNIT ID: 101), COFFEEN ASH POND NO. 2 (UNIT ID: 102), COFFEEN GMF GYPSUM STACK POND (UNIT ID: 103), COFFEEN GMF RECYCLE POND (UNIT ID: 104) AND COFFEEN LANDFILL (UNIT ID: 105) UPPERMOST AQUIFER UNIT GROUNDWATER ELEVATION CONTOUR MAP
ROUND 8: JULY 8, 2017
 DYNEGY CCR RULE GROUNDWATER MONITORING
 COFFEEN POWER STATION
 COFFEEN, ILLINOIS

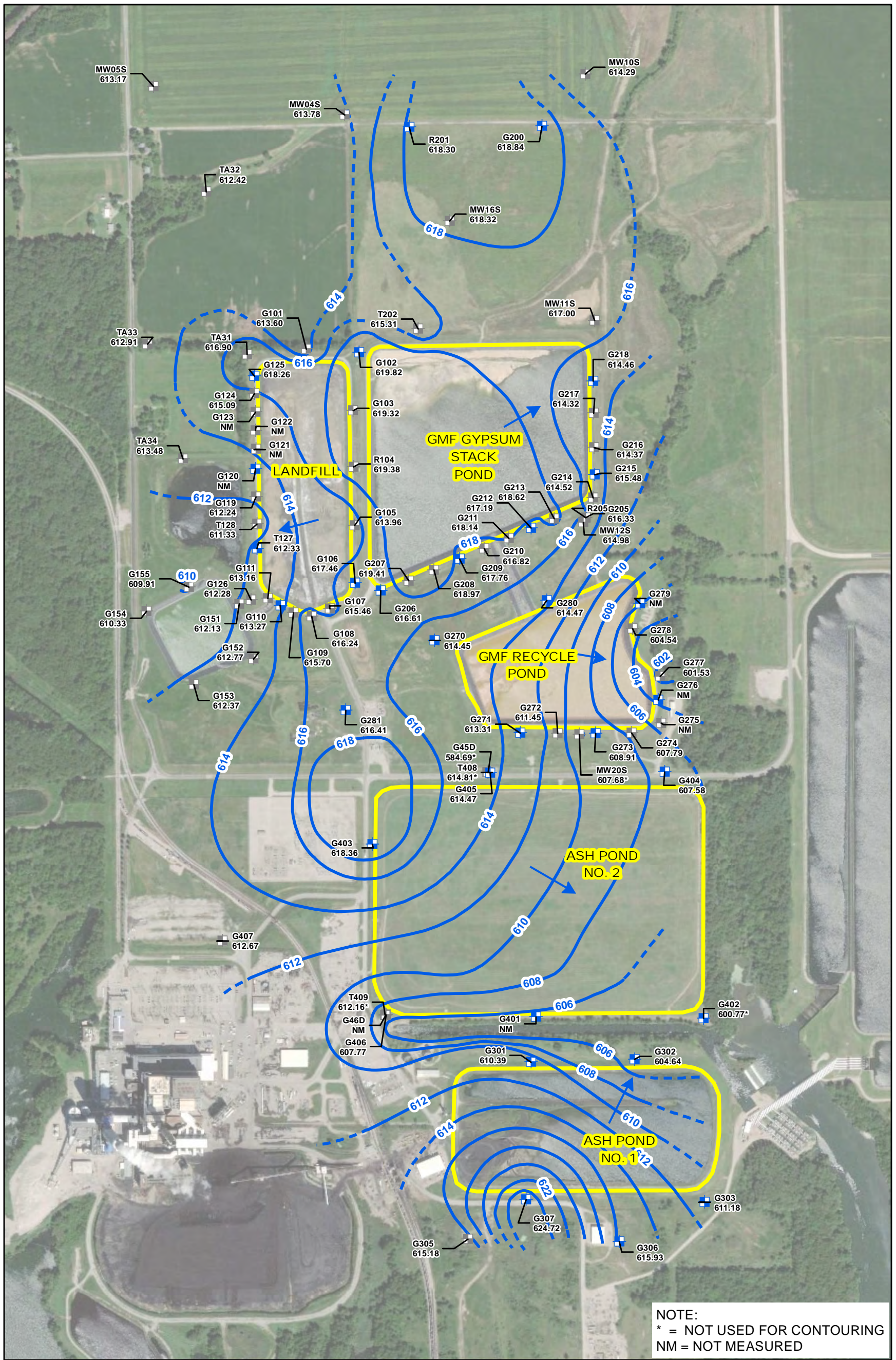
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SDS 8/12/17
 REVIEWED BY/DATE:
TBN 8/10/17
 APPROVED BY/DATE:
JJW 8/30/17

PROJECT NO: 2285

FIGURE NO: 1



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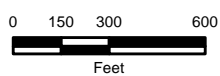
NOTE:
 * = NOT USED FOR CONTOURING
 NM = NOT MEASURED

LEGEND

- CCR RULE MONITORING WELL LOCATION
- NON-CCR RULE MONITORING WELL LOCATION
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- ▭ CCR MONITORED UNIT

COFFEEN ASH POND NO. 1 (UNIT ID: 101), COFFEEN ASH POND NO. 2 (UNIT ID: 102), COFFEEN GMF GYPSUM STACK POND (UNIT ID: 103), COFFEEN GMF RECYCLE POND (UNIT ID: 104) AND COFFEEN LANDFILL (UNIT ID: 105)
 GROUNDWATER ELEVATION CONTOUR MAP
 OCTOBER 21, 2017

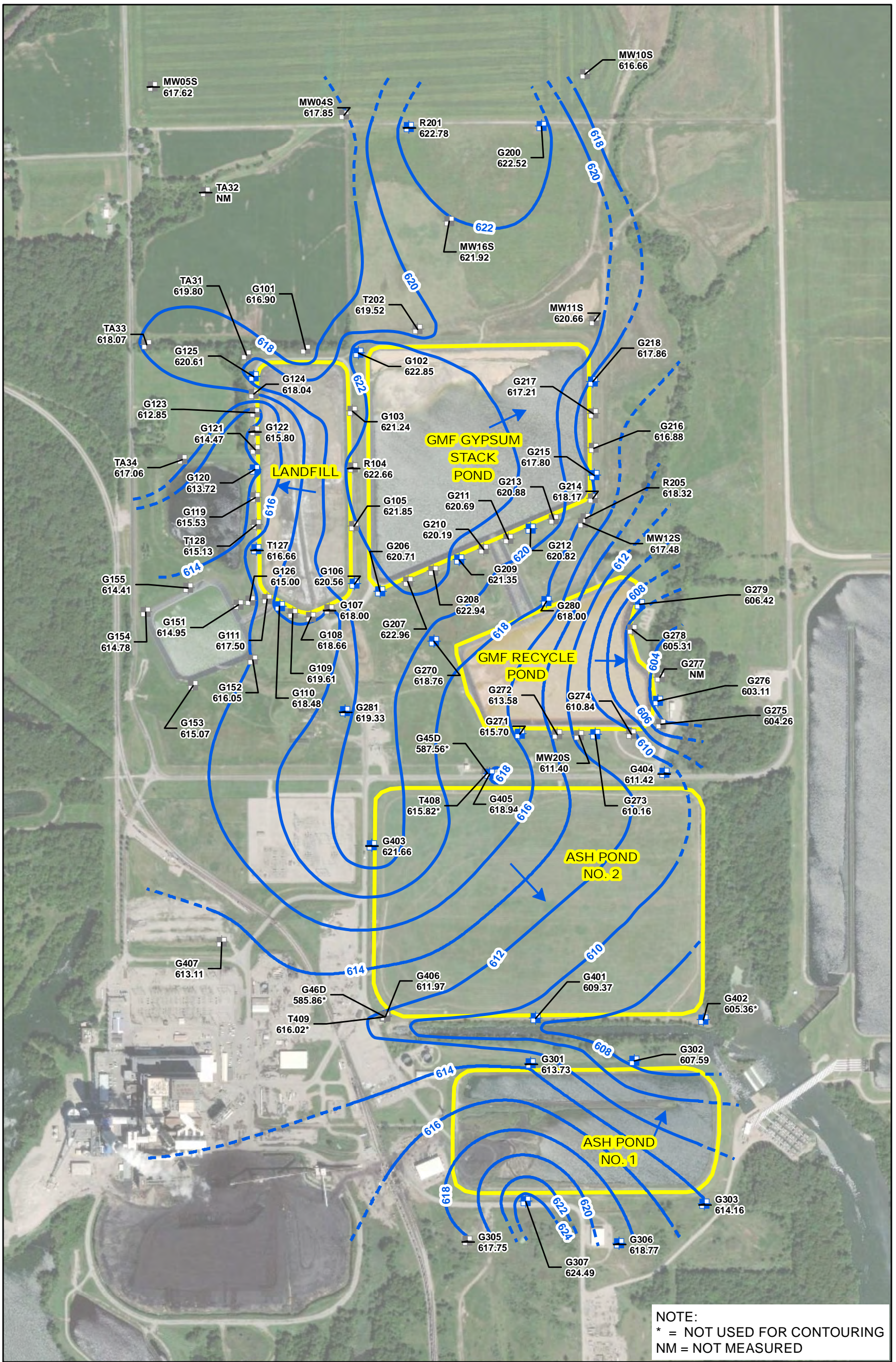
CCR RULE GROUNDWATER MONITORING
 COFFEEN POWER STATION
 COFFEEN, ILLINOIS



O'BRIEN & GERE ENGINEERS, INC.

FILE NO. 70099
 DATE 8/1/2018

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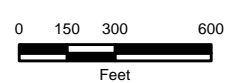
NOTE:
 * = NOT USED FOR CONTOURING
 NM = NOT MEASURED

LEGEND

- CCR RULE MONITORING WELL LOCATION
- NON-CCR RULE MONITORING WELL LOCATION
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- CCR MONITORED UNIT

COFFEEN ASH POND NO. 1 (UNIT ID: 101), COFFEEN ASH POND NO. 2 (UNIT ID: 102),
 COFFEEN GMF GYPSUM STACK POND (UNIT ID: 103), COFFEEN GMF RECYCLE POND
 (UNIT ID: 104) AND COFFEEN LANDFILL (UNIT ID: 105)
 GROUNDWATER ELEVATION CONTOUR MAP
 MAY 8, 2018

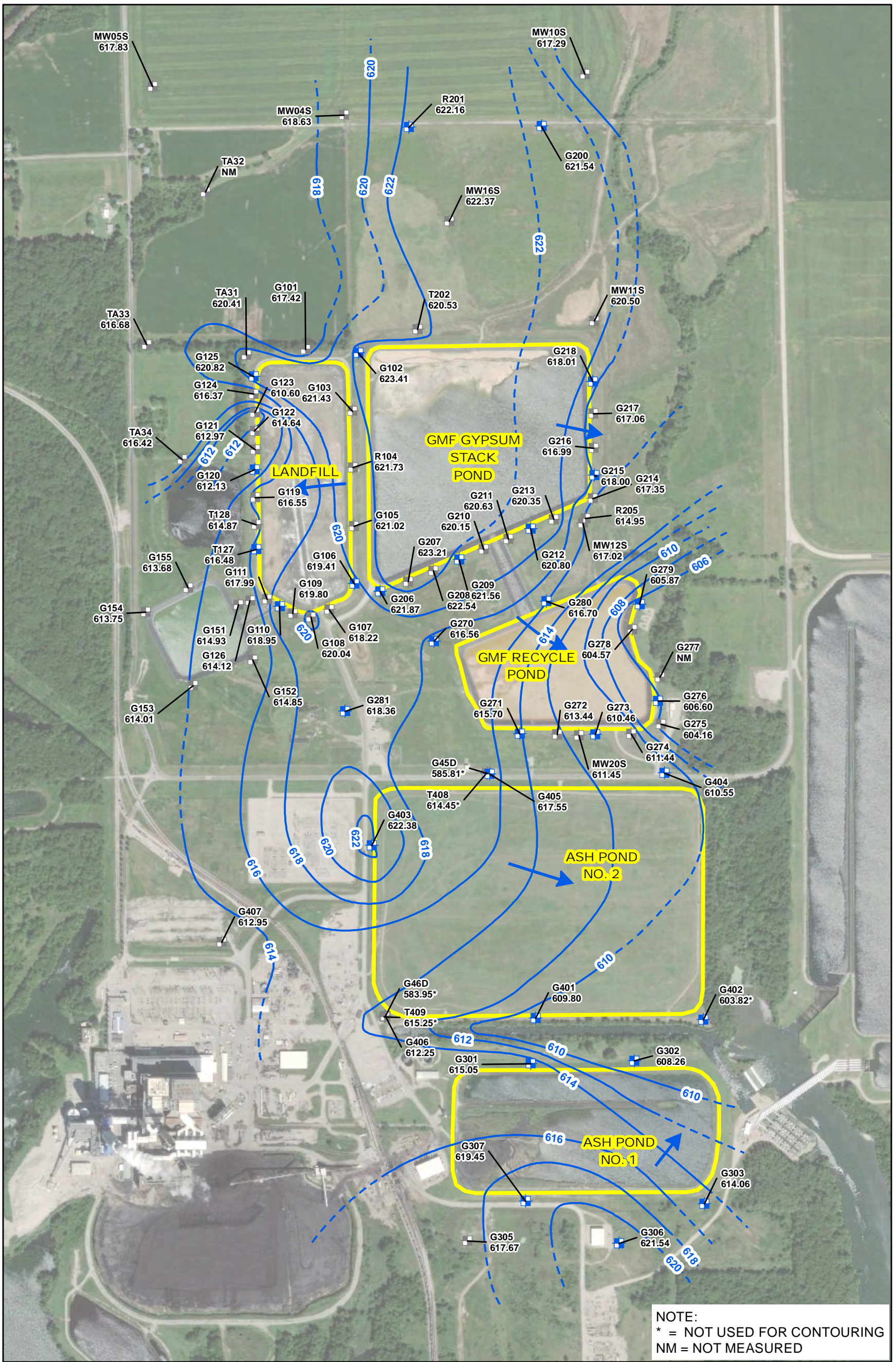
CCR RULE GROUNDWATER MONITORING
 COFFEEN POWER STATION
 COFFEEN, ILLINOIS



O'BRIEN & GERE ENGINEERS, INC.

FILE NO. 70099
 DATE 8/1/2018

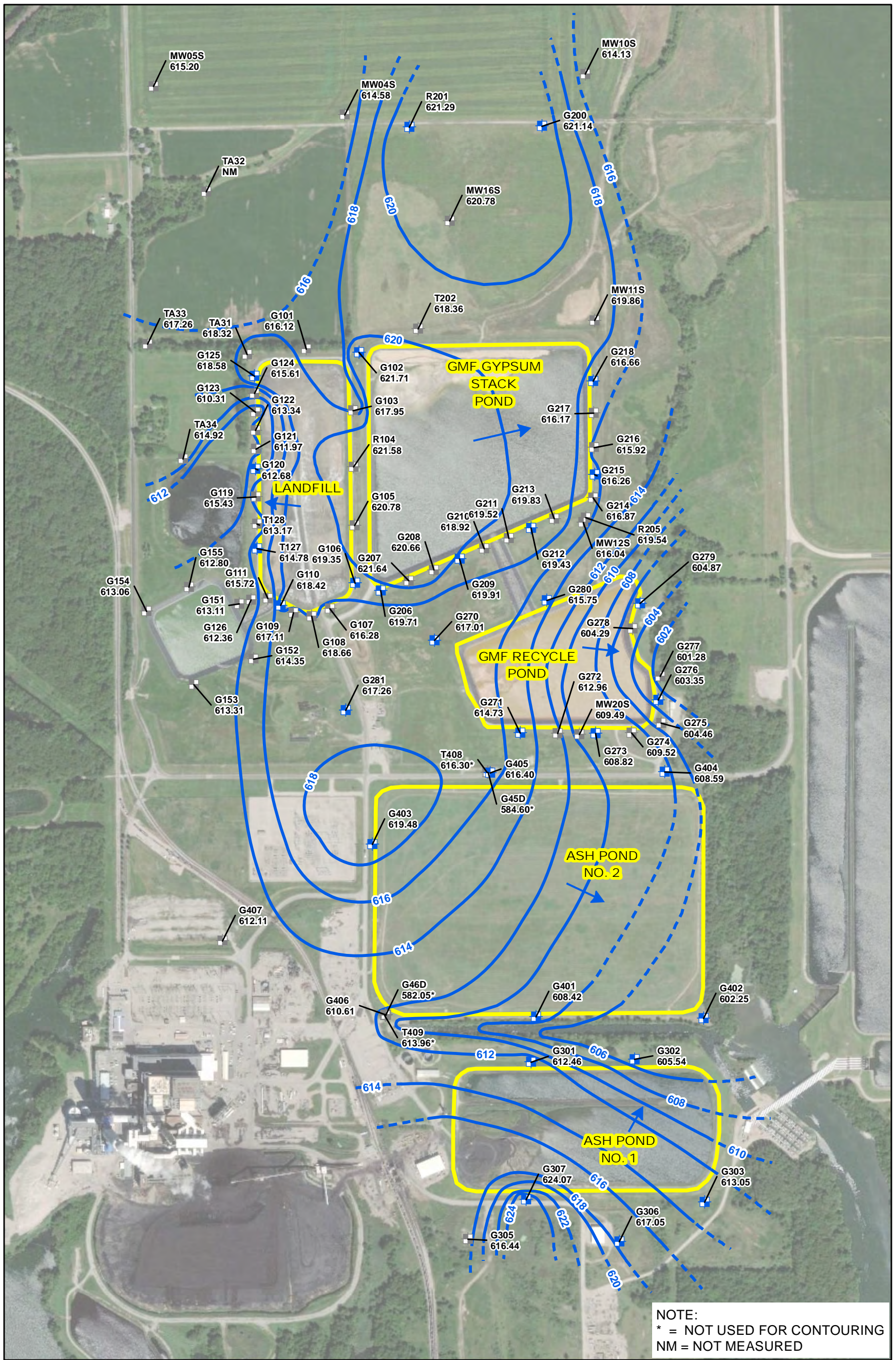




NOTE:
 * = NOT USED FOR CONTOURING
 NM = NOT MEASURED

- CCR RULE MONITORING WELL LOCATION
 - NON-CCR RULE MONITORING WELL LOCATION
 - GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
 - - - INFERRED GROUNDWATER ELEVATION CONTOUR
 - ➔ GROUNDWATER FLOW DIRECTION
 - CCR MONITORED UNIT
- COFFEEN ASH POND NO. 1 (UNIT ID: 101), COFFEEN ASH POND NO. 2 (UNIT ID: 102), COFFEEN GMF GYPSUM STACK POND (UNIT ID: 103), COFFEEN GMF RECYCLE POND (UNIT ID: 104) AND COFFEEN LANDFILL (UNIT ID: 105)
- GROUNDWATER ELEVATION CONTOUR MAP
 AUGUST 2, 2018
- CCR RULE GROUNDWATER MONITORING
 COFFEEN POWER STATION
 COFFEEN, ILLINOIS
- 0 150 300 600
 Feet





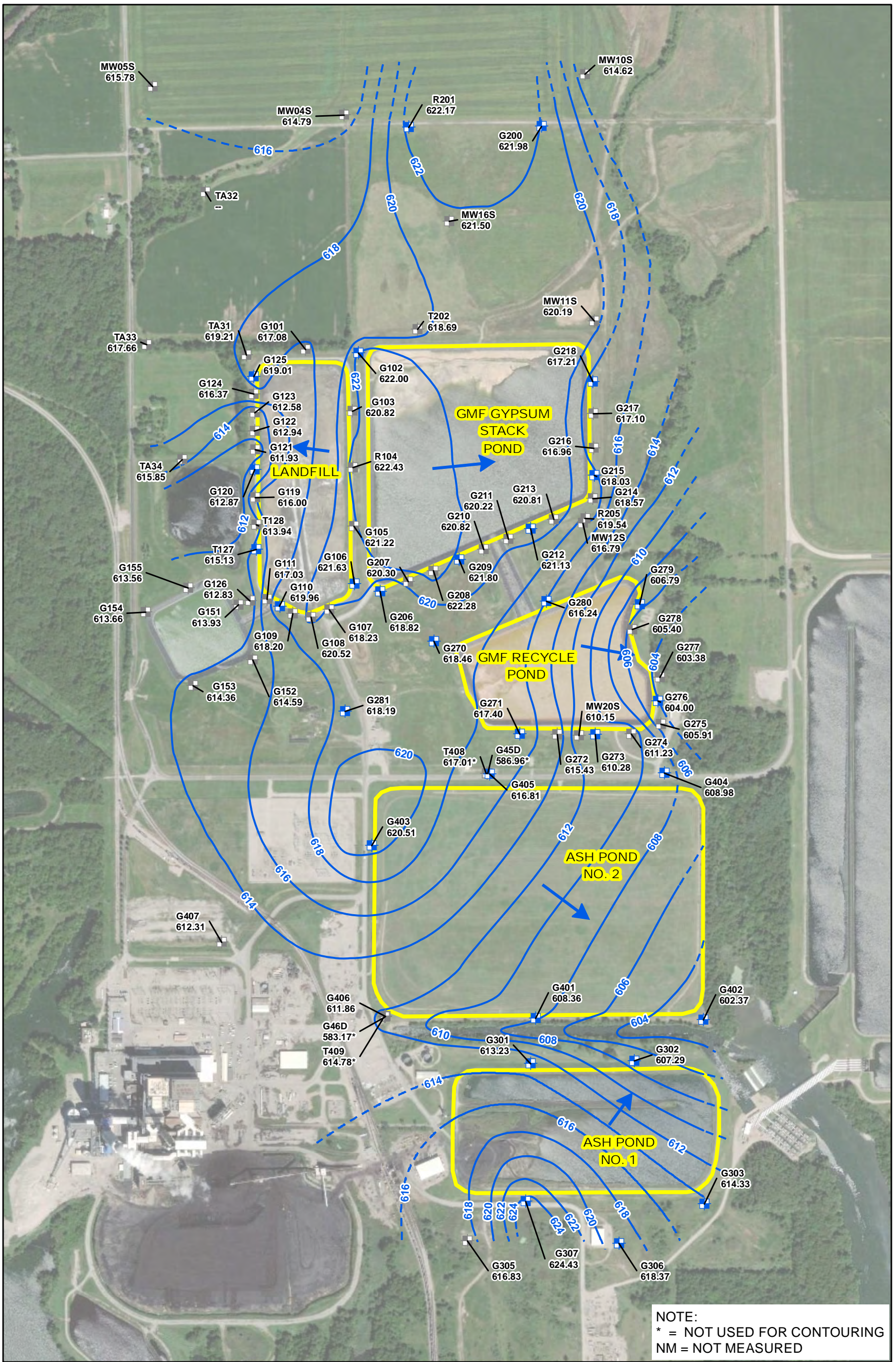
LEGEND

- CCR RULE MONITORING WELL LOCATION
- NON-CCR RULE MONITORING WELL LOCATION
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- CCR MONITORED UNIT

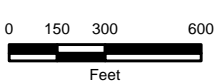
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 COFFEEN GMF GYPSUM STACK POND (UNIT ID: 103), COFFEEN GMF RECYCLE POND
 (UNIT ID: 104) AND COFFEEN LANDFILL (UNIT ID: 105)
GROUNDWATER ELEVATION CONTOUR MAP
 OCTOBER 23, 2018

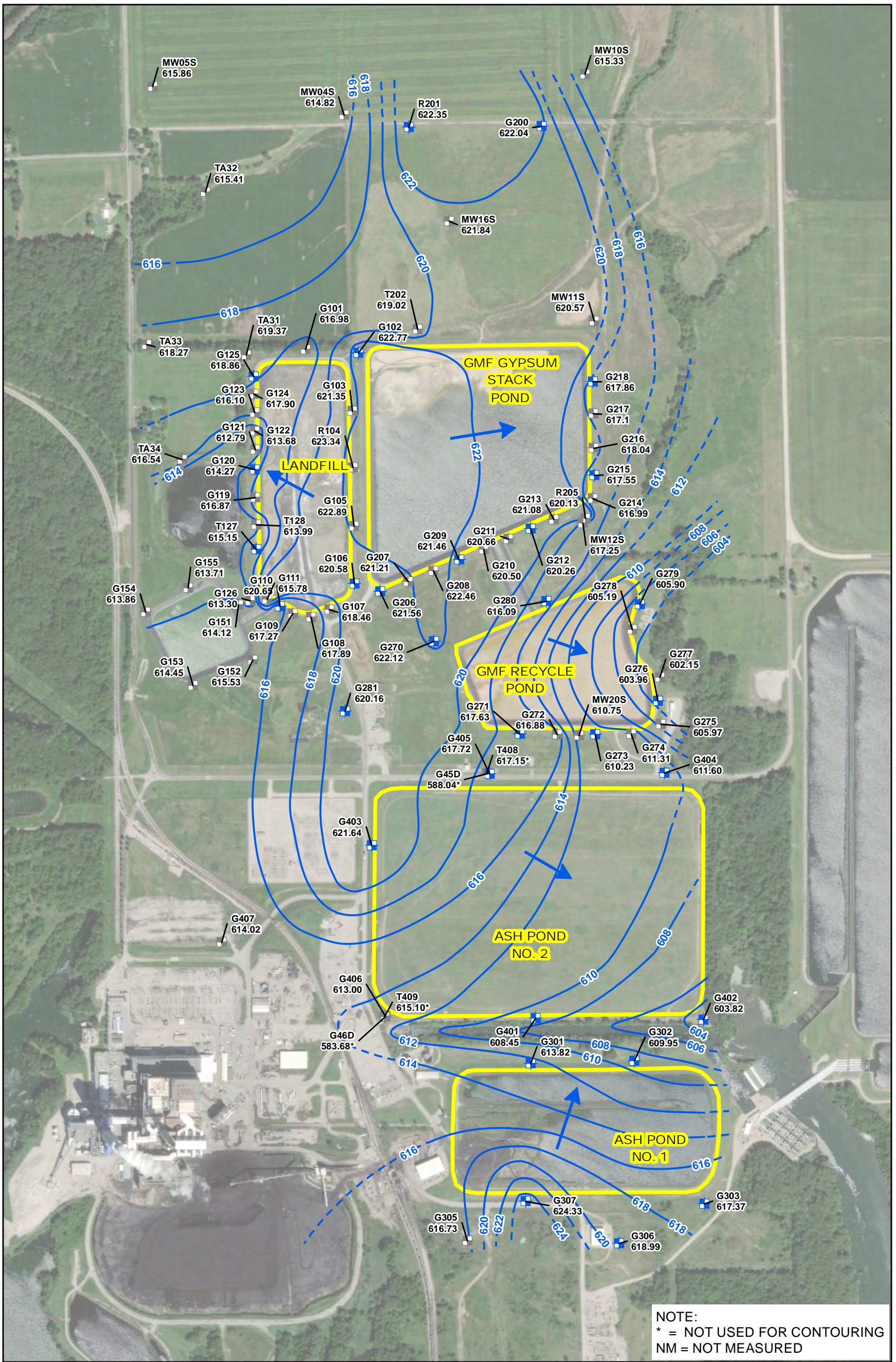
CCR RULE GROUNDWATER MONITORING
 COFFEEN POWER STATION
 COFFEEN, ILLINOIS





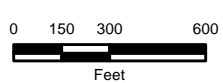
- CCR RULE MONITORING WELL LOCATION
 - NON-CCR RULE MONITORING WELL LOCATION
 - GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
 - - - INFERRED GROUNDWATER ELEVATION CONTOUR
 - ➔ GROUNDWATER FLOW DIRECTION
 - CCR MONITORED UNIT
- COFFEEN ASH POND NO. 1 (UNIT ID: 101), COFFEEN ASH POND NO. 2 (UNIT ID: 102), COFFEEN GMF GYPSUM STACK POND (UNIT ID: 103), COFFEEN GMF RECYCLE POND (UNIT ID: 104) AND COFFEEN LANDFILL (UNIT ID: 105)
- GROUNDWATER ELEVATION CONTOUR MAP
JANUARY 15, 2019
- CCR RULE GROUNDWATER MONITORING
COFFEEN POWER STATION
COFFEEN, ILLINOIS

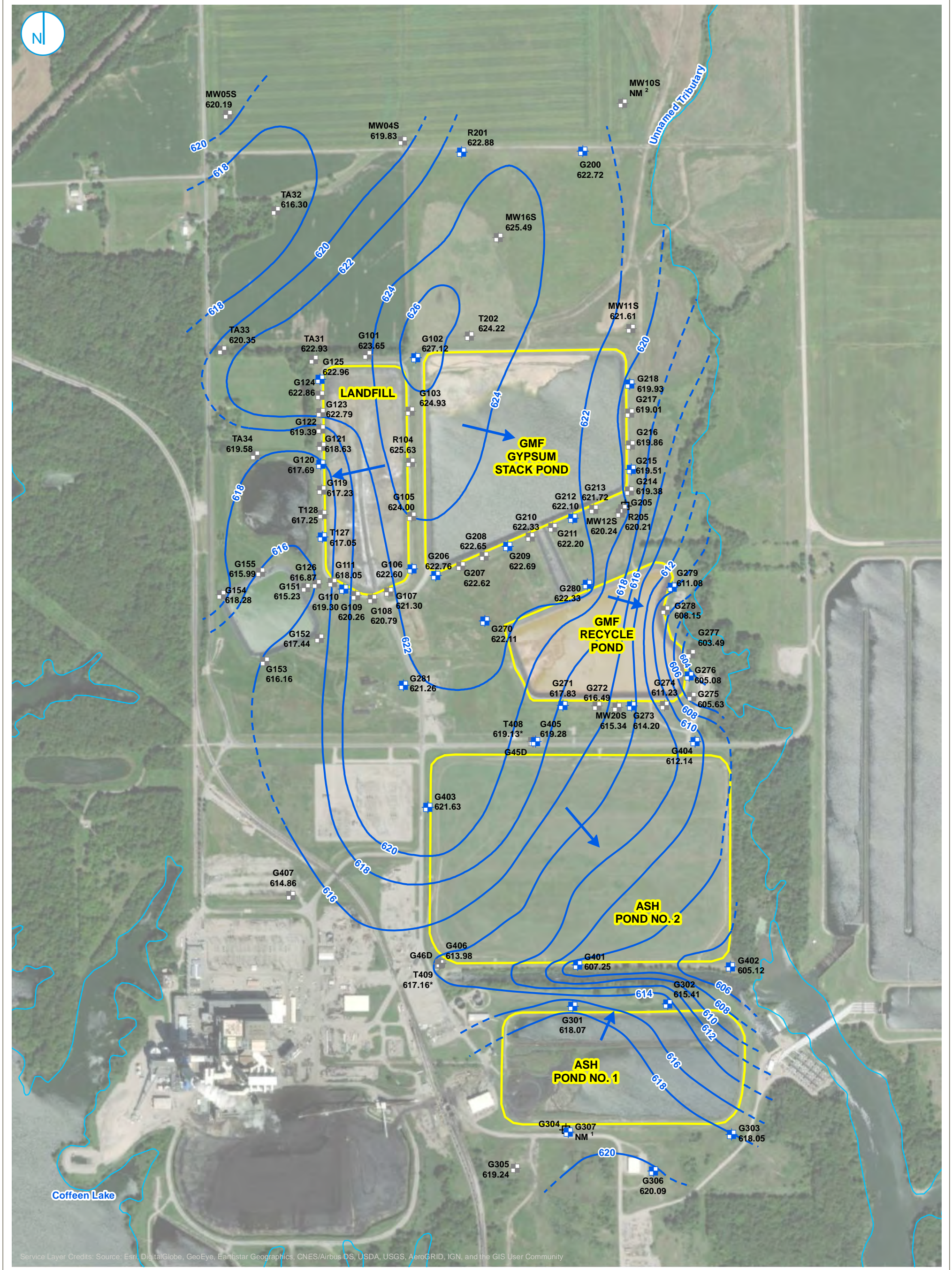




NOTE:
 * = NOT USED FOR CONTOURING
 NM = NOT MEASURED

- CCR RULE MONITORING WELL LOCATION
 - NON-CCR RULE MONITORING WELL LOCATION
 - GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
 - - - INFERRED GROUNDWATER ELEVATION CONTOUR
 - ➔ GROUNDWATER FLOW DIRECTION
 - CCR MONITORED UNIT
- COFFEEN ASH POND NO. 1 (UNIT ID: 101), COFFEEN ASH POND NO. 2 (UNIT ID: 102),
 COFFEEN GMF GYPSUM STACK POND (UNIT ID: 103), COFFEEN GMF RECYCLE POND
 (UNIT ID: 104) AND COFFEEN LANDFILL (UNIT ID: 105)
- GROUNDWATER ELEVATION CONTOUR MAP
 AUGUST 5, 2019
- CCR RULE GROUNDWATER MONITORING
 COFFEEN POWER STATION
 COFFEEN, ILLINOIS





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- CCR RULE MONITORING WELL LOCATION
- NON-CCR RULE MONITORING WELL LOCATION
- ABANDONED MONITORING WELL
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- CCR UNIT BOUNDARY
- SURFACE WATER FEATURE

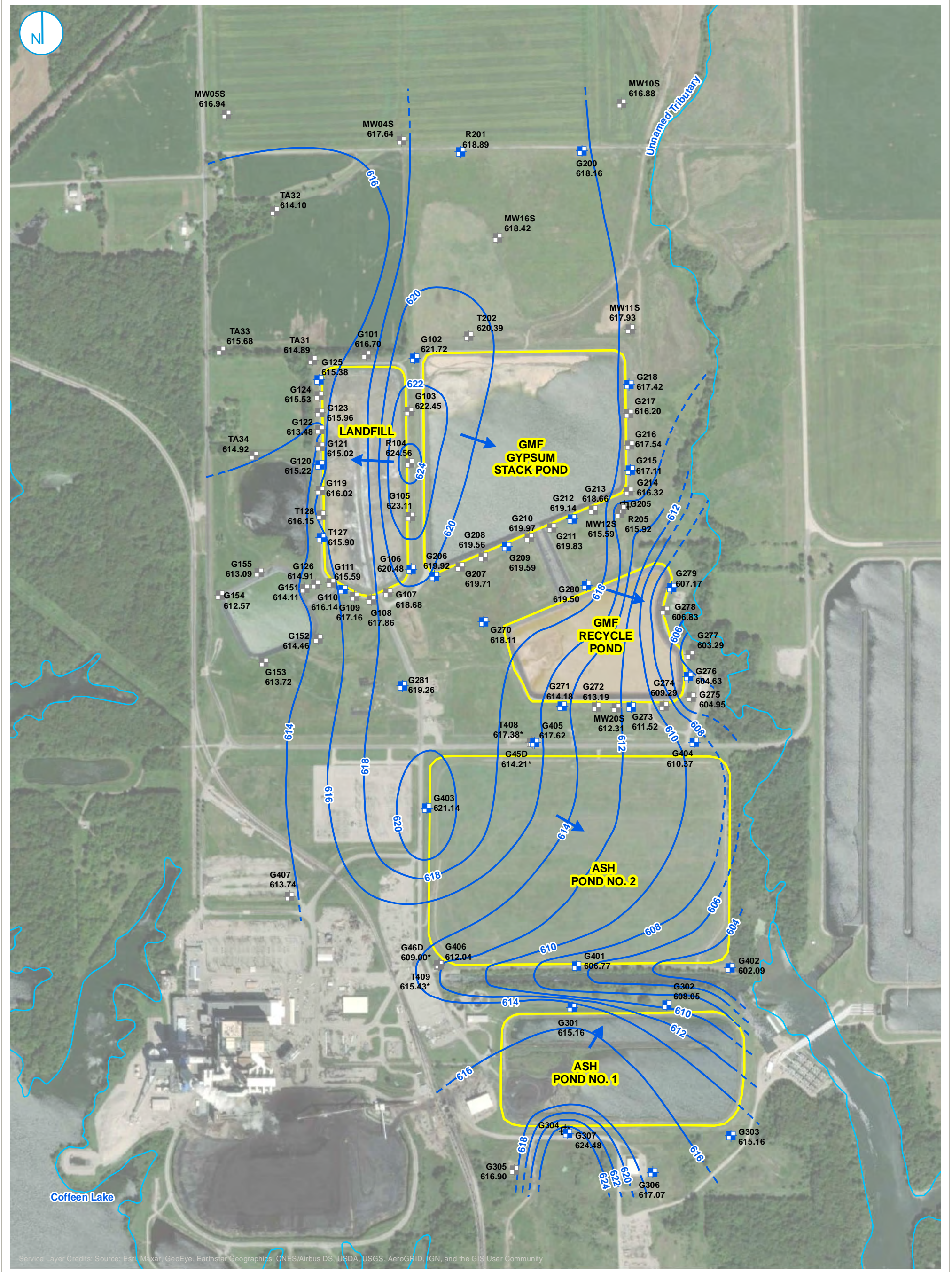
NOTE:
 * = NOT USED FOR CONTOURING
 NM = NOT MEASURED
¹ G307 WAS FROZEN DURING THE JANUARY 20, 2020 SAMPLING EVENT AND WATER LEVEL COULD NOT BE COLLECTED.
² MW10S WAS DAMAGED PRIOR TO THE JANUARY 20, 2020 SAMPLING EVENT AND WATER LEVEL COULD NOT BE COLLECTED.

GROUNDWATER ELEVATION CONTOUR MAP JANUARY 20, 2020

CCR RULE GROUNDWATER MONITORING
 COFFEEN POWER STATION
 COFFEEN, ILLINOIS

RAMBOLL US CORPORATION
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- CCR RULE MONITORING WELL LOCATION
- NON-CCR RULE MONITORING WELL LOCATION
- ABANDONED MONITORING WELL
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
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² MW10S WAS DAMAGED PRIOR TO THE JANUARY 20, 2020 SAMPLING EVENT AND WATER LEVEL COULD NOT BE COLLECTED.

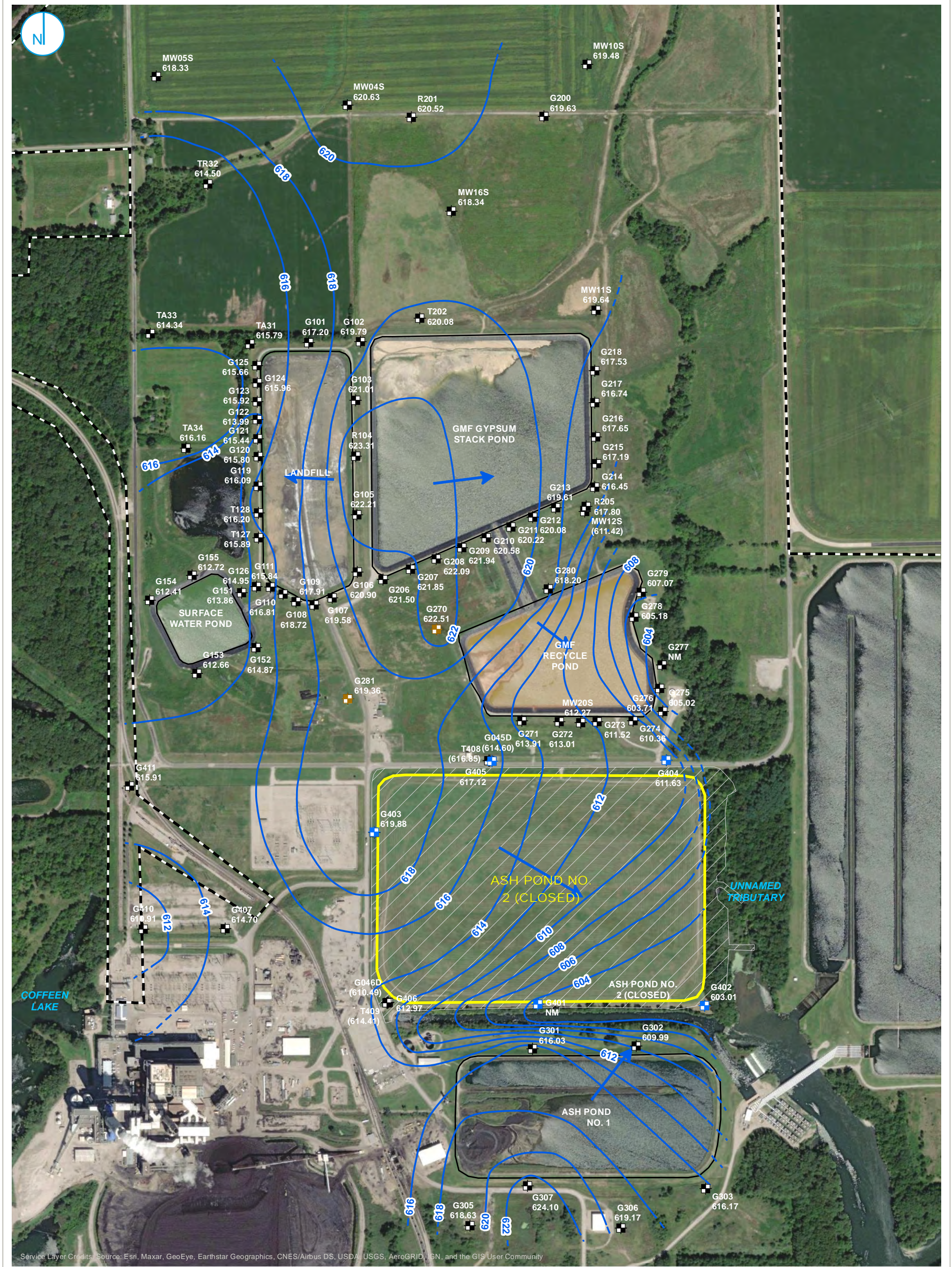
GROUNDWATER ELEVATION CONTOUR MAP

AUGUST 10, 2020

CCR RULE GROUNDWATER MONITORING
 COFFEEN POWER STATION
 COFFEEN, ILLINOIS

RAMBOLL US CORPORATION
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- BACKGROUND WELL
- COMPLIANCE WELL
- MONITORING WELL
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- PART 257 REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

NOTE:
ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
NM = NOT MEASURED

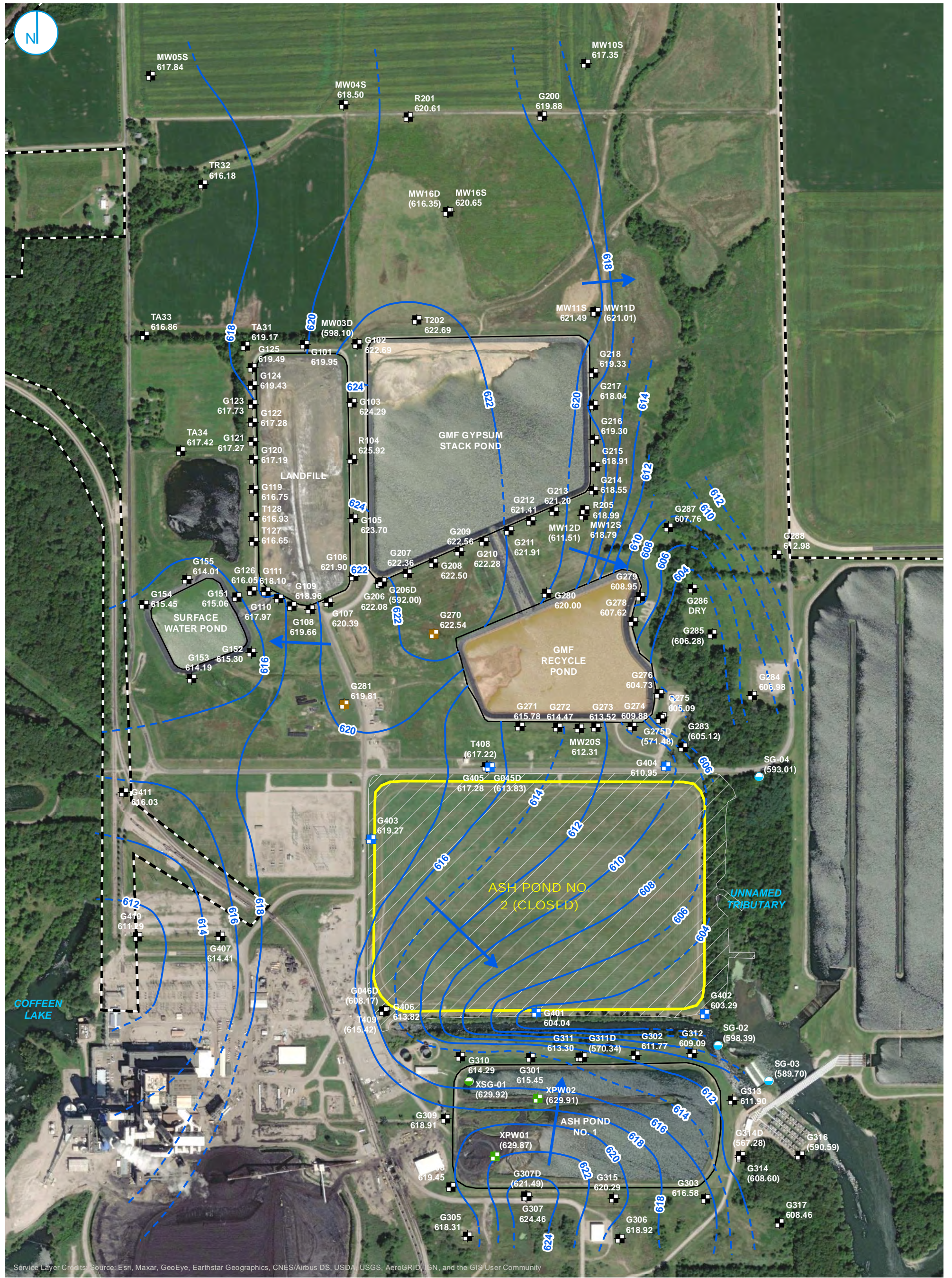
0 275 550 Feet

POTENTIOMETRIC SURFACE MAP JANUARY 20, 2021

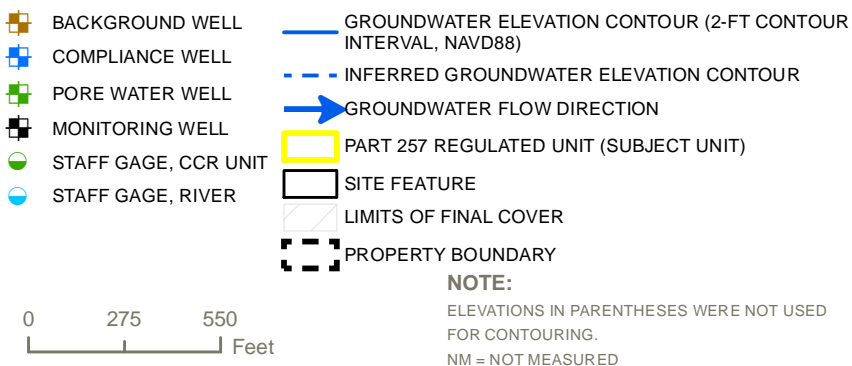
2021 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT
ASH POND NO.2
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.





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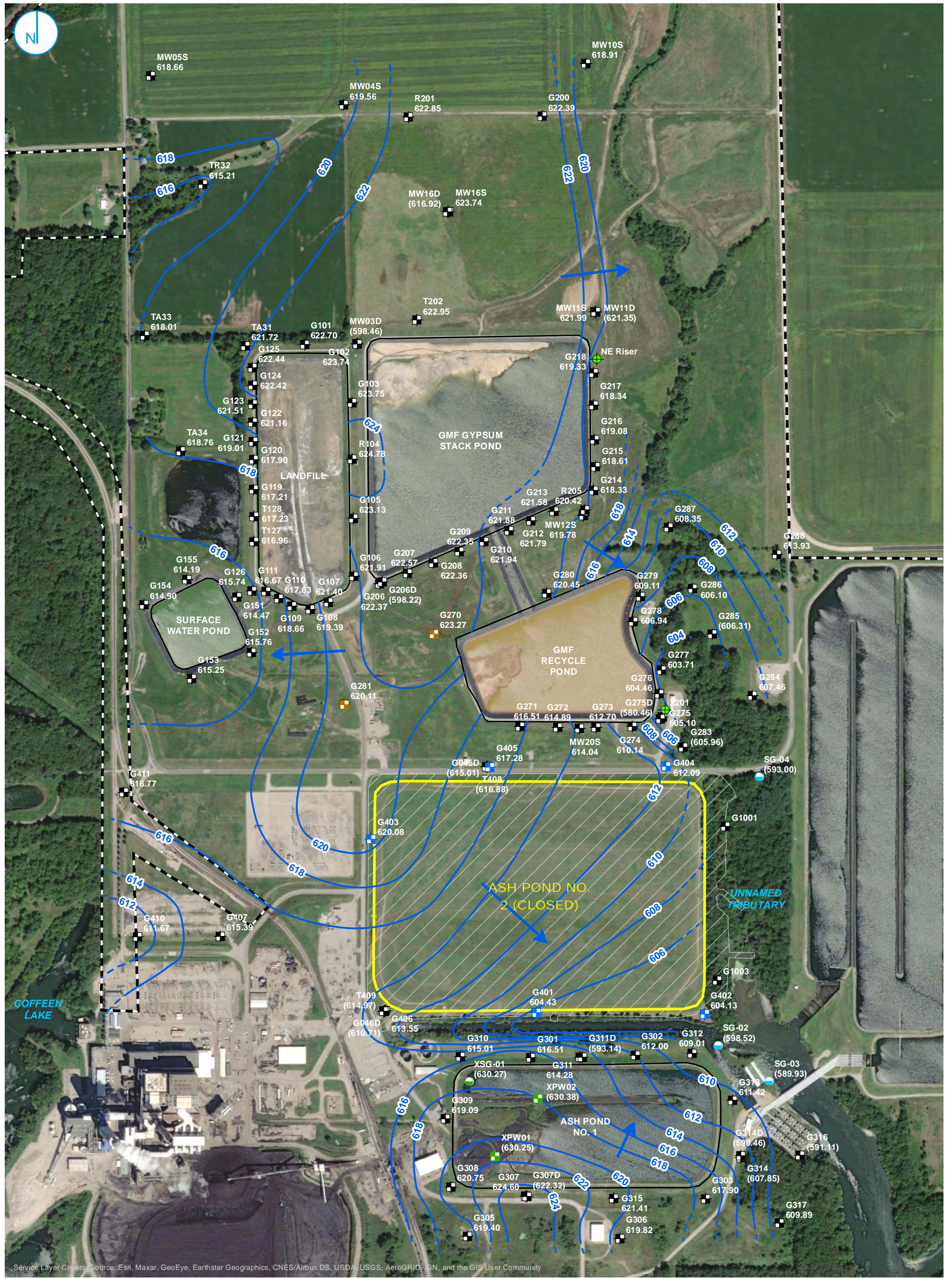


POTENTIOMETRIC SURFACE MAP AUGUST 16, 2021

2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT ASH POND NO.2 COFFEEN POWER PLANT COFFEEN, ILLINOIS

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- BACKGROUND WELL
- COMPLIANCE WELL
- PORE WATER WELL
- LEACHATE WELL
- MONITORING WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- PART 257 REGULATED UNIT (SUBJECT UNIT)
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

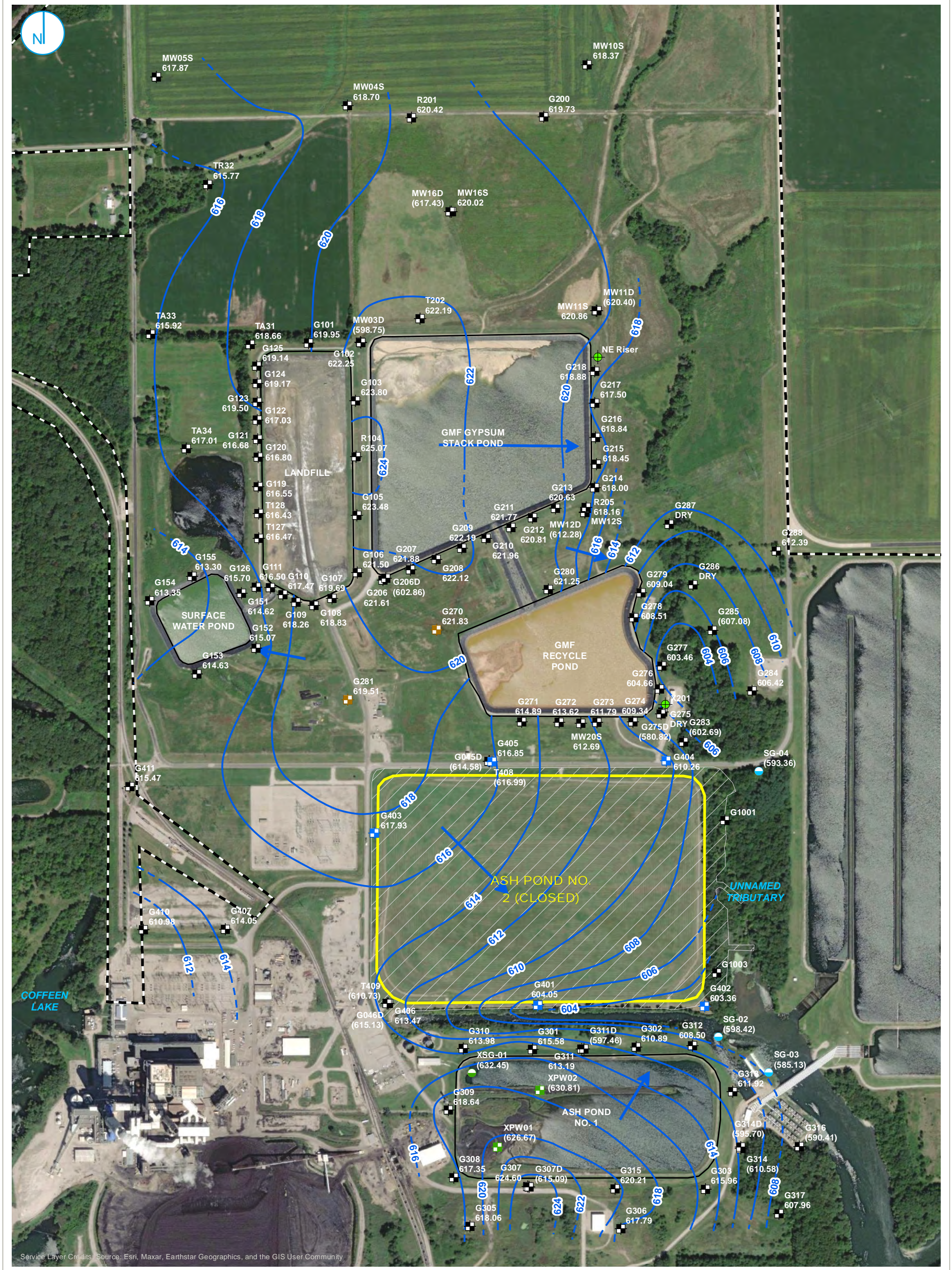
POTENTIOMETRIC SURFACE MAP FEBRUARY 7, 2022

2022 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT ASH POND NO. 2 COFFEEN POWER PLANT COFFEEN, ILLINOIS

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.



- NOTES:**
1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
 2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)



Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

- BACKGROUND WELL
- COMPLIANCE WELL
- PORE WATER WELL
- LEACHATE WELL
- MONITORING WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- PART 257 REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY

NOTES:

1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)



**POTENTIOMETRIC SURFACE MAP
AUGUST 23, 2022**

**2022 ANNUAL GROUNDWATER MONITORING
AND CORRECTIVE ACTION REPORT
ASH POND NO. 2
COFFEEN POWER PLANT
COFFEEN, ILLINOIS**

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.





Service Layer Credits: World Imagery, State of Missouri, Maxar

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- SOURCE SAMPLE LOCATION
- PORE WATER WELL
- LEACHATE WELL
- MONITORING WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER

- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- ➔ GROUNDWATER FLOW DIRECTION
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY
- REGULATED UNIT (SUBJECT UNIT)

POTENTIOMETRIC SURFACE MAP MAY 30, 2023



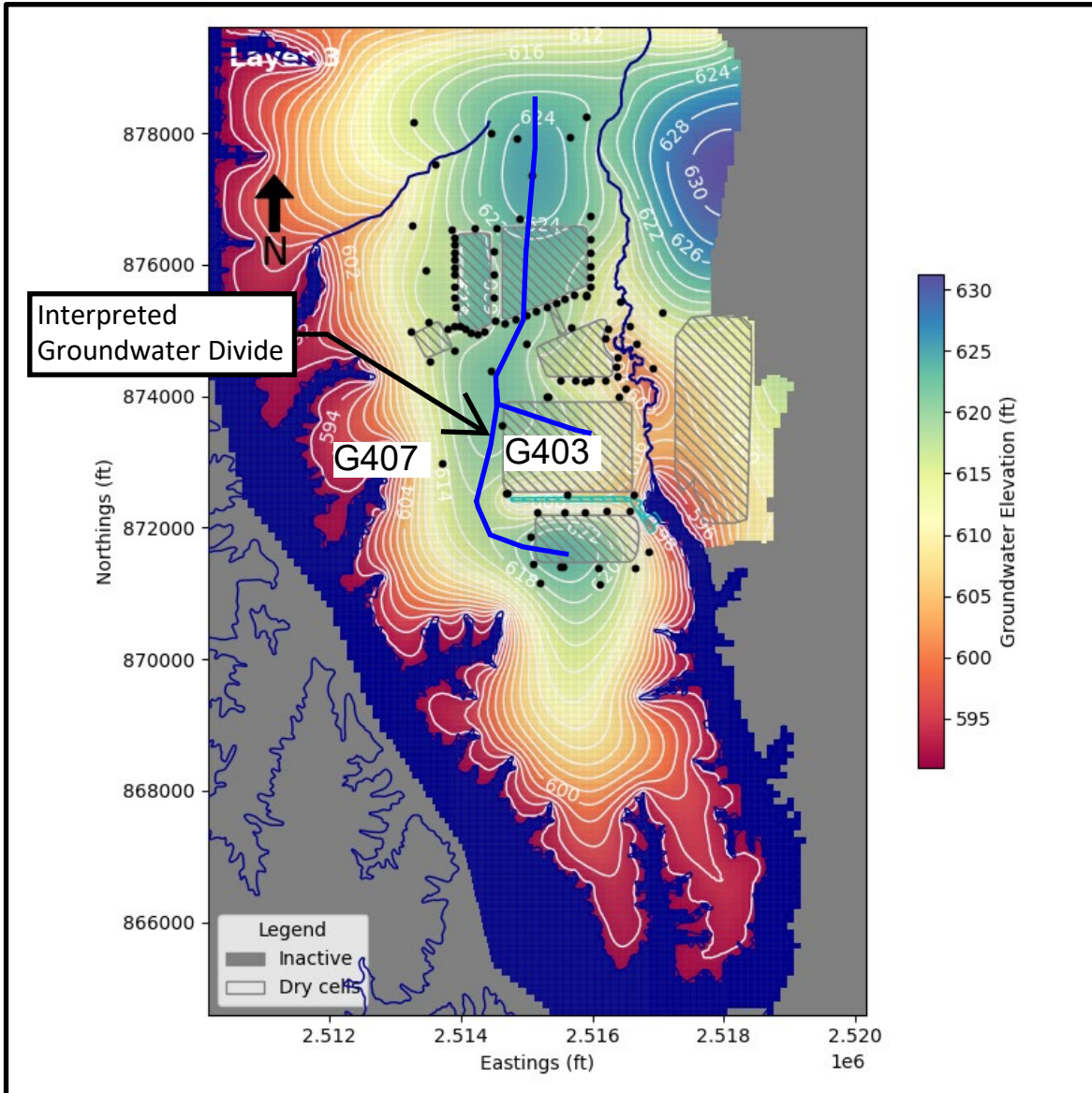
NOTES:
 1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
 2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

ASH POND NO. 2
 COFFEEN POWER PLANT
 COFFEEN, ILLINOIS

RAMBOLL AMERICAS
 ENGINEERING SOLUTIONS, INC.



ATTACHMENT 4
Coffeen Power Plant Groundwater Model Output



SIMULATED STEADY STATE GROUNDWATER LEVEL CONTOURS FROM UA (LAYER 3) FROM THE CALIBRATED MODEL

GROUNDWATER MODELING REPORT
ASH POND NO. 1
COFFEEN POWER PLANT
COFFEEN, ILLINOIS





engineers | scientists | innovators

Alternative Source Demonstration

Coffeen Power Plant Ash Pond No. 2

(Unit ID #102)

IEPA ID: W1350150004-02

35 I.A.C. 845.650

Prepared for

Illinois Power Generating Company

134 Cips Lane

Coffeen, Illinois 62017

Prepared by

Geosyntec Consultants, Inc.

500 W. Wilson Bridge Rd, Suite 250

Worthington, OH 43085

Project Number: GLP8029

December 2023

Alternative Source Demonstration

**Coffeen Power Plant Bottom Ash Pond No. 2
(Unit ID #102)**

IEPA ID: W1350150004-02

35 I.A.C. § 845.650

Prepared for

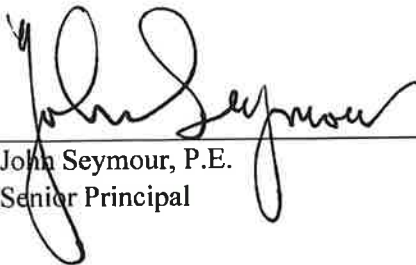
Illinois Power Generating Company
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Expires: 11/30/2025



John Seymour, P.E.
Senior Principal



Project Number: GLP8029

December 2023

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ACRONYMS AND ABBREVIATIONS

ASD	Alternative source demonstration
AP2	Ash Pond 2
CCR	Coal combustion residuals
CPP	Coffeen Power Plant
DA	Deep aquifer
EPRI	Electric Power Research Institute
GWB	Geochemists Workbench
GWPS	Groundwater protection standard
HCR	Hydrogeologic site characterization report
IAC	Illinois Administrative Code
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
LCU	Lower confining unit
LEAF	Leaching Environmental Assessment Framework
LOE	Line of evidence
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NID	National Inventory of Dams
redox	oxidation/reduction
SEP	Sequential extraction procedure
SI	Surface impoundment
SU	standard units
UA	Uppermost aquifer
UCU	Upper confining unit
USEPA	United States Environmental Protection Agency
XRD	X-ray diffraction

1. INTRODUCTION

Geosyntec Consultants, Inc. has prepared this alternative source demonstration (ASD) on behalf of Illinois Power Generating Company (IPGC) regarding the Ash Pond No. 2 coal combustion residuals (CCR) unit at the Coffeen Power Plant (CPP) near Coffeen, Illinois. The ASD is completed pursuant to Illinois Administrative Code (IAC) Title 35, Part 845 (“Standards for the Disposal of CCR in Surface Impoundments”) and was completed by December 15, 2023, within 60 days of determination of the exceedances (October 16, 2023), as required by 35 I.A.C.§ 845.650(e). This report applies specifically to the CCR Unit referred to as Ash Pond No. 2 (AP2), identification (ID) number (No.) 102, IEPA ID No. W1350150004-02, and National Inventory of Dams (NID) ID No. IL50723 and was prepared in conformance with guidance provided in the Electric Power Research Institute (EPRI) guidance for development of ASDs at CCR sites (EPRI 2017), and the United States Environmental Protection Agency (USEPA)’s Solid Waste Disposal Facility Criteria: Technical Manual (USEPA 1993).

An exceedance of cobalt was identified above the site-specific groundwater protection standard (GWPS) of 0.006 milligrams per liter (mg/L) at downgradient monitoring well G401 following the Second Quarter 2023 sampling event. Under 35 IAC 845.650(e), the owner or operator of a CCR surface impoundment may submit a demonstration that a source other than the CCR surface impoundment caused the contamination and the CCR surface impoundment did not contribute to the contamination, or that the exceedance of the groundwater protection standard resulted from error in sampling, analysis, or statistical evaluation, natural variation in groundwater quality, or a change in the potentiometric surface and groundwater flow direction.

Pursuant to 35 IAC 845.650(e), the lines of evidence (LOEs) documented in this ASD demonstrate that a source other than the CPP AP2 CCR unit was the cause of the GWPS exceedance for cobalt at downgradient monitoring well G401 and that AP2 did not contribute to the exceedance. Natural variability associated with the lithology of the aquifer was identified as the alternative source for the elevated cobalt concentrations at G401.

2. BACKGROUND

2.1 Site Location and Description

The CPP, operated by the IPGC is located in Montgomery County, Illinois approximately two miles south of the City of Coffeen in Section 11, Township 7 North, and Range 7 East. The CPP is located between the two lobes of Coffeen Lake to the west, east, and south, and is bordered by agricultural land to the north. The CPP operated as a coal-fired power plant from 1964 to November 2019 and has five CCR management units. The approximately 1,100-acre Coffeen Lake was built by damming the McDavid Branch of the East Fork of Shoal Creek in 1963 for use as an artificial cooling lake for the CPP. Historically, underground coal mines were operated in the vicinity of the CPP. An aerial view of the site is shown in **Attachment 1**.

2.2 Description of the CCR Unit

Coffeen AP2 is an unlined surface impoundment with a surface area of approximately 60 acres, with berms up to 47 feet above the surrounding land surface. AP2 was removed from service and capped in the mid-1980s using a two-foot compacted clay and soil cap (Ramboll 2019).

AP2 was recapped starting in 2019 using a geomembrane cover system in accordance with a closure plan submitted to the Illinois Environmental Protection Agency (IEPA; AECOM, 2017). The cover system installation was completed on November 17, 2020. The geomembrane cap design addresses the potential for slope failure and water infiltration into the closed CCR unit by directing the drainage of surface water (i.e., precipitation) off the cover system.

2.3 Geology and Hydrogeology

Significant site investigation has been completed to fully characterize the geology, hydrogeology, and groundwater quality as provided in the AP2 Initial Operating Permit Application (Burns & McDonnell 2021) and the Hydrogeologic Site Characterization Report (HCR) for AP2 (NRT 2017). These materials are incorporated herein.

There are multiple layers of unlithified material present beneath AP2 and above bedrock which are categorized into hydrostratigraphic units listed below (from the surface downward) based on stratigraphic relationships and hydrogeologic characteristics:

- **Upper Confining Unit (UCU):** Composed of the Roxana and Peoria Silts (Loess Unit) and the upper clayey portion of the Hagarstown member which are classified as silts-clayey silts and gravelly clay below the surficial soil.
- **Uppermost Aquifer (UA):** Composed of the Hagarstown Member which is classified as primarily sandy-gravelly silts and clays with beds of sedimentary deposits. Beds consist of thin (generally less than three feet in thickness), moderate to high permeability sand, silty sand, and sandy silt/clay units.

- **Lower Confining Unit (LCU):** Comprised of the Vandalia Member, Mulberry Grove Member, and Smithboro Member. The LCU in the vicinity of AP2 consists of thick (generally greater than 15 feet), very low permeability sandy to silty till or clay till.
- **Deep Aquifer (DA):** Comprised of sand and sandy silt/clay units of the Yarmouth Soil, which include accretionary deposits of fine sediment and organic materials, typically less than five feet thick and discontinuous across the CPP.

Bedrock is comprised of the Pennsylvanian-age Bond Formation, which consists of limestone and calcareous clays and shale. A geologic cross-section modified from a version provided in the Hydrogeologic Characterization Report is provided as **Figure 1**. CCR within AP2 is underlain by the UCU in the majority of the footprint.

G401 is screened from 14.36 feet below ground surface (ft. bgs) to 18.8 ft. bgs (608.7 to 604.2 feet in elevation [North American Vertical Datum of 1988, NAVD88]). The boring log for G401, provided in **Attachment 2**, indicates that the lithology of the upper portion of the screened interval is gray/yellowish brown clay with some silt and sand, and the lithology of the lower portion of the screened interval is yellowish brown fine sand and silt.

The groundwater monitoring well network for AP2 consists of 11 monitoring wells: three background monitoring wells (G270, G280, G281) and eight downgradient monitoring locations (G1001, G401, G402, G403, G404, G405, G406, G407) (**Attachment 1**). Monitoring wells within the network are screened in the Uppermost Aquifer from approximately elevations 600 to 610 ft.

The potentiometric groundwater contours and generalized groundwater flow directions at the site are shown in **Attachment 3**. Groundwater flow in the vicinity of AP2 is generally to the south and east. The groundwater to the west of AP2 is separated from the groundwater flow regime under AP2 by a groundwater divide.

3. G401 ASD LINES OF EVIDENCE

3.1 LOE #1: AP2 Porewater Samples Do Not Contain Detectable Concentrations of Cobalt

Porewater (i.e., water within the CCR) samples were collected from four locations (Ap2e, AP2f, AP2g, Ap2h) throughout AP2 in 2016 and analyzed for total cobalt. The locations of these porewater samples are shown on **Attachment 5**. Of these samples, none contained cobalt at concentrations above the method detection limit of 0.002 mg/L (**Figure 2**). One additional porewater sample was collected from an AP2 leachate collection system in May 2020 and analyzed for cobalt. This sample contained cobalt at a concentration of 0.0046 mg/L (**Figure 2**). Analytical data for the porewater samples is provided in **Attachment 6**. The cobalt concentrations detected in the porewater samples are less than the lower confidence limits of cobalt concentrations observed at downgradient well G401 for the Second Quarter 2023 sampling event (0.0629 mg/L calculated using a confidence band around a linear regression, Ramboll 2023).

Because the concentrations in porewater within AP2 are lower than the concentrations of cobalt at monitoring well G401, this exceedance is not attributed to impacts from the AP2 CCR unit.

As background information, CCR porewater most accurately represents the mobile constituents associated with the waste management activity within the CCR surface impoundment (SI) (EPRI 2017). The composition of CCR porewater accumulated at the base of the CCR unit, which is derived from, and represents contact with, CCR material above and around the well screen, is the truest representation of mobile constituents throughout the CCR SI. Leach tests presented in SW-846 (e.g., toxicity characteristic leaching procedure, synthetic precipitation leaching procedure, Leachate Environmental Assessment Framework [LEAF 1313 – 1316]) are inconsistent predictors or surrogates of *in situ* porewater chemical concentrations (EPRI 2020, EPRI 2021, and EPRI 2022). Indeed, laboratory leach test effectiveness is determined by comparing results to porewater data (USEPA 2014, EPRI 2020, EPRI 2021, and EPRI 2022). These laboratory leach tests most accurately predict porewater concentrations when conditions in the test closely reflect conditions present in the field (USEPA, 2019). In many cases, the pH and/or oxidation-reduction (redox) potential of porewater is poorly represented by any laboratory leach test conditions. For these reasons, analysis of actual CCR porewater is more representative of potential contributions to groundwater observed in compliance monitoring wells than laboratory leach testing. The uncertainty in comparing the laboratory leach test results with the actual porewater concentrations means that the contribution of laboratory leach test data as a line of evidence to an ASD would be minimal.

Testing of porewater is a direct source term for evaluating potential influence on groundwater. SW-846 provides analytical methods for evaluating solid waste using leach tests that are designed to replicate potential *in situ* conditions (either current or future). The goal of these laboratory leach tests is to predict the potential concentration of chemicals under laboratory-controlled conditions (e.g., landfill leachate, synthetic precipitation, variable pH) which may or may not represent conditions observed in the field. The use of leach test results performed under variable conditions

collected from any number of locations within the CCR SI to estimate a total potential for chemical leaching from CCR into groundwater under a variety of different conditions is irrelevant to an ASD. ASDs are prepared to evaluate the potential for actual porewater leaking from a CCR SI to be the cause of or contribute to a detected exceedance observed in a compliance well.

3.2 LOE #2: Cobalt Is Present in Aquifer Solids

Aquifer solids samples were collected from three soil borings across CPP in May 2021, including one sample adjacent to the screened interval of G401 and one sample adjacent to the screened interval of background well G270. The field boring logs for these samples are provided as **Attachment 7**. These samples were submitted for analyses of total cobalt and cobalt distribution within the aquifer solids using sequential extraction procedure (SEP). Results for total and SEP analyses of cobalt in these samples are presented in **Table 1** and the analytical laboratory reports are provided as **Attachment 7**¹.

SEP is an analytical technique that uses progressively stronger reagents to solubilize metals from specific phases within the solid matrix and is used to infer associations between constituents and different classes of solids (Tessier et al. 1979). These classes of solids are identified based on their solubility under different reagents and include the exchangeable fraction, the carbonate-bound fraction, the fraction bound to non-crystalline materials (typically amorphous oxides), the iron/manganese oxide-bound fraction, the organic matter-bound fraction, and the residual fraction. To evaluate data quality in an SEP analysis, first the sum of individual extraction steps from the SEP was compared to the total cobalt concentration. The sum of the SEP is not expected to be exactly equal to the total metals analysis but should be generally consistent with the total metals result. The total cobalt concentration from the G401 sample was reported as 7.7 milligrams per kilogram of soil (mg/kg). The total cobalt concentration from the background G270 sample was reported as 7.3 mg/kg. The summed concentration of cobalt from the SEP analyses of the G401 sample was 5.2 mg/kg, and the summed concentration of cobalt from the G270 sample was 9.1 mg/kg, indicating general consistency between the total metals analyses and the summed SEP steps and therefore good metals recovery and data quality.

These results indicate that cobalt is naturally present in the solids comprising the screened interval of both well of interest G401 and background location G270. In both samples, the largest component of cobalt was found to be associated with the ammonium oxalate reactive fraction (often correlated to non-crystalline metal oxides) and the reducing agent extractable fraction (often correlated to iron/manganese oxides), which together comprise 82% of recovered cobalt from G401 and 78% of recovered cobalt from G270 (**Table 1**). Smaller components of cobalt were found to be associated with the stronger reagents used to mobilize constituents from sulfides or

¹ Sample G1001 is included in Attachment 7 but excluded from subsequent results tables and discussion in order to emphasize findings associated with the cobalt exceedance at G401.

residual materials within the solid phase. These results demonstrate that naturally occurring cobalt is present and ubiquitous throughout the site, including at upgradient locations.

3.3 LOE #3: Geochemical Conditions Favor Mobilization of Cobalt from Iron-bearing Minerals

Additional evaluation of solid phase data and geochemical conditions at G401 provide evidence that the naturally occurring cobalt within the solid phase is mobilized to groundwater.

3.3.1 Mineralogical Analysis

SEP testing indicated that the largest components of cobalt are likely associated with non-crystalline metal oxides and iron/manganese oxides (Section 3.2). Mineralogical analysis of aquifer solids collected adjacent to G401 was completed using X-ray Diffraction (XRD) to evaluate the mineralogy of the screened interval and identify the phases present in the aquifer matrix material. Mineralogy results are provided in **Table 2**, and the laboratory analytical report is included as **Attachment 8**. Mineralogy of the sampled interval of G401 consists primarily of quartz, various feldspars (albite, microcline), and various phyllosilicate minerals (muscovite, stilpnomelane [smectite-group], biotite). Minor abundances of diopside, actinolite, and ankerite were reported as well.

The results of the SEP analyses indicated that non-crystalline oxides and crystalline oxide minerals were found to have the greatest and second association with cobalt, respectively (**Table 1**). The iron concentration measured during step 3 of the extraction procedure (the extraction phase typically associated with amorphous oxides) was 580 mg/kg and the iron concentration measured in step 4 (the extraction phase typically associated with crystalline iron and manganese oxides) was 6,400 mg/kg, suggesting that iron oxides are present within the aquifer matrix and are strongly associated with cobalt (**Attachment 7**). Total metals concentrations are provided in **Attachment 9**. In contrast to SEP and total metals results, no crystalline iron or manganese oxide minerals were reported in the XRD analyses. XRD does not provide an assessment of amorphous materials due to analytical limitations; XRD results are normalized to 100% to exclude non-crystalline components.

Cobalt is known to undergo isomorphic substitution for iron in crystalline iron minerals such as iron oxides, iron sulfides, and iron carbonates due to the similar ionic radii (Clementi and Raimondi, 1963; Krupka and Serne, 2002; Hitzman et al., 2017). Cobalt which has been isomorphically substituted for iron in the crystal structure of iron-bearing minerals or adsorbed to their surfaces would also be subject to mobilization via initiation of weathering reactions in which mineral crystal structures dissolve. Minor abundances of ankerite, an iron-bearing carbonate mineral, were reported in XRD results. Iron carbonate minerals are known to undergo pH and redox-driven reversible weathering reactions with ferric iron minerals such as iron oxides (Taylor 1980, Schwertmann and Taylor 1989, Schwertmann and Fitzpatrick 1993). The likely presence of iron oxide minerals coupled with the reported presence of an iron-bearing carbonate mineral

suggests that iron exists in multiple solid phases in the G401 aquifer material which have the potential to undergo dissolution reactions in response to aqueous geochemistry. Such reactions would mobilize iron and isomorphically substituted cobalt into groundwater.

3.3.2 Geochemical Conditions

The SEP results indicate that cobalt is likely associated with the iron oxide fraction and the non-crystalline material fraction of the aquifer matrix. An Eh-pH diagram was generated using the average composition of G401 groundwater (**Figure 3**) to evaluate groundwater conditions at G401 relative to the thermodynamic stability of iron oxide and iron carbonate minerals. Groundwater geochemistry from G401 sampling events consistently plot along the stability boundaries between aqueous Fe^{2+} , ferrous iron carbonate (siderite, FeCO_3), and amorphous ferric iron oxide ($\text{Fe}(\text{OH})_3$), indicating that groundwater is in a state of dynamic equilibrium between the three phases. Based on **Figure 3**, subtle shifts in pH or redox conditions within G401 groundwater would be expected to result in alteration reactions between ferrous and ferric iron minerals which may trigger mineral dissolution and subsequent mobilization of iron and the associated cobalt to groundwater.

Further evidence of the association of cobalt with iron mineral phases is provided by **Figure 4**, which indicates a strong correlation between aqueous iron and aqueous cobalt in groundwater at G401 as well as a general shift in aqueous cobalt and iron trends occurring within the same time interval. This strong correlation reinforces the likelihood that isomorphic substitution of cobalt into iron minerals is occurring in the natural lithology adjacent to AP2, as aqueous iron is observed to behave in a very similar manner to aqueous cobalt. Such concurrent changes suggest an identical source of both aqueous cobalt and aqueous iron, that source being the presence of mineral-bearing minerals.

G401 groundwater has a notably lower pH than all other AP2 compliance wells (**Figure 5**). Measured pH values at G401 range from 5.58 to 6.40 Standard Units (SU). These values are lower than those measured from AP2 porewater samples during 2016 sampling, which range from 6.5 to 7.2 SU, suggesting that AP2 is not affecting the pH at G401 and it is instead driven by variability in the aquifer. The lower pH values at G401 contribute to the relative instability of iron-bearing minerals as shown in the thermodynamic speciation diagram in **Figure 3**. The lower pH condition at G401 groundwater likely accounts for the elevated aqueous iron and cobalt concentrations in G401 groundwater relative to other compliance wells.

3.4 LOE #4: Geochemical Modeling of Cobalt Mobilization from Aquifer Solids Supports the Determination of Naturally Occurring Cobalt

Geochemical modeling was used to investigate the influence of pH conditions on aqueous cobalt concentrations at well G401. Thermodynamic reaction pathway modeling was conducted using the React module of Geochemist's Workbench (GWB) geochemical modeling software package (version 17.0.1). The purpose of the model is to show the relationship between pH and aqueous cobalt concentrations as a function of variable pH and iron mineral instability and sorption capability.

The initial aqueous component of the geochemical model was populated using the groundwater composition of the most recent sample collected at G401 on June 7, 2023 (**Table 3**). The pH value of the aqueous component was not defined and was set as a sliding scale. Solid-phase reactants incorporated into the model were limited to iron-bearing minerals to evaluate iron and associated cobalt dynamics in the system and were defined based on results of the solid phase analyses: 0.1 weight percentage (wt. %) siderite (FeCO_3) as a proxy for ankerite and 0.1 wt. % of iron hydroxide, $\text{Fe}(\text{OH})_3$. Ankerite ($\text{Ca}[\text{Fe},\text{Mg},\text{Mn}][\text{CO}_3]_2$) is a complex iron-carbonate solid-solution mineral with limited thermodynamic data available and is not included in most thermodynamic databases. $\text{Fe}(\text{OH})_3$ was included to account for the iron oxide mineral phase which is suggested by SEP results (**Table 1**) and predicted to occur based on thermodynamic speciation (**Figure 3**). Both siderite and iron hydroxide were included as reactant phases, and $\text{Fe}(\text{OH})_3$ was modified in the thermodynamic database to incorporate a small fraction of cobalt (**Table 3**) to represent isomorphically substituted cobalt within the crystal structure of this mineral as suggested by SEP results (**Table 1**). The cobalt-iron hydroxide phase represents a natural cobalt source within the model and allows for evaluation of cobalt stability as a function of pH variability.

The thermodynamic database used for the model (thermo.dat) was adjusted to include the newly-defined cobalt-iron hydroxide mineral phase discussed above. Sorption to iron oxyhydroxides was incorporated into model calculations using the Dzombak and Morel (1990) two-layer surface complexation model. This sorption dataset was modified to recognize the cobalt-substituted source phase of $\text{Fe}(\text{OH})_3$. Crystalline iron minerals ferrite, hematite, goethite, and magnetite were suppressed during model simulations due to their lack of detection by XRD. A porosity value of 25% was used for the UA.

The geochemical model simulates cobalt and iron concentrations over the pH range observed in groundwater at well G401 from November 2015 (the beginning of monitoring) to the present, as well as the average pH value across all other AP2 compliance wells since sampling began (**Figure 6**). Iron concentrations are included to illustrate the effects of dissolution of the cobalt-bearing iron mineral source phase on aqueous conditions. Generally, both aqueous iron and cobalt concentrations are predicted to be higher at lower pH values (such as those observed at G401). This effect is due to the combined instability of the cobalt-bearing iron hydroxide and desorption of aqueous cobalt from the surface complexes of the $\text{Fe}(\text{OH})_3$ mineral with declining pH. **Figure 7a** shows the fraction of cobalt predicted to sorb to this iron oxide component at varying pH levels (maximum adsorption at pH 7.19), and **Figure 7b** shows the predicted mass of each mineral at varying pH levels, which represents the availability of sorption sites for cobalt. The results of the equilibrium geochemical model demonstrate an increase in aqueous cobalt in groundwater as desorption from iron oxide surfaces and dissolution of iron-bearing oxide minerals are promoted at groundwater pH conditions below 7.0. Geochemical modeling results support the hypothesis that the lower pH levels documented at G401 relative to all other AP2 compliance wells are the primary cause of elevated aqueous cobalt concentrations.

4. CONCLUSIONS

It has been demonstrated that the cobalt GWPS exceedance at G401 is not due to a release from the AP2 CCR unit and that the unit has not contributed to the exceedance, but instead the exceedance is attributed to a natural source. The following summarizes the four LOEs used to support this alternative source demonstration:

1. AP2 porewater samples do not contain detectable concentrations of aqueous cobalt and can therefore not be the source of cobalt exceedances to downgradient groundwater.
2. Cobalt has been detected in aquifer solids samples collected adjacent to well G401 and adjacent to background well G270 which constitute a naturally occurring cobalt source.
3. Geochemical conditions of G401 groundwater indicate that multiple iron phases are present in the aquifer-groundwater system, and small changes in pH or redox conditions are expected to result in the dissolution of cobalt-bearing phases and the release of cobalt and dissolved iron into groundwater.
4. Geochemical modeling of cobalt mobilization from aquifer solids predicts that pH conditions govern aqueous cobalt concentrations in Site groundwater. Lower pH levels documented in G401 groundwater are predicted to result in elevated aqueous cobalt relative to other AP2 compliance wells.

The alternative source of cobalt at G401 is the influence of the till lithology on groundwater composition. This demonstration fulfills the requirements of both 35 IAC 845.650(e) and the technical manual for the Municipal Solid Waste Landfill federal regulatory program (Code of Federal Regulations, Title 40, Section 258) that a statistically significant increase may result from natural variation in groundwater quality.

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TABLES

**Table 1 - Cobalt SEP Results Summary
Coffeen Power Plant**

Geosyntec Consultants, Inc.

Soil Boring Location		G270A		G401A	
Sample Depth (ft)		(12-16)		(16-20)	
Location		Background		Upgradient	
Field Boring Log Description		Brown silty sand		Brown sand transitioning to light gray/brown sandy clay	
Total Cobalt		7.3		7.7	
SEP Results					
SEP Fraction	SEP Reagent	Concentration	% of Total	Concentration	% of Total
Exchangeable Metals Fraction	MgSO ₄	<0.21	--	<0.21	--
Bound to Carbonates Fraction	Sodium acetate, acetic acid	<0.22	--	<0.22	--
Bound to Non-crystalline Materials	Ammonium oxalate (pH 3)	4.3	47%	2.4 J	46%
Bound to Fe/Mn Oxides Fraction	Hydroxylamine HCl and acetic acid	2.8 J	31%	1.9 J	36%
Bound to Organic Material Fraction	5% sodium hypochlorite (pH 9.5)	<0.70	--	<0.69	--
Bound to Sulfides Fraction	HNO ₃ , HCl-H ₂ O solution	1.6 J	18%	0.85 J	16%
Residual Metals Fraction	HF, HNO ₃ , HCL, and H ₃ BO ₃	0.36 J	4%	0.061 J	1.0%
SEP Total		9.1	100%	5.1	100%

Notes:

SEP - sequential extraction procedure

ft bgs - feet below ground surface

All results shown in milligram of cobalt per kilogram of soil (mg/kg).

Non-detect values are shown as less than the detection limit.

The cobalt fraction associated with each SEP phase is shown.

% of total cobalt is calculated from the sum of the SEP fractions.

**Table 2 - Summary of X-Ray Diffraction Analysis
Coffeen Power Plant**

Geosyntec Consultants, Inc.

Field Boring Location			G270A	G401A
Sample Depth (ft bgs)			(12-16)	(16-20)
Location			Upgradient	Downgradient
Field Boring Log Description			Brown silty sand	Brown sand transitioning to light gray/brown sandy clay
Mineral/Compound	Formula	Mineral Type	(wt %)	(wt %)
Quartz	SiO ₂	Silicate	60.6	68.9
Albite	NaAlSi ₃ O ₈	Feldspar	9.1	8.6
Microcline	KAlSi ₃ O ₈	Feldspar	9.8	7.8
Muscovite	KAl ₂ (AlSi ₃ O ₁₀)(OH) ₂	Mica	9.0	6.8
Stilpnomelane	K(Fe,Mg) ₈ (Si,Al) ₁₂ (O,OH) ₂₇ •H ₂ O	Clay	2.0	2.7
Biotite	K(Mg,Fe) ₃ AlSi ₃ O ₁₀ (OH) ₂	Mica	2.4	2.1
Diopside	CaMgSi ₂ O ₆	Pyroxene	1.3	1.4
Actinolite	Ca ₂ (Mg,Fe) ₃ Si ₈ O ₂₂ (OH) ₂	Amphibole	3.3	1.4
Chlorite	(Fe,(Mg,Mn) ₅ ,Al)(Si ₃ Al)O ₁₀ (OH) ₈	Clay	1.4	-
Dolomite	(Mg,Ca)(CO ₃) ₂	Carbonate	0.6	-
Ankerite	CaFe(CO ₃) ₂	Carbonate	0.5	0.1
Pyrite	FeS ₂	Sulfide	0.2	-

Notes:

Sample depth is shown in feet below ground surface (ft bgs).

wt %: percentage by weight

- : Mineral was not detected at abundances above the instrument detection limit

Table 3 - Summary of Geochemical Model Inputs *Geosyntec Consultants, Inc.*
Coffeen Power Plant

Aqueous Phase			
Parameter	Unit	Input Value	Source
Calcium	mg/L	490	June 7, 2023 sampling event
Chloride	mg/L	3.60	June 7, 2023 sampling event
Cobalt	mg/L	0.110	June 7, 2023 sampling event
Iron	mg/L	84.0	June 7, 2023 sampling event
Magnesium	mg/L	150	June 7, 2023 sampling event
Manganese	mg/L	27.0	June 7, 2023 sampling event
Potassium	mg/L	2.20	June 7, 2023 sampling event
Sodium	mg/L	71.0	June 7, 2023 sampling event
Sulfate	mg/L	2100	June 7, 2023 sampling event
Bicarbonate Alkalinity	mg/L	140	June 7, 2023 sampling event
Eh	V	0.168	June 7, 2023 sampling event
Temperature	°C	12.3	June 7, 2023 sampling event
pH	SU	5.0-8.0	Model variable
Solid Phase			
Reactant	Unit	Input Value	Source
Fe(OH) ₃ -Cobalt Source Phase ¹	wt. %	0.1	Assumption based on SEP results indicating iron oxide presence and thermodynamic speciation modeling
Siderite	wt. %	0.1	May 2021 sample XRD results (for iron carbonate mineral ankerite ²)
Porosity	%	25	Assumed

Notes:

mg/L: milligrams per liter

V: volts

°C: degrees Celsius

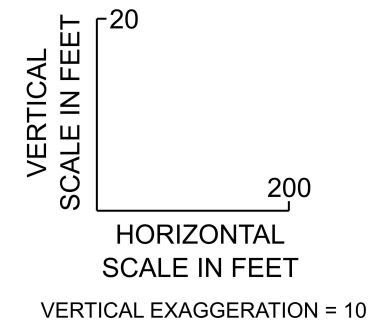
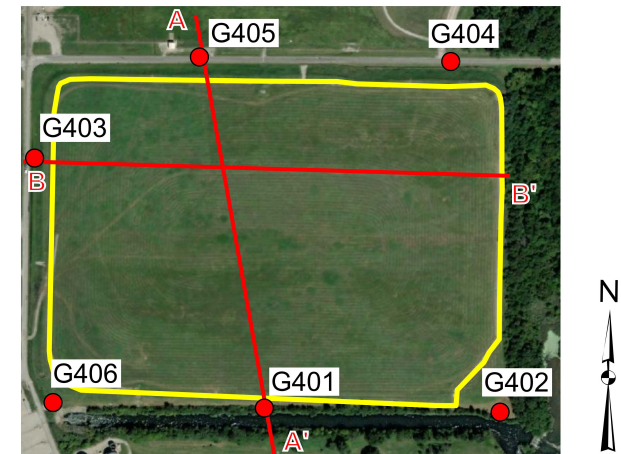
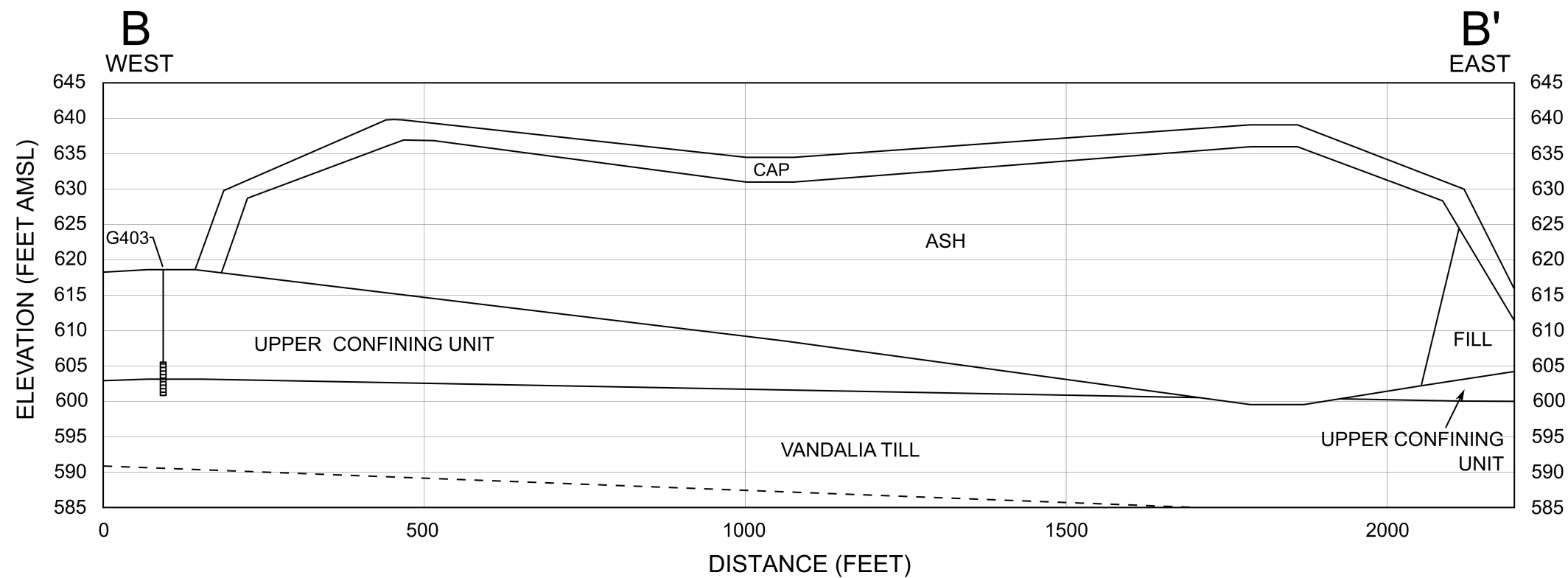
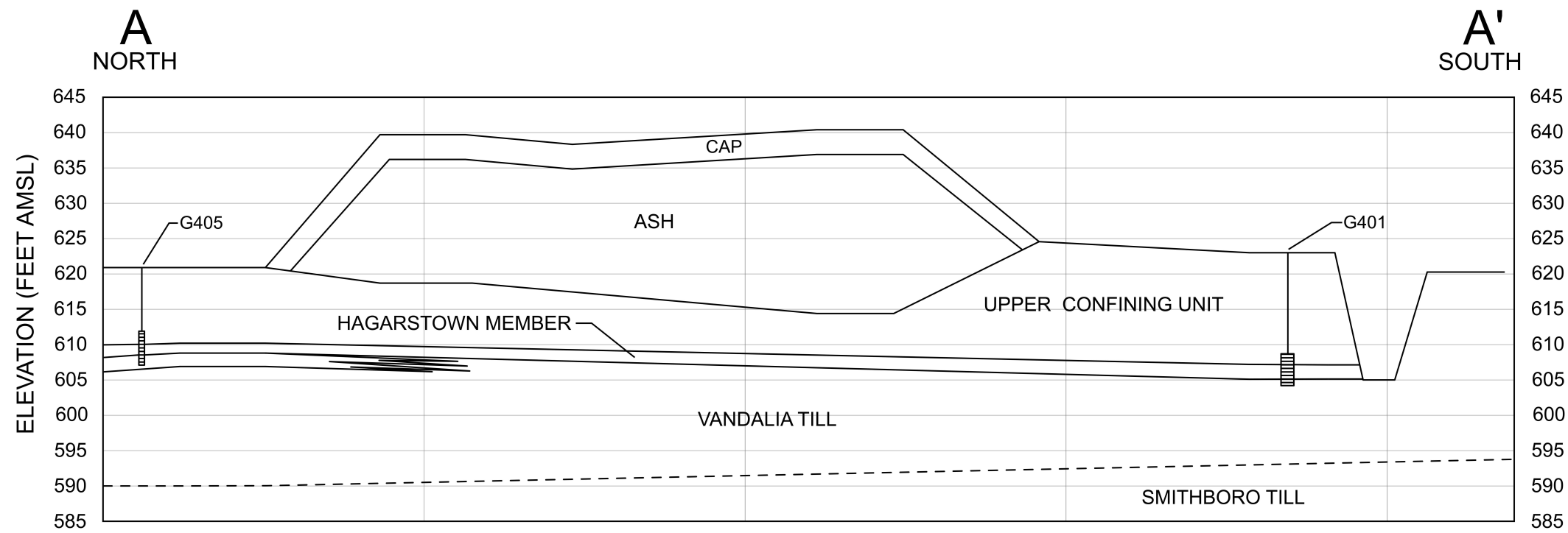
SU: standard units

wt. %: weight percentage

1: Mineral formula $Fe^{3+}_{0.99}Co^{2+}_{0.015}(OH)_3$

2: Thermodynamic information for ankerite is not readily available, so iron carbonate mineral siderite was used in modeling efforts in place of ankerite

FIGURES



Legend

- Monitoring Wells
- Pond Outline
- Well Screen

Notes

- Well locations are approximate
- Geologic cross-sections modified from Hydrogeologic Monitoring Plan (Natural Resource Technology, 2017)
- Cap thickness is approximate

Ash Pond No. 2 Geologic Cross-Section

134 Cips Lane
Coffeen, Illinois

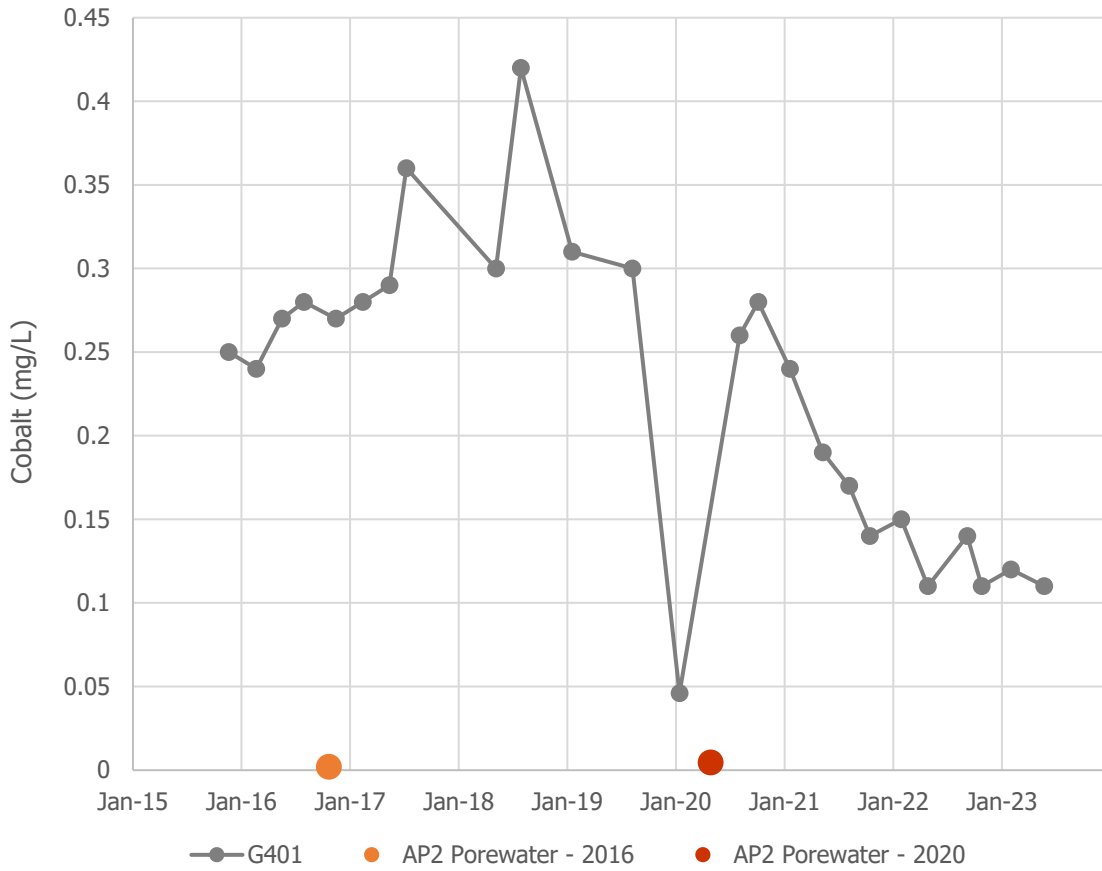
Geosyntec
consultants

Columbus, OH

November 2023

Figure

1



Notes: Cobalt results are shown for unfiltered samples in units of milligrams per liter (mg/L). The 2016 porewater sample datapoint represents four separate sampling locations throughout AP2, all of which did not contain detectable cobalt. The method detection limit of 0.002 mg/L is shown.

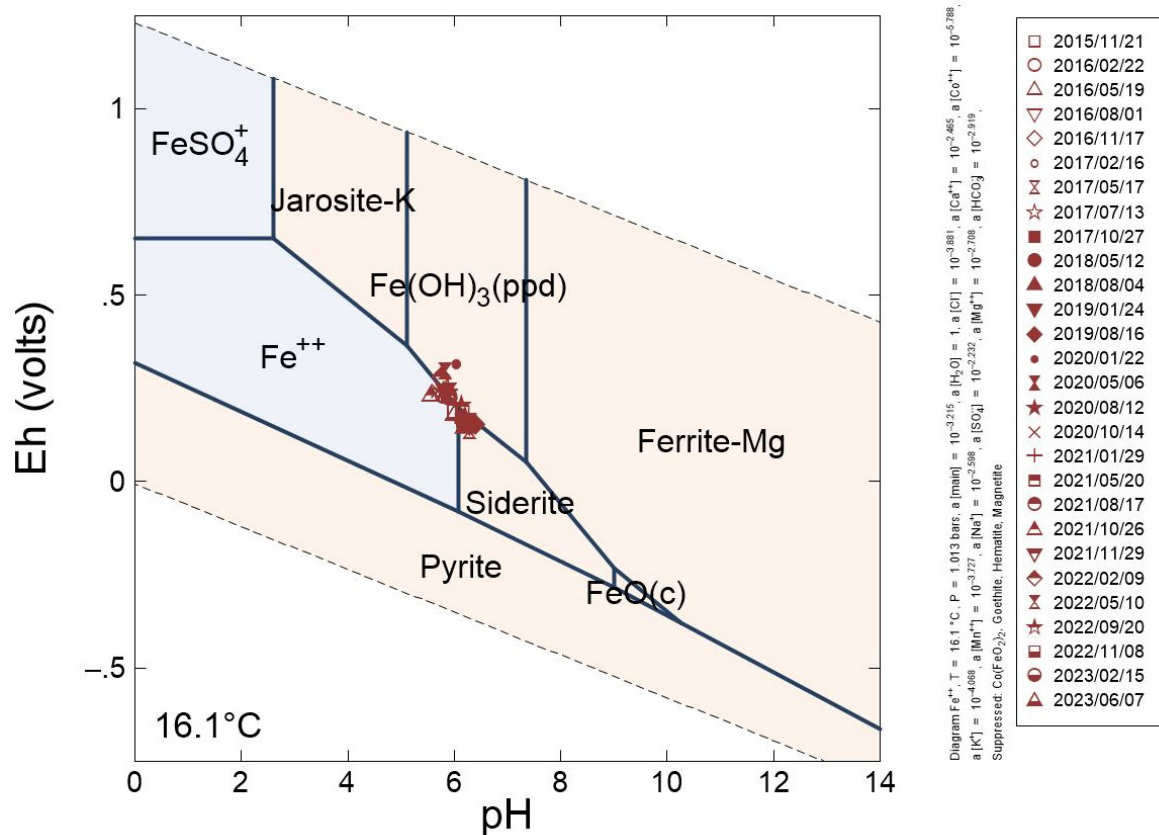
Cobalt Time Series



Figure
2

Columbus, OH

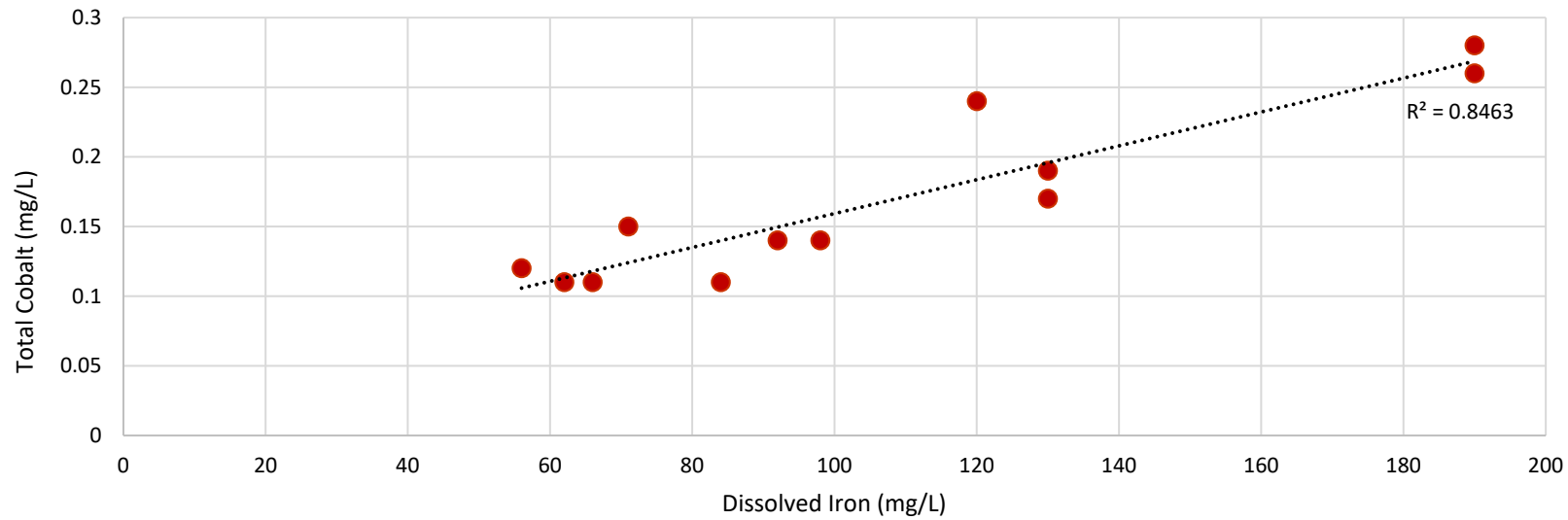
November 2023



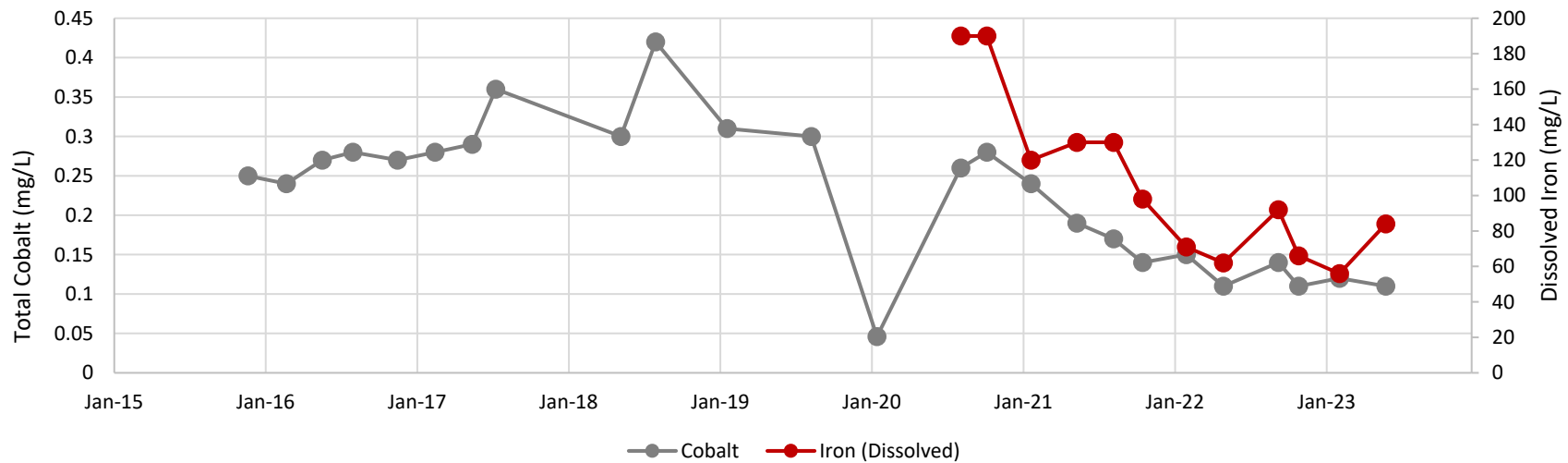
Notes: Groundwater compositions from all G401 sampling events were averaged and used to establish baseline conditions for the diagram. Eh and pH values for sampling dates at G401 are shown on the diagram. pH is displayed in standard units (SU). V - volts

Iron Eh-pH Phase Stability Diagram – G401	
Columbus, OH	October 2023

Figure
3



A



B

Notes: Figure A displays a scatterplot of groundwater data for G401 samples in units of milligrams per liter (mg/L). Iron concentrations are from filtered samples, and cobalt concentrations are from unfiltered samples. Figure B displays a time series plot of aqueous iron and cobalt concentrations at G401 in units of mg/L. Iron concentrations are from filtered samples, and cobalt concentrations are from unfiltered samples.

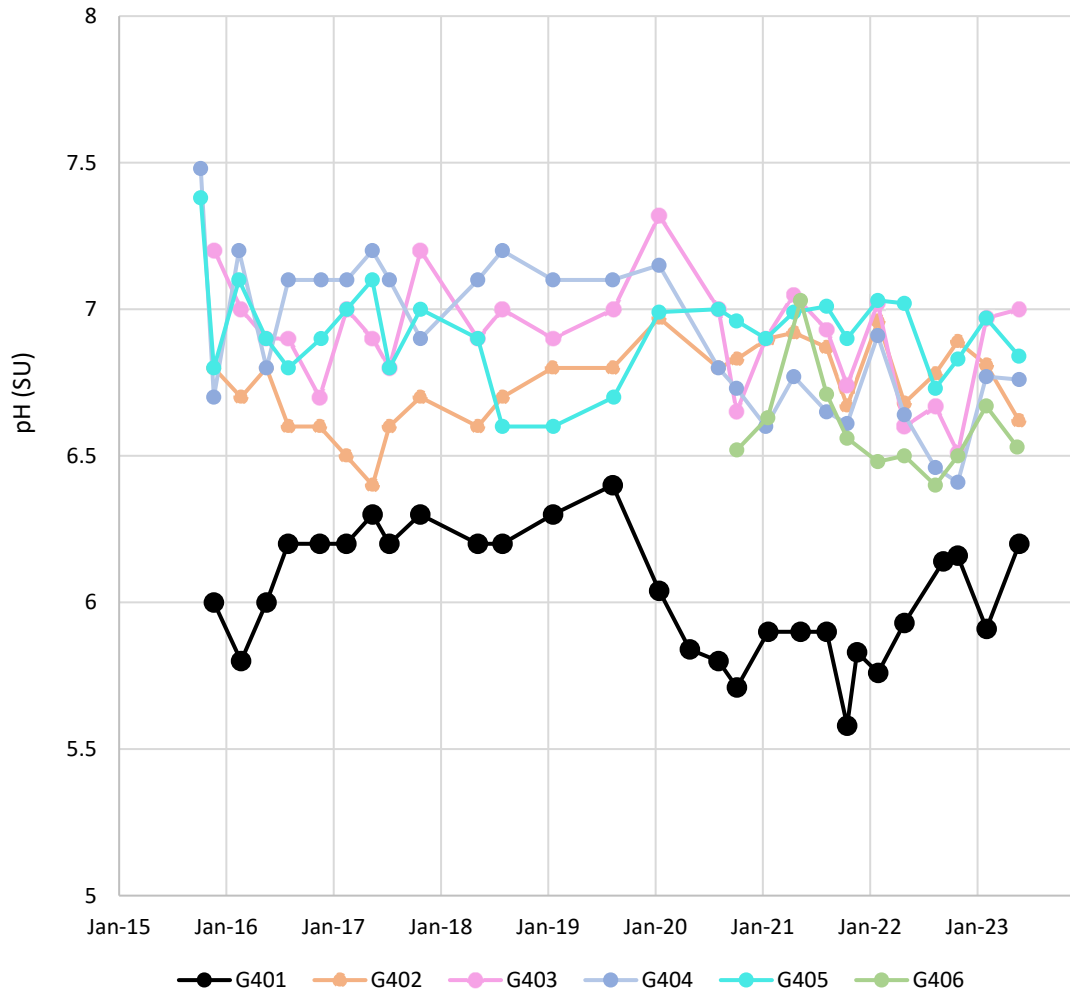
G401 Cobalt-Iron Relationship



Columbus, OH

November 2023

Figure
4



Notes: Field-measured values for pH at all Coffeen Ash Pond 2 compliance wells are shown in standard units (SU).

AP2 Groundwater pH Time Series

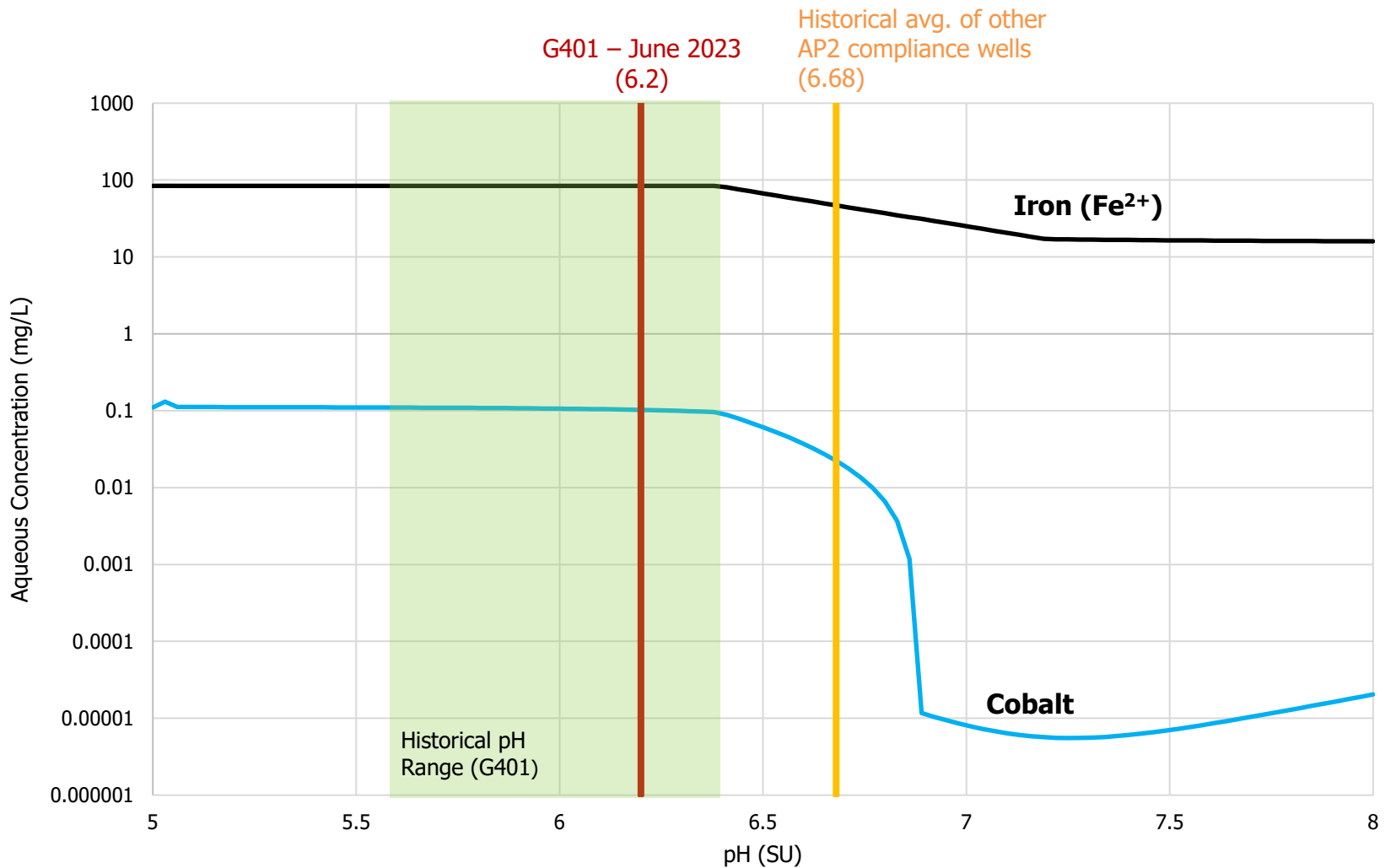


Columbus, OH

November 2023

Figure

5



Notes: pH values are shown in standard units (SU). Predicted concentrations of aqueous cobalt and iron in units of milligrams per liter (mg/L) on a log scale as a function of pH are shown. The historical range of measured pH values at monitoring well G401 groundwater from 2015 to the present are indicated by the green shading. The pH value of the most recent groundwater sample from G401 is indicated by the red line. The average pH value of all sampling events from all AP2 compliance wells (not including G401) is indicated by the orange line.

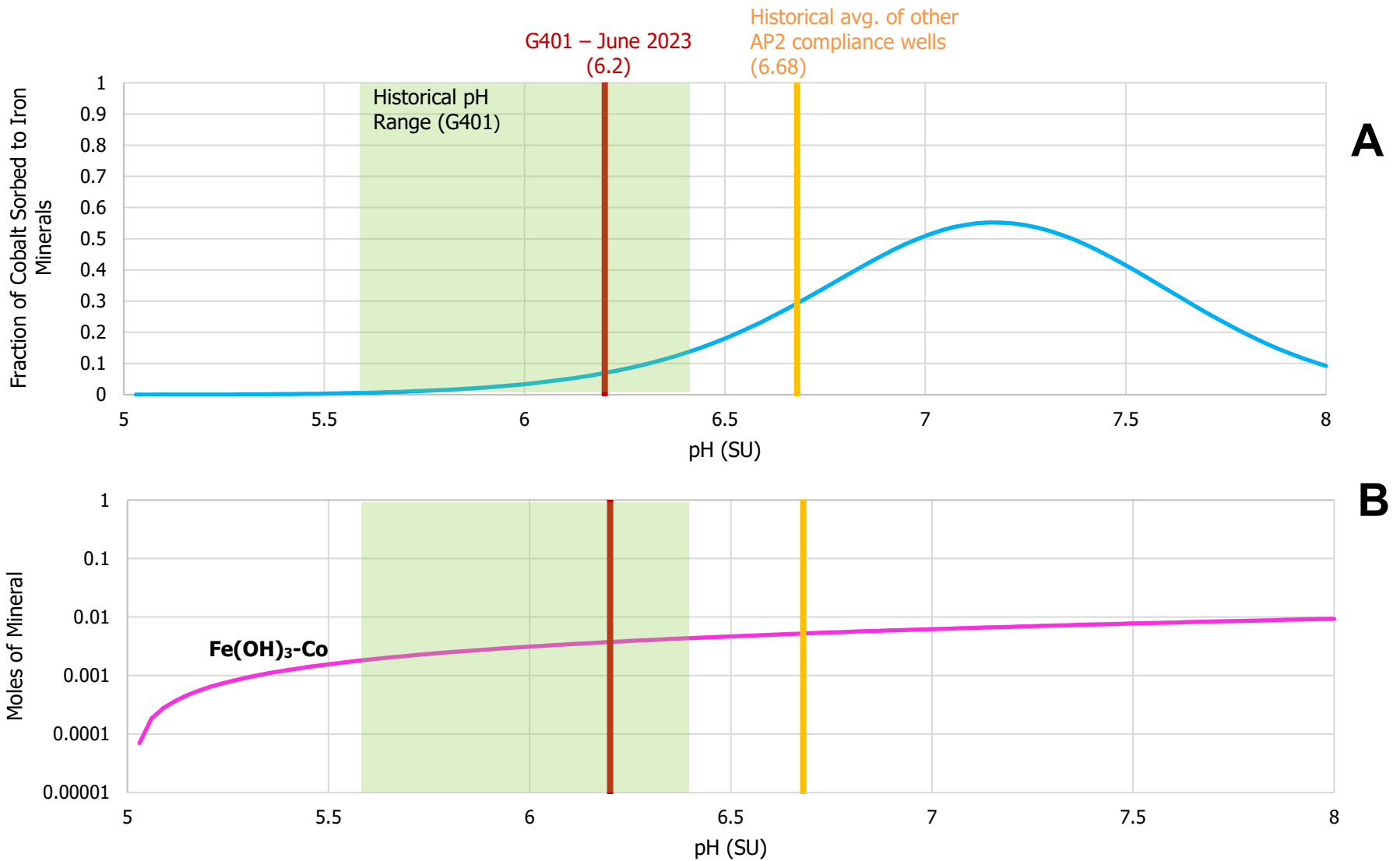
Geochemical Model Output – Aqueous Cobalt and Iron Concentrations



Figure
6

Columbus, OH

November 2023



Notes: pH values are shown in standard units (SU). Plot A displays the fraction of cobalt in the system that is predicted to sorb to iron-bearing minerals. Plot B displays the predicted number of moles of Fe(OH)₃-Co as a function of pH. The historical range of measured pH values at monitoring well G401 groundwater from 2015 to the present are indicated by the green shading. The pH value of the most recent groundwater sample from G401 is indicated by the red line. The average pH value of all sampling events from all AP2 compliance wells (not including G401) is indicated by the orange line.

Geochemical Model Output – Sorbed Cobalt and Mineral Mass



Figure
7

Columbus, OH

December 2023

ATTACHMENT 1
Proposed 845 Groundwater Monitoring Network

PROJECT: 169000XXXXX | DATED: 10/6/2021 | DESIGNER: STOLZSD
 Y:\Mapping\Projects\2202285\MXD\945_Operating_Permit\Coffeen\AP2_GMP\Figure 2-1_Proposed Monitoring Well Network.mxd



- COMPLIANCE WELL
- BACKGROUND WELL
- MONITORING WELL
- STAFF GAGE
- PART 845 REGULATED UNIT (SUBJECT UNIT)
- SITE FEATURE
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY



PROPOSED 845 GROUNDWATER MONITORING WELL NETWORK

ADDENDUM TO THE GROUNDWATER MONITORING PLAN
ASH POND NO. 2
 COFFEEN POWER PLANT
 COFFEEN, ILLINOIS

FIGURE 2-3

RAMBOLL AMERICAS
 ENGINEERING SOLUTIONS, INC.



ATTACHMENT 2
G401 Boring Log and Well Construction
Diagram

FIELD BORING LOG



CLIENT: Natural Resource Technology, Inc.
Site: Coffeen Energy Center
Location: Coffeen, Illinois
Project: 15E0030
DATES: Start: 9/14/2015
Finish: 9/14/2015
WEATHER: Sunny, hi 60's

CONTRACTOR: Ramsey Geotechnical Engineering, LLC
Rig mfg/model: D-50 Turbo Tracked MST 800ATV
Drilling Method: Hollow Stem Auger (3/4" overdrill / 4/4")
FIELD STAFF: Driller: D. Crump
Helper: D. Groves
Eng/Geo: R. Hasenyager

BOREHOLE ID: G401
Well ID: G401
Surface Elev: 623.03 ft. MSL
Completion: 19.30 ft. BGS
Station: 2,515,614.84N
 872,510.57E

SAMPLE		TESTING					TOPOGRAPHIC MAP INFORMATION:		WATER LEVEL INFORMATION:		
Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Moisture (%)	Dry Den. (lb/ft ³)	Q _u (tsf) Q _p (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
1A	16/24 67%	ss	2-2 3-7 N=5		17			Dark grayish brown (10YR4/2), moist, soft, CLAY with little silt and trace very fine- to fine-grained sand - FILL.		622	
2A	21/24 88%	ss	8-11 8-9 N=19		17	1.80		Yellowish brown (10YR5/6) moist, medium, CLAY with some silt and trace very fine- to coarse-grained sand - FILL.		620	
2B					25			Dark gray (10YR4/1), moist, stiff, SILT with little clay and trace very fine-grained sand.		620	
3A	23/24 96%	ss	3-4 7-8 N=11		23	2.50		Yellowish brown (10YR5/6), moist, stiff, CLAY with some silt and trace very fine- to fine-grained sand.		618	
4A	24/24 100%	ss	8-9 12-14 N=21		21	3.30		Gray (10YR5/1) with 20% yellowish brown (10YR5/6) mottles, moist, medium, CLAY with some silt and trace very fine- to fine-grained sand.		616	
4B					19	2.80		Gray (10YR5/1) with 30% yellowish brown (10YR5/8) mottles, moist, stiff, SILT and very fine-grained SAND with trace clay.		616	
5A	24/24 100%	ss	2-3 4-5 N=7		21	1.30				614	
6A	24/24 100%	ss	2-4 5-6 N=9		17	2.50		Gray (10YR5/1) with 30% yellowish brown (10YR5/6) mottles, moist, medium, CLAY with some silt and trace very fine- to fine-grained sand.		612	
7A	24/24 100%	ss	9-7 8-9 N=15		21	1.40				610	
8A	24/24 100%	ss	2-3 2-4 N=5		17	1.30		Gray (10YR6/1), moist soft, CLAY with very fine- to fine-grained sand and little silt.		608	
8B					19			Yellowish brown (10YR5/6), wet, loose, very fine- to fine-grained SAND with trace silt.		608	
9A	20/24 83%	ss	5-4 5-10 N=9		21			Yellowish brown (10YR5/6), wet, medium, SILT with some very fine-grained sand and little clay.		606	
9B					16			Yellowish brown (10YR5/6), wet, loose, very fine- to medium-grained SAND with trace silt.		606	
10A	12/16 75%	ss	23-41 50/4"		6	4.50		Gray (10YR5/1), moist, very hard, SILT with few clay and little very fine- to very coarse sand.		604	

End of boring = 19.3 feet

NOTE(S): G401 installed in borehole.



Site #: _____ County: Montgomery Well #: G401
Site Name: Natural Resource Technology, Inc. Coffeen Energy Center Borehole #: G401
State _____
Plane Coordinate: X 872,510.6 Y 2,515,614.8 (or) Latitude: _____ Longitude: _____
Surveyed By: Gary C. Rogers IL Registration #: 035-002957
Drilling Contractor: Ramsey Geotechnical Engineering, LLC Driller: D. Crump
Consulting Firm: Hanson Professional Services Inc. Geologist: Rhonald W. Hasenyager, LPG #196-000246
Drilling Method: Hollow stem auger Drilling Fluid (Type): none
Logged By: Rhonald W. Hasenyager Date Started: 9/14/2015 Date Finished: 9/14/2015
Report Form Completed By: Suzanna L. Keim Date: 10/7/2015

ANNULAR SPACE DETAILS

Table with 4 columns: Description, Elevations (MSL)*, Depths (BGS), and (0.01 ft.). Includes a central diagram of a well cross-section. Rows include: Top of Protective Casing (625.84, -2.81), Top of Riser Pipe (625.57, -2.54), Ground Surface (623.03, 0.00), Top of Annular Sealant (621.33, 1.70), Static Water Level (After Completion), Top of Seal (n/a, n/a), Top of Sand Pack (610.12, 12.91), Top of Screen (608.67, 14.36), Bottom of Screen (604.24, 18.79), Bottom of Well (603.74, 19.29), Bottom of Borehole (603.73, 19.30).

* Referenced to a National Geodetic Datum

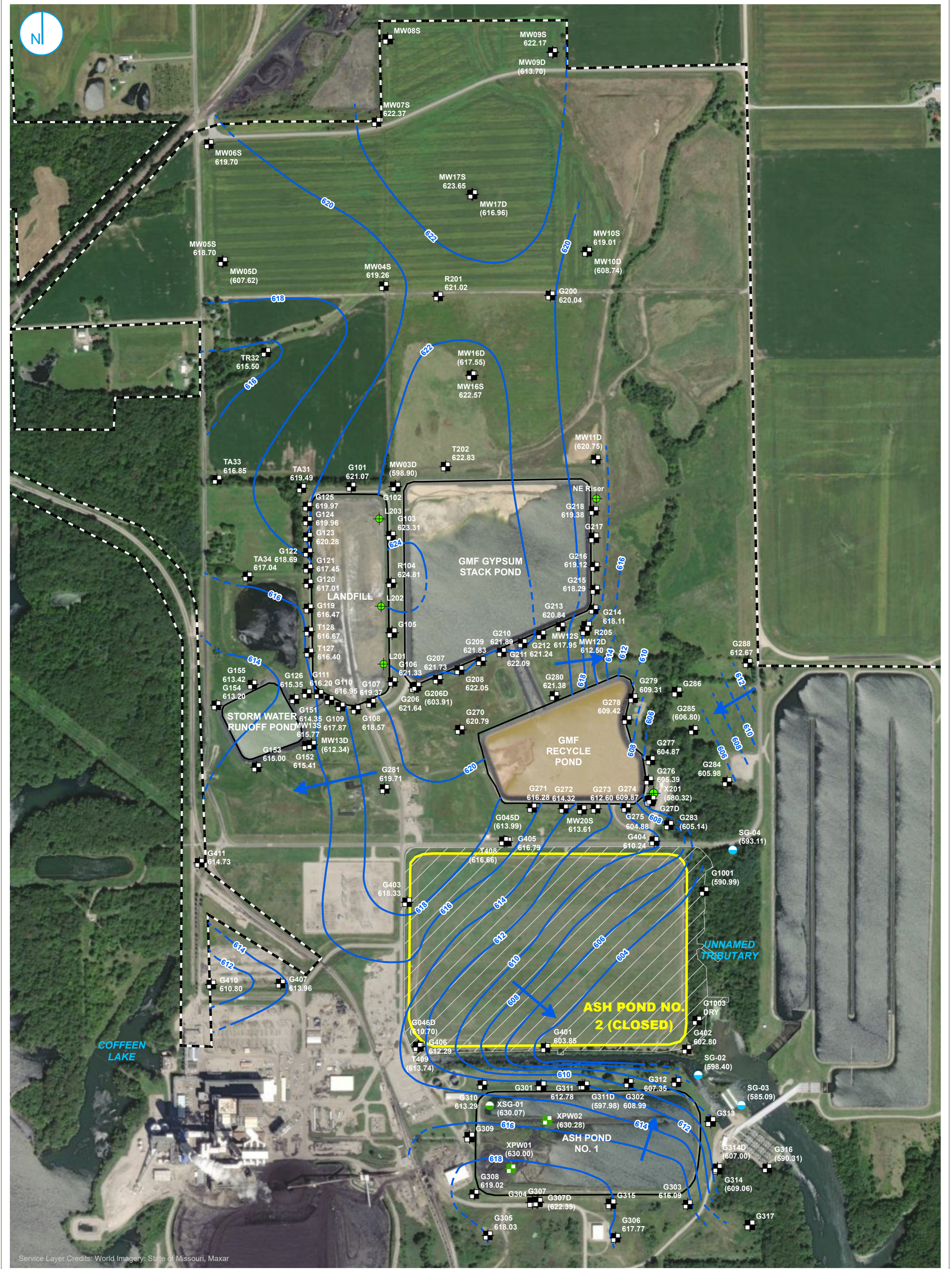
CASING MEASUREMENTS

Table with 3 columns: Measurement, Unit, and Value. Rows include: Diameter of Borehole (8.0 inches), ID of Riser Pipe (2.0 inches), Protective Casing Length (5.0 feet), Riser Pipe Length (16.70 feet), Bottom of Screen to End Cap (0.50 feet), Screen Length (4.63 feet), Total Length of Casing (21.83 feet), Screen Slot Size (0.010 inches).

WELL CONSTRUCTION MATERIALS
(Choose one type of material for each area)

Table with 6 columns: Material Type, SS304, SS316, PTFE, PVC, OTHER. Rows include: Protective Casing, Riser Pipe Above W.T., Riser Pipe Below W.T., Screen.

ATTACHMENT 3
Potentiometric Surface Map – May 30,2023



Service Layer Credits: World Imagery, State of Missouri, Maxar

- COMPLIANCE MONITORING WELL
- BACKGROUND MONITORING WELL
- SOURCE SAMPLE LOCATION
- PORE WATER WELL
- LEACHATE WELL
- MONITORING WELL
- STAFF GAGE, CCR UNIT
- STAFF GAGE, RIVER

- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD88)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- LIMITS OF FINAL COVER
- PROPERTY BOUNDARY
- REGULATED UNIT (SUBJECT UNIT)

POTENTIOMETRIC SURFACE MAP MAY 30, 2023

NOTES:
 1. ELEVATIONS IN PARENTHESES WERE NOT USED FOR CONTOURING.
 2. ELEVATION CONTOURS SHOWN IN FEET, NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)

ASH POND NO. 2
 COFFEEN POWER PLANT
 COFFEEN, ILLINOIS

RAMBOLL AMERICAS
 ENGINEERING SOLUTIONS, INC.



ATTACHMENT 4

Field Boring Logs

Drilling Start Date: 04/05/2021	Boring Depth (ft): 20
Drilling End Date: 04/05/2021	Boring Diameter (in): 6
Drilling Company: Roberts Drilling	Sampling Method(s): Direct Push
Drilling Method: Direct Push	DTW During Drilling (ft):
Drilling Equipment: Geoprobe	DTW After Drilling (ft):
Driller:	Ground Surface Elev. (ft):
Logged By: A. Toye	Northing, Easting (NAD83):

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEVATION (ft)
				Sample Type	Recovery (in)	Blow Counts	N Value RQD (%)		Lab Sample	
0				DP	12/48			(0') CLAY (CL); brown (7.5YR 5/2), soft, moist, low plasticity.		
5				DP	27/48			(4') 14" of As above: trace gravel. (4.16') 13" of CLAYEY SILT (ML); trace gravel, medium stiff, moist.		
10				DP	48/48			(8') SILTY CLAY (CL); brown (7.5YR 5/4), stiff to medium stiff, moist, low plasticity.		
15				DP	48/48			(12') As above: trace gravel and siltier starting at 45", some sand for first 12".		
17.83				DP	48/48			(16') 22" of SAND (SP); strong brown (7.5YR 4/6) to brown (7.5YR 5/2), fine to coarse grained, stiff to soft,	Chem (16-20')	
20								(17.83') 26" of SANDY CLAY (CL); light gray (7.5YR 7/1) to strong brown (7.5YR 5/8), soft, moist, medium plasticity, trace ash.		
								(20') End of Boring.		

NOTES: No groundwater encountered.

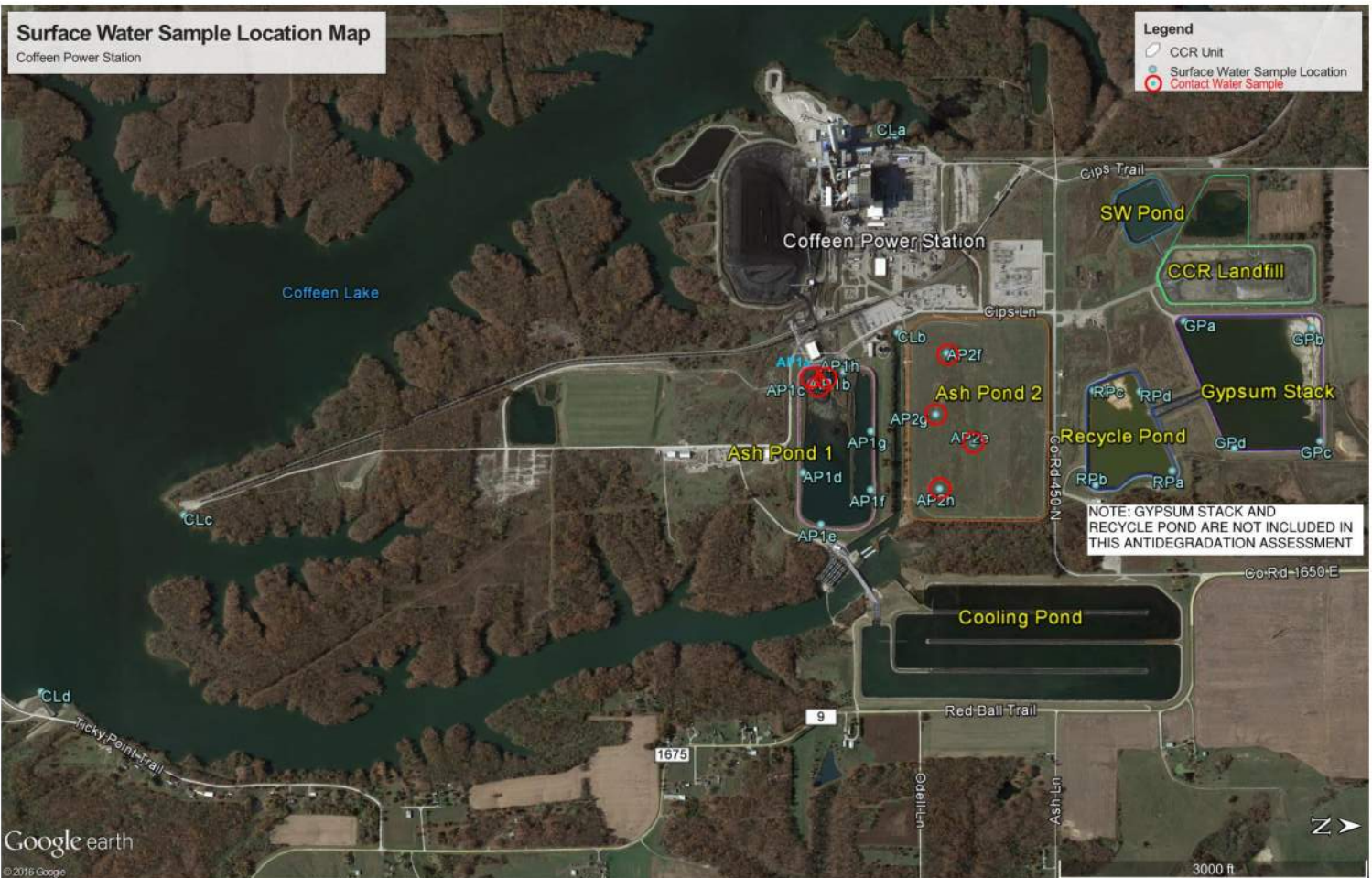
Drilling Start Date: 04/05/2021	Boring Depth (ft): 18
Drilling End Date: 04/05/2021	Boring Diameter (in): 6
Drilling Company: Roberts Drilling	Sampling Method(s): Direct Push
Drilling Method: Direct Push	DTW During Drilling (ft):
Drilling Equipment: Geoprobe	DTW After Drilling (ft):
Driller:	Ground Surface Elev. (ft):
Logged By: A. Toye	Northing, Easting (NAD83):

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT				SOIL/ROCK VISUAL DESCRIPTION	MEASURE	ELEVATION (ft)
				Sample Type	Recovery (in)	Blow Counts	N Value RQD (%)		Lab Sample	
0				DP	29/48			(0') 15" of SILT (ML); light gray (10YR 7/2), medium stiff, moist, no plasticity.		
								(1.25') 14" of CLAY (CL); light brownish gray (10YR 6/2), medium stiff, moist, medium plasticity.		
5				DP	18/48			(4') CLAY (CL); brown (7.5YR 5/2), soft, moist, medium plasticity, some silt, trace gravel.		
								(8') As above: more silt.		
10				DP	25/48					
				DP	48/48			(12') SILTY SAND (SM); strong brown (7.5YR 5/8), soft, wet, fine grained, sandier at bottom 6".	Chem (12-16')	
15				DP	24/24			(16') 6" of As above.		
								(16.5') 18" of CLAY (CL); gray (7.5YR 6/1), stiff, dry, trace gravel.		
20								(18') End of Boring: Refusal.		

NOTES: No groundwater encountered.

ATTACHMENT 5
2016 AP2 Porewater Sampling Locations

Figure 1 Site Map



ATTACHMENT 6
Coffeen AP2 Porewater Laboratory Analytical
Data



May 29, 2020

John Romang
Vistra - Coffeen
134 CIPS Lane
Coffeen, IL 62017

RE: COFFEEN DEWATERING

Dear John Romang:

Please find enclosed the **revised** analytical results for the **1** sample(s) the laboratory received on **5/7/20 8:54 am** and logged in under work order **0051246**. All testing is performed according to our current TNI accreditations unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Director of Client Services, Lisa Grant, with any feedback you have about your experience with our laboratory at 309-683-1764 or lgrant@pdclab.com.

Sincerely,

Gail Schindler

Gail Schindler
Project Manager
(309) 692-9688 x1716
gschindler@pdclab.com





ANALYTICAL RESULTS

Sample: 0051246-01
Name: CO 102 PumpQbox Source Water CCR
Matrix: Ground Water - Grab

Sampled: 05/06/20 10:40
Received: 05/07/20 08:54
PO #: 663168

Table with 10 columns: Parameter, Result, Unit, Qualifier, Prepared, Dilution, MRL, Analyzed, Analyst, Method. Rows include Anions - PIA (Chloride, Fluoride, Sulfate), General Chemistry - PIA (Alkalinity, pH, Solids, Temperature), Soluble Metals - PIA (Cobalt, Iron, Manganese), and Total Metals - PIA (Antimony, Arsenic, Barium, Boron, Cadmium, Calcium, Cobalt, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Potassium, Selenium, Sodium, Thallium, Lithium).



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B010928 - IC No Prep - EPA 300.0 REV 2.1</u>									
Calibration Blank (B010928-CCB1)				Prepared & Analyzed: 05/07/20					
Chloride	0.00	mg/L							
Fluoride	0.00	mg/L							
Calibration Check (B010928-CCV1)				Prepared & Analyzed: 05/07/20					
Chloride	4.48	mg/L		5.000		90	90-110		
Fluoride	5.01	mg/L		5.000		100	90-110		
<u>Batch B011061 - IC No Prep - EPA 300.0 REV 2.1</u>									
Calibration Blank (B011061-CCB1)				Prepared & Analyzed: 05/08/20					
Sulfate	0.00	mg/L							
Calibration Check (B011061-CCV1)				Prepared & Analyzed: 05/08/20					
Sulfate	4.77	mg/L		5.000		95	90-110		
<u>Batch B011151 - 6020 Sol no prep - EPA 6020A</u>									
Blank (B011151-BLK1)				Prepared: 05/12/20 Analyzed: 05/13/20					
Cobalt	< 2.0	ug/L							
Iron	< 10	ug/L							
Manganese	< 1.0	ug/L							
LCS (B011151-BS1)				Prepared: 05/12/20 Analyzed: 05/13/20					
Cobalt	234	ug/L		250.0		94	80-120		
Iron	23900	ug/L		25000		96	80-120		
Manganese	243	ug/L		250.0		97	80-120		
Matrix Spike (B011151-MS1)				Sample: 0051228-06		Prepared: 05/12/20 Analyzed: 05/13/20			
Cobalt	230	ug/L		250.0	ND	92	75-125		
Iron	23800	ug/L		25000	ND	95	75-125		
Manganese	242	ug/L		250.0	1.60	96	75-125		
Matrix Spike Dup (B011151-MSD1)				Sample: 0051228-06		Prepared: 05/12/20 Analyzed: 05/13/20			
Cobalt	224	ug/L		250.0	ND	89	75-125	3	20
Iron	23100	ug/L		25000	ND	92	75-125	3	20
Manganese	236	ug/L		250.0	1.60	94	75-125	3	20
<u>Batch B011162 - No Prep - SM 2540 D 1997</u>									
Blank (B011162-BLK1)				Prepared & Analyzed: 05/12/20					
Solids - total suspended solids (TSS)	< 4.0	mg/L							
LCS (B011162-BS1)				Prepared & Analyzed: 05/12/20					
Solids - total suspended solids (TSS)	480	mg/L		500.0		96	0-200		
Duplicate (B011162-DUP1)				Sample: 0051312-02		Prepared & Analyzed: 05/12/20			
Solids - total suspended solids (TSS)	3.20	mg/L			2.40			29	5
Duplicate (B011162-DUP2)				Sample: 0051314-02		Prepared & Analyzed: 05/12/20			
Solids - total suspended solids (TSS)	5.60	mg/L			4.80			15	5
<u>Batch B011183 - No Prep - SM 2540C</u>									
Blank (B011183-BLK1)				Prepared & Analyzed: 05/12/20					
Solids - total dissolved solids (TDS)	< 17	mg/L							



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B011183 - No Prep - SM 2540C</u>									
LCS (B011183-BS1)				Prepared & Analyzed: 05/12/20					
Solids - total dissolved solids (TDS)	967	mg/L		1000		97	67.9-132		
Duplicate (B011183-DUP1)				Sample: 0051246-01 Prepared & Analyzed: 05/12/20					
Solids - total dissolved solids (TDS)	2120	mg/L			2120			0	5
Duplicate (B011183-DUP2)				Sample: 0051350-01 Prepared & Analyzed: 05/12/20					
Solids - total dissolved solids (TDS)	2140	mg/L			2210			3	5
<u>Batch B011270 - SW 3015 - EPA 6020A</u>									
Blank (B011270-BLK1)				Prepared: 05/13/20 Analyzed: 05/19/20					
Antimony	< 3.0	ug/L							
Arsenic	< 1.0	ug/L							
Barium	< 1.0	ug/L							
Boron	< 10	ug/L							
Cadmium	< 1.0	ug/L							
Calcium	< 0.20	mg/L							
Cobalt	< 2.0	ug/L							
Iron	< 10	ug/L							
Lead	< 1.0	ug/L							
Magnesium	< 0.10	mg/L							
Manganese	< 1.0	ug/L							
Mercury	< 0.20	ug/L							
Molybdenum	< 1.0	ug/L							
Potassium	< 0.10	mg/L							
Selenium	< 1.0	ug/L							
Sodium	< 0.10	mg/L							
Thallium	< 1.0	ug/L							
Lithium	< 20	ug/L							
LCS (B011270-BS1)				Prepared: 05/13/20 Analyzed: 05/19/20					
Antimony	533	ug/L		555.6		96	80-120		
Arsenic	556	ug/L		555.6		100	80-120		
Barium	557	ug/L		555.6		100	80-120		
Boron	508	ug/L		555.6		91	80-120		
Cadmium	552	ug/L		555.6		99	80-120		
Calcium	5.33	mg/L		5.556		96	80-120		
Cobalt	586	ug/L		555.6		105	80-120		
Iron	577	ug/L		555.6		104	80-120		
Lead	572	ug/L		555.6		103	80-120		
Magnesium	5.48	mg/L		5.556		99	80-120		
Manganese	568	ug/L		555.6		102	80-120		
Mercury	54.8	ug/L		55.56		99	80-120		
Molybdenum	550	ug/L		555.6		99	80-120		
Potassium	5.11	mg/L		5.556		92	80-120		
Selenium	541	ug/L		555.6		97	80-120		
Sodium	5.53	mg/L		5.556		100	80-120		



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B011270 - SW 3015 - EPA 6020A</u>									
LCS (B011270-BS1)				Prepared: 05/13/20 Analyzed: 05/19/20					
Thallium	549	ug/L		555.6		99	80-120		
Lithium	587	ug/L		555.6		106	80-120		
Matrix Spike (B011270-MS1)				Sample: 0051254-01 Prepared: 05/13/20 Analyzed: 05/19/20					
Antimony	539	ug/L		555.6	ND	97	75-125		
Arsenic	578	ug/L		555.6	ND	104	75-125		
Barium	605	ug/L		555.6	20.2	105	75-125		
Boron	499	ug/L		555.6	65.9	78	75-125		
Cadmium	575	ug/L		555.6	ND	103	75-125		
Calcium	118	mg/L	Q4	5.556	114	87	75-125		
Cobalt	584	ug/L		555.6	ND	105	75-125		
Iron	661	ug/L		555.6	39.4	112	75-125		
Lead	573	ug/L		555.6	ND	103	75-125		
Magnesium	75.6	mg/L		5.556	69.2	116	75-125		
Manganese	588	ug/L		555.6	5.24	105	75-125		
Mercury	55.0	ug/L		55.56	ND	99	75-125		
Molybdenum	584	ug/L		555.6	0.261	105	75-125		
Potassium	10.1	mg/L		5.556	4.20	105	75-125		
Selenium	562	ug/L		555.6	ND	101	75-125		
Sodium	9.38	mg/L		5.556	4.03	96	75-125		
Thallium	555	ug/L		555.6	ND	100	75-125		
Matrix Spike Dup (B011270-MSD1)				Sample: 0051254-01 Prepared: 05/13/20 Analyzed: 05/19/20					
Antimony	527	ug/L		555.6	ND	95	75-125	2	20
Arsenic	568	ug/L		555.6	ND	102	75-125	2	20
Barium	585	ug/L		555.6	20.2	102	75-125	3	20
Boron	499	ug/L		555.6	65.9	78	75-125	0.1	20
Cadmium	565	ug/L		555.6	ND	102	75-125	2	20
Calcium	118	mg/L	Q4	5.556	114	69	75-125	0.8	20
Cobalt	570	ug/L		555.6	ND	103	75-125	3	20
Iron	623	ug/L		555.6	39.4	105	75-125	6	20
Lead	570	ug/L		555.6	ND	103	75-125	0.5	20
Magnesium	75.0	mg/L		5.556	69.2	105	75-125	0.8	20
Manganese	579	ug/L		555.6	5.24	103	75-125	1	20
Mercury	55.2	ug/L		55.56	ND	99	75-125	0.3	20
Molybdenum	576	ug/L		555.6	0.261	104	75-125	2	20
Potassium	9.88	mg/L		5.556	4.20	102	75-125	2	20
Selenium	549	ug/L		555.6	ND	99	75-125	2	20
Sodium	9.41	mg/L		5.556	4.03	97	75-125	0.3	20
Thallium	551	ug/L		555.6	ND	99	75-125	0.7	20
<u>Batch B011779 - No Prep - SM 2320B 1997</u>									
Blank (B011779-BLK1)				Prepared & Analyzed: 05/18/20					
Alkalinity - bicarbonate as CaCO3	< 2.0	mg/L							
LCS (B011779-BS1)				Prepared & Analyzed: 05/18/20					



QC SAMPLE RESULTS

Parameter	Result	Unit	Qual	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<u>Batch B011779 - No Prep - SM 2320B 1997</u>									
LCS (B011779-BS1)					Prepared & Analyzed: 05/18/20				
Alkalinity - bicarbonate as CaCO3	80.0	mg/L					90-110		
<u>Batch B012057 - No Prep - SM 2550 B</u>									
Duplicate (B012057-DUP1)					Sample: 0052610-02 Prepared & Analyzed: 05/21/20				
Temperature at pH measurement	14.2	°C			14.4			2	200
pH	7.62	pH Units	H		7.58			0.6	10
Duplicate (B012057-DUP2)					Sample: 0052632-01 Prepared & Analyzed: 05/21/20				
pH	8.17	pH Units	H		8.13			0.5	10
Temperature at pH measurement	14.4	°C			15.2			5	200
Duplicate (B012057-DUP3)					Sample: 0052653-01 Prepared & Analyzed: 05/21/20				
pH	7.53	pH Units	H, M		7.64			1	10
Temperature at pH measurement	15.0	°C	M		15.4			2	200
Duplicate (B012057-DUP4)					Sample: 0052653-02 Prepared & Analyzed: 05/21/20				
pH	8.18	pH Units	H		8.16			0.3	10
Temperature at pH measurement	16.0	°C			15.6			3	200
Duplicate (B012057-DUP5)					Sample: 0052781-02 Prepared & Analyzed: 05/21/20				
pH	8.41	pH Units	H		8.46			0.6	10
Temperature at pH measurement	16.5	°C			16.1			2	200
Duplicate (B012057-DUP6)					Sample: 0052615-01 Prepared & Analyzed: 05/21/20				
pH	7.98	pH Units	H		7.93			0.7	10
Temperature at pH measurement	17.2	°C			17.0			1	200
Duplicate (B012057-DUP7)					Sample: 0053401-01 Prepared & Analyzed: 05/21/20				
Temperature at pH measurement	17.7	°C			17.8			0.2	200
pH	7.73	pH Units	H		7.73			0.03	10
Duplicate (B012057-DUP8)					Sample: 0052828-01 Prepared & Analyzed: 05/21/20				
Temperature at pH measurement	12.5	°C			12.9			3	200
pH	7.20	pH Units	H		7.21			0.2	10



NOTES

Specific method revisions used for analysis are available upon request.

* Not a TNI accredited analyte

Memos

Revised Report - client requested sample name change

Certifications

CHI - McHenry, IL - 4314 W Crystal Lake Road A, McHenry, IL 60050

TNI Accreditation for Drinking Water, Wastewater, Fields of Testing through IL EPA Lab No. 100279
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17556

PIA - Peoria, IL - 2231 W Altorfer Drive, Peoria, IL 61615

TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100230
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17553
Drinking Water Certifications: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Hazardous/Solid Waste Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPIL - Springfield, IL - 1210 Capitol Airport Drive, Springfield, IL 62707

TNI Accreditation through IL EPA Lab No. 100323

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807

USEPA DMR-QA Program

STL - St. Louis, MO - 3278 N Highway 67, Florissant, MO 63033

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389
TNI Accreditation for Wastewater, Hazardous, and Solid Waste Analysis through IL EPA No. 200080
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
Missouri Department of Natural Resources
Microbiological Laboratory Service for Drinking Water

Qualifiers

- H Test performed after the expiration of the appropriate regulatory/advisory maximum allowable hold time.
- M Analyte failed to meet the required acceptance criteria for duplicate analysis.
- Q4 The matrix spike recovery result is unusable since the analyte concentration in the sample is greater than four times the spike level. The associated blank spike was acceptable.

Gail Schindler



Certified by: Gail Schindler, Project Manager



PDC Laboratories, Inc.

PROFESSIONAL • DEPENDABLE • COMMITTED

November 08, 2016

Rhonald Hasenyager
Hanson Professional Services, Inc.
1525 South Sixth Street
Springfield, IL 62703-2886

Dear Rhonald Hasenyager:

Please find enclosed the analytical results for the sample(s) the laboratory received on **10/25/16 7:45 am** and logged in under work order **6103663**. All testing is performed according to our current TNI certifications unless otherwise noted. This report cannot be reproduced, except in full, without the written permission of PDC Laboratories, Inc.

If you have any questions regarding your report, please contact your project manager. Quality and timely data is of the utmost importance to us.

PDC Laboratories, Inc. appreciates the opportunity to provide you with analytical expertise. We are always trying to improve our customer service and we welcome you to contact the Vice President, John LaPayne with any feedback you have about your experience with our laboratory.

Sincerely,

Gail Schindler
Project Manager
(309) 692-9688 x1716
gschindler@pdclab.com





ANALYTICAL RESULTS

Sample: 6103663-01
Name: AP1a
Matrix: Surface Water - Grab

Sampled: 10/24/16 11:52
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	3.2	mg/L		10/25/16 11:16	10/25/16 11:16	TAS	EPA 300.0
Fluoride	< 0.250	mg/L		10/25/16 11:16	10/25/16 11:16	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 11:16	10/25/16 11:16	TAS	EPA 300.0
Sulfate	1500	mg/L		10/27/16 13:02	10/27/16 13:02	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.99	pH Units		10/24/16 11:52	10/24/16 11:52	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	90	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Solids - total dissolved solids (TDS)	1800	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	3.1	ug/L		10/26/16 13:38	11/02/16 12:10	JMW	SW 6020
Arsenic	7.2	ug/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Barium	130	ug/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Boron	3800	ug/L		10/26/16 13:38	11/03/16 07:54	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Calcium	380	mg/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Lithium	39	ug/L		10/26/16 13:38	10/27/16 11:24	KJP	SW 6010*
Magnesium	67	mg/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 13:53	JMW	SW 6020
Molybdenum	47	ug/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Potassium	7.3	mg/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Selenium	3.0	ug/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Sodium	33	mg/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:23	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-02
Name: AP1b
Matrix: Surface Water - Grab

Sampled: 10/24/16 11:56
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	13	mg/L		10/27/16 13:20	10/27/16 13:20	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 12:45	10/25/16 12:45	TAS	EPA 300.0
Sulfate	1300	mg/L		10/27/16 13:38	10/27/16 13:38	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.01	pH Units		10/24/16 11:56	10/24/16 11:56	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	120	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	0.977	mg/L		10/27/16 13:26	10/27/16 13:26	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	1600	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	3.3	ug/L		10/26/16 13:38	11/02/16 12:23	JMW	SW 6020
Arsenic	17	ug/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Barium	100	ug/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Boron	3100	ug/L		10/26/16 13:38	11/03/16 07:59	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Calcium	320	mg/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Lithium	47	ug/L		10/26/16 13:38	10/27/16 11:33	KJP	SW 6010*
Magnesium	52	mg/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:06	JMW	SW 6020
Molybdenum	100	ug/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Potassium	18	mg/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Selenium	6.9	ug/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Sodium	53	mg/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:36	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-03
Name: AP1c
Matrix: Surface Water - Grab

Sampled: 10/24/16 12:10
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	13	mg/L		10/27/16 13:55	10/27/16 13:55	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 13:21	10/25/16 13:21	TAS	EPA 300.0
Sulfate	1600	mg/L		10/27/16 14:13	10/27/16 14:13	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.05	pH Units		10/24/16 12:10	10/24/16 12:10	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	80	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	0.614	mg/L		10/27/16 13:30	10/27/16 13:30	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	1900	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 12:26	JMW	SW 6020
Arsenic	18	ug/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Barium	130	ug/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Boron	2900	ug/L		10/26/16 13:38	11/03/16 08:01	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Calcium	390	mg/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Lithium	51	ug/L		10/26/16 13:38	10/27/16 11:36	KJP	SW 6010*
Magnesium	49	mg/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:10	JMW	SW 6020
Molybdenum	81	ug/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Potassium	18	mg/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Selenium	3.1	ug/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Sodium	59	mg/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:39	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-04
Name: AP1d
Matrix: Surface Water - Grab

Sampled: 10/24/16 12:15
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	18	mg/L		10/27/16 14:31	10/27/16 14:31	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 13:57	10/25/16 13:57	TAS	EPA 300.0
Sulfate	1000	mg/L		10/27/16 14:48	10/27/16 14:48	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.21	pH Units		10/24/16 12:15	10/24/16 12:15	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	90	mg/L		10/25/16 09:29	10/25/16 09:29	CJN	SM 2320B*
Alkalinity - carbonate as CaCO3	< 20	mg/L		10/25/16 09:29	10/25/16 09:29	CJN	SM 2320B*
Fluoride	1.08	mg/L		10/27/16 13:43	10/27/16 13:43	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	980	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 12:30	JMW	SW 6020
Arsenic	2.0	ug/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Barium	200	ug/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Boron	2000	ug/L		10/26/16 13:38	11/03/16 08:02	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Calcium	210	mg/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Lithium	55	ug/L		10/26/16 13:38	10/27/16 11:39	KJP	SW 6010*
Magnesium	35	mg/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:13	JMW	SW 6020
Molybdenum	31	ug/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Potassium	26	mg/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Selenium	1.5	ug/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Sodium	83	mg/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:43	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-05
Name: AP1e
Matrix: Surface Water - Grab

Sampled: 10/24/16 12:01
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	18	mg/L		10/27/16 18:37	10/27/16 18:37	TAS	EPA 300.0
Fluoride	1.00	mg/L		10/25/16 13:26	10/25/16 13:26	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 13:26	10/25/16 13:26	TAS	EPA 300.0
Sulfate	960	mg/L		10/28/16 11:36	10/28/16 11:36	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.12	pH Units		10/24/16 12:01	10/24/16 12:01	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	80	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Solids - total dissolved solids (TDS)	1200	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 12:45	JMW	SW 6020
Arsenic	1.4	ug/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Barium	160	ug/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Boron	2100	ug/L		10/26/16 13:38	11/03/16 08:03	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Calcium	200	mg/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Lithium	55	ug/L		10/26/16 13:38	10/27/16 11:48	KJP	SW 6010*
Magnesium	34	mg/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:17	JMW	SW 6020
Molybdenum	30	ug/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Potassium	26	mg/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Selenium	1.2	ug/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Sodium	80	mg/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:46	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-06
Name: AP1f
Matrix: Surface Water - Grab

Sampled: 10/24/16 12:40
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	17	mg/L		10/27/16 15:06	10/27/16 15:06	TAS	EPA 300.0
Fluoride	1.00	mg/L		10/25/16 14:03	10/25/16 14:03	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 14:03	10/25/16 14:03	TAS	EPA 300.0
Sulfate	1000	mg/L		10/27/16 15:23	10/27/16 15:23	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.20	pH Units		10/24/16 12:40	10/24/16 12:40	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	110	mg/L		10/25/16 09:29	10/25/16 09:29	CJN	SM 2320B*
Alkalinity - carbonate as CaCO3	< 20	mg/L		10/25/16 09:29	10/25/16 09:29	CJN	SM 2320B*
Solids - total dissolved solids (TDS)	1200	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 12:48	JMW	SW 6020
Arsenic	1.5	ug/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Barium	150	ug/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Boron	2100	ug/L		10/26/16 13:38	11/03/16 08:13	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Calcium	200	mg/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Lithium	57	ug/L		10/26/16 13:38	10/27/16 11:51	KJP	SW 6010*
Magnesium	35	mg/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:21	JMW	SW 6020
Molybdenum	31	ug/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Potassium	26	mg/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Selenium	1.2	ug/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Sodium	82	mg/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 11:50	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-07
Name: AP1g
Matrix: Surface Water - Grab

Sampled: 10/24/16 12:50
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	17	mg/L		10/27/16 15:41	10/27/16 15:41	TAS	EPA 300.0
Fluoride	1.00	mg/L		10/25/16 15:34	10/25/16 15:34	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 15:34	10/25/16 15:34	TAS	EPA 300.0
Sulfate	970	mg/L		10/28/16 11:54	10/28/16 11:54	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.21	pH Units		10/24/16 12:50	10/24/16 12:50	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Solids - total dissolved solids (TDS)	1200	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 12:52	JMW	SW 6020
Arsenic	1.3	ug/L		10/26/16 13:38	11/01/16 12:09	JMW	SW 6020
Barium	140	ug/L		10/26/16 13:38	11/01/16 14:37	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:09	JMW	SW 6020
Boron	2100	ug/L		10/26/16 13:38	11/03/16 08:16	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:09	JMW	SW 6020
Calcium	210	mg/L		10/26/16 13:38	11/02/16 12:52	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 14:37	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/02/16 12:52	JMW	SW 6020
Lithium	56	ug/L		10/26/16 13:38	10/27/16 11:54	KJP	SW 6010*
Magnesium	32	mg/L		10/26/16 13:38	11/01/16 14:37	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:37	JMW	SW 6020
Molybdenum	29	ug/L		10/26/16 13:38	11/01/16 12:09	JMW	SW 6020
Potassium	26	mg/L		10/26/16 13:38	11/01/16 12:09	JMW	SW 6020
Selenium	1.4	ug/L		10/26/16 13:38	11/01/16 12:09	JMW	SW 6020
Sodium	100	mg/L		10/26/16 13:38	11/02/16 12:52	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:09	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-08
Name: AP1h
Matrix: Surface Water - Grab

Sampled: 10/24/16 12:55
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	17	mg/L		10/27/16 16:51	10/27/16 16:51	TAS	EPA 300.0
Fluoride	0.980	mg/L		10/25/16 16:11	10/25/16 16:11	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 16:11	10/25/16 16:11	TAS	EPA 300.0
Sulfate	1000	mg/L		10/28/16 12:12	10/28/16 12:12	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.41	pH Units		10/24/16 12:55	10/24/16 12:55	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	90	mg/L		10/25/16 09:29	10/25/16 09:29	CJN	SM 2320B*
Alkalinity - carbonate as CaCO3	< 20	mg/L		10/25/16 09:29	10/25/16 09:29	CJN	SM 2320B*
Solids - total dissolved solids (TDS)	1200	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 12:55	JMW	SW 6020
Arsenic	1.5	ug/L		10/26/16 13:38	11/01/16 12:12	JMW	SW 6020
Barium	180	ug/L		10/26/16 13:38	11/01/16 14:40	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:12	JMW	SW 6020
Boron	2200	ug/L		10/26/16 13:38	11/03/16 08:18	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:12	JMW	SW 6020
Calcium	230	mg/L		10/26/16 13:38	11/02/16 12:55	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 14:40	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/02/16 12:55	JMW	SW 6020
Lithium	55	ug/L		10/26/16 13:38	10/27/16 11:57	KJP	SW 6010*
Magnesium	30	mg/L		10/26/16 13:38	11/01/16 14:40	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:40	JMW	SW 6020
Molybdenum	31	ug/L		10/26/16 13:38	11/01/16 12:12	JMW	SW 6020
Potassium	27	mg/L		10/26/16 13:38	11/01/16 12:12	JMW	SW 6020
Selenium	1.2	ug/L		10/26/16 13:38	11/01/16 12:12	JMW	SW 6020
Sodium	110	mg/L		10/26/16 13:38	11/02/16 12:55	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:12	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-09
Name: AP2e
Matrix: Surface Water - Grab

Sampled: 10/24/16 11:30
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	< 5.0	mg/L		10/27/16 17:27	10/27/16 17:27	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 14:33	10/25/16 14:33	TAS	EPA 300.0
Sulfate	1500	mg/L		10/28/16 12:31	10/28/16 12:31	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.49	pH Units		10/24/16 11:30	10/24/16 11:30	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	55	mg/L		10/25/16 09:29	10/25/16 09:29	CJN	SM 2320B*
Alkalinity - carbonate as CaCO3	< 20	mg/L		10/25/16 09:29	10/25/16 09:29	CJN	SM 2320B*
Fluoride	0.438	mg/L		10/27/16 13:58	10/27/16 13:58	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	1700	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 12:59	JMW	SW 6020
Arsenic	23	ug/L		10/26/16 13:38	11/01/16 12:16	JMW	SW 6020
Barium	26	ug/L		10/26/16 13:38	11/01/16 14:44	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/02/16 12:59	JMW	SW 6020
Boron	5300	ug/L		10/26/16 13:38	11/03/16 08:19	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:16	JMW	SW 6020
Calcium	210	mg/L		10/26/16 13:38	11/02/16 12:59	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 14:44	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/02/16 12:59	JMW	SW 6020
Lithium	190	ug/L		10/26/16 13:38	10/27/16 12:00	KJP	SW 6010*
Magnesium	40	mg/L		10/26/16 13:38	11/01/16 14:44	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:44	JMW	SW 6020
Molybdenum	90	ug/L		10/26/16 13:38	11/01/16 12:16	JMW	SW 6020
Potassium	27	mg/L		10/26/16 13:38	11/01/16 12:16	JMW	SW 6020
Selenium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:16	JMW	SW 6020
Sodium	25	mg/L		10/26/16 13:38	11/02/16 12:59	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:16	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-10
Name: AP2f
Matrix: Surface Water - Grab

Sampled: 10/24/16 11:20
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	< 5.0	mg/L		10/27/16 18:02	10/27/16 18:02	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 15:09	10/25/16 15:09	TAS	EPA 300.0
Sulfate	1500	mg/L		10/28/16 12:49	10/28/16 12:49	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.42	pH Units		10/24/16 11:20	10/24/16 11:20	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	100	mg/L		10/25/16 09:29	10/25/16 09:29	CJN	SM 2320B*
Alkalinity - carbonate as CaCO3	< 20	mg/L		10/25/16 09:29	10/25/16 09:29	CJN	SM 2320B*
Fluoride	0.398	mg/L		10/27/16 14:02	10/27/16 14:02	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	1700	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 13:03	JMW	SW 6020
Arsenic	1.2	ug/L		10/26/16 13:38	11/01/16 12:20	JMW	SW 6020
Barium	22	ug/L		10/26/16 13:38	11/01/16 14:47	JMW	SW 6020
Beryllium	< 2.0	ug/L		10/26/16 13:38	11/02/16 13:54	JMW	SW 6020
Boron	2000	ug/L		10/26/16 13:38	11/03/16 08:20	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:20	JMW	SW 6020
Calcium	170	mg/L		10/26/16 13:38	11/02/16 13:54	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 14:47	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/02/16 13:03	JMW	SW 6020
Lithium	130	ug/L		10/26/16 13:38	10/27/16 12:03	KJP	SW 6010*
Magnesium	33	mg/L		10/26/16 13:38	11/01/16 14:47	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:47	JMW	SW 6020
Molybdenum	3.2	ug/L		10/26/16 13:38	11/01/16 12:20	JMW	SW 6020
Potassium	21	mg/L		10/26/16 13:38	11/01/16 12:20	JMW	SW 6020
Selenium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:20	JMW	SW 6020
Sodium	14	mg/L		10/26/16 13:38	11/02/16 13:03	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:20	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-11
Name: AP2g
Matrix: Surface Water - Grab

Sampled: 10/24/16 11:10
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	< 5.0	mg/L		10/27/16 19:12	10/27/16 19:12	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 16:20	10/25/16 16:20	TAS	EPA 300.0
Sulfate	2300	mg/L		10/28/16 13:07	10/28/16 13:07	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.46	pH Units		10/24/16 11:10	10/24/16 11:10	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	4.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	0.506	mg/L		10/27/16 14:07	10/27/16 14:07	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	2400	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 13:06	JMW	SW 6020
Arsenic	5.5	ug/L		10/26/16 13:38	11/01/16 12:23	JMW	SW 6020
Barium	20	ug/L		10/26/16 13:38	11/01/16 14:51	JMW	SW 6020
Beryllium	< 2.0	ug/L		10/26/16 13:38	11/02/16 13:57	JMW	SW 6020
Boron	4300	ug/L		10/26/16 13:38	11/03/16 08:22	JMW	SW 6020
Cadmium	4.6	ug/L		10/26/16 13:38	11/01/16 12:23	JMW	SW 6020
Calcium	410	mg/L		10/26/16 13:38	11/02/16 13:57	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 14:51	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/02/16 13:06	JMW	SW 6020
Lithium	180	ug/L		10/26/16 13:38	10/27/16 12:06	KJP	SW 6010*
Magnesium	51	mg/L		10/26/16 13:38	11/01/16 14:51	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:51	JMW	SW 6020
Molybdenum	41	ug/L		10/26/16 13:38	11/01/16 12:23	JMW	SW 6020
Potassium	29	mg/L		10/26/16 13:38	11/01/16 12:23	JMW	SW 6020
Selenium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:23	JMW	SW 6020
Sodium	27	mg/L		10/26/16 13:38	11/02/16 13:06	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:23	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-12
Name: AP2h
Matrix: Surface Water - Grab

Sampled: 10/24/16 11:40
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	1.7	mg/L		10/25/16 16:56	10/25/16 16:56	TAS	EPA 300.0
Fluoride	0.406	mg/L		10/25/16 16:56	10/25/16 16:56	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 16:56	10/25/16 16:56	TAS	EPA 300.0
Sulfate	1300	mg/L		10/28/16 14:57	10/28/16 14:57	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.17	pH Units		10/24/16 11:40	10/24/16 11:40	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	140	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Solids - total dissolved solids (TDS)	1500	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 13:10	JMW	SW 6020
Arsenic	75	ug/L		10/26/16 13:38	11/01/16 12:27	JMW	SW 6020
Barium	23	ug/L		10/26/16 13:38	11/01/16 14:55	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:27	JMW	SW 6020
Boron	14000	ug/L		10/26/16 13:38	11/03/16 08:23	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:27	JMW	SW 6020
Calcium	310	mg/L		10/26/16 13:38	11/02/16 13:10	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 14:55	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/02/16 13:10	JMW	SW 6020
Lithium	120	ug/L		10/26/16 13:38	10/27/16 12:09	KJP	SW 6010*
Magnesium	29	mg/L		10/26/16 13:38	11/01/16 14:55	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:55	JMW	SW 6020
Molybdenum	570	ug/L		10/26/16 13:38	11/01/16 12:27	JMW	SW 6020
Potassium	40	mg/L		10/26/16 13:38	11/03/16 08:23	JMW	SW 6020
Selenium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:27	JMW	SW 6020
Sodium	39	mg/L		10/26/16 13:38	11/02/16 13:10	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:27	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-13
Name: CLa
Matrix: Surface Water - Grab

Sampled: 10/24/16 15:30
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	23	mg/L		10/27/16 20:41	10/27/16 20:41	TAS	EPA 300.0
Fluoride	0.443	mg/L		10/25/16 17:32	10/25/16 17:32	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 17:32	10/25/16 17:32	TAS	EPA 300.0
Sulfate	55	mg/L		10/25/16 17:50	10/25/16 17:50	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.22	pH Units		10/24/16 15:30	10/24/16 15:30	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	80	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Solids - total dissolved solids (TDS)	190	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 13:14	JMW	SW 6020
Arsenic	1.8	ug/L		10/26/16 13:38	11/01/16 12:30	JMW	SW 6020
Barium	54	ug/L		10/26/16 13:38	11/01/16 14:58	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:30	JMW	SW 6020
Boron	270	ug/L		10/26/16 13:38	11/03/16 08:24	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:30	JMW	SW 6020
Calcium	23	mg/L		10/26/16 13:38	11/02/16 13:14	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 14:58	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/02/16 13:14	JMW	SW 6020
Lithium	< 10	ug/L		10/26/16 13:38	10/27/16 12:12	KJP	SW 6010*
Magnesium	12	mg/L		10/26/16 13:38	11/01/16 14:58	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 14:58	JMW	SW 6020
Molybdenum	5.0	ug/L		10/26/16 13:38	11/01/16 12:30	JMW	SW 6020
Potassium	7.4	mg/L		10/26/16 13:38	11/01/16 12:30	JMW	SW 6020
Selenium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:30	JMW	SW 6020
Sodium	19	mg/L		10/26/16 13:38	11/02/16 13:14	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:30	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-14
Name: CLb
Matrix: Surface Water - Grab

Sampled: 10/24/16 13:35
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	22	mg/L		10/27/16 20:58	10/27/16 20:58	TAS	EPA 300.0
Fluoride	0.425	mg/L		10/25/16 18:08	10/25/16 18:08	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 18:08	10/25/16 18:08	TAS	EPA 300.0
Sulfate	56	mg/L		10/25/16 18:26	10/25/16 18:26	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.52	pH Units		10/24/16 13:35	10/24/16 13:35	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	80	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Solids - total dissolved solids (TDS)	180	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 13:17	JMW	SW 6020
Arsenic	1.8	ug/L		10/26/16 13:38	11/01/16 12:34	JMW	SW 6020
Barium	52	ug/L		10/26/16 13:38	11/01/16 15:02	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:34	JMW	SW 6020
Boron	280	ug/L		10/26/16 13:38	11/03/16 08:26	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:34	JMW	SW 6020
Calcium	23	mg/L		10/26/16 13:38	11/02/16 13:17	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 15:02	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/02/16 13:17	JMW	SW 6020
Lithium	< 10	ug/L		10/26/16 13:38	10/27/16 12:15	KJP	SW 6010*
Magnesium	11	mg/L		10/26/16 13:38	11/01/16 15:02	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 15:02	JMW	SW 6020
Molybdenum	4.9	ug/L		10/26/16 13:38	11/01/16 12:34	JMW	SW 6020
Potassium	7.8	mg/L		10/26/16 13:38	11/01/16 12:34	JMW	SW 6020
Selenium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:34	JMW	SW 6020
Sodium	19	mg/L		10/26/16 13:38	11/02/16 13:17	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:34	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-15
Name: CLc
Matrix: Surface Water - Grab

Sampled: 10/24/16 13:15
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	22	mg/L		10/27/16 21:16	10/27/16 21:16	TAS	EPA 300.0
Fluoride	0.426	mg/L		10/25/16 18:43	10/25/16 18:43	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 18:43	10/25/16 18:43	TAS	EPA 300.0
Sulfate	54	mg/L		10/25/16 19:01	10/25/16 19:01	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.62	pH Units		10/24/16 13:15	10/24/16 13:15	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	75	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Solids - total dissolved solids (TDS)	160	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 13:29	JMW	SW 6020
Arsenic	1.8	ug/L		10/26/16 13:38	11/01/16 12:38	JMW	SW 6020
Barium	56	ug/L		10/26/16 13:38	11/01/16 15:05	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:38	JMW	SW 6020
Boron	280	ug/L		10/26/16 13:38	11/03/16 08:27	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:38	JMW	SW 6020
Calcium	23	mg/L		10/26/16 13:38	11/02/16 13:29	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 15:05	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/02/16 13:29	JMW	SW 6020
Lithium	< 10	ug/L		10/26/16 13:38	10/27/16 12:24	KJP	SW 6010*
Magnesium	12	mg/L		10/26/16 13:38	11/01/16 15:05	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 15:05	JMW	SW 6020
Molybdenum	4.7	ug/L		10/26/16 13:38	11/01/16 12:38	JMW	SW 6020
Potassium	7.4	mg/L		10/26/16 13:38	11/01/16 12:38	JMW	SW 6020
Selenium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:38	JMW	SW 6020
Sodium	19	mg/L		10/26/16 13:38	11/02/16 13:29	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:38	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-16
Name: CLd
Matrix: Surface Water - Grab

Sampled: 10/24/16 15:55
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	23	mg/L		10/27/16 21:34	10/27/16 21:34	TAS	EPA 300.0
Fluoride	0.421	mg/L		10/25/16 19:55	10/25/16 19:55	TAS	EPA 300.0
Nitrite-N	< 0.15	mg/L		10/25/16 19:55	10/25/16 19:55	TAS	EPA 300.0
Sulfate	54	mg/L		10/25/16 20:13	10/25/16 20:13	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.30	pH Units		10/24/16 15:55	10/24/16 15:55	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	80	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Solids - total dissolved solids (TDS)	170	mg/L		10/25/16 14:59	10/25/16 15:33	DMB/ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 13:32	JMW	SW 6020
Arsenic	1.8	ug/L		10/26/16 13:38	11/01/16 12:41	JMW	SW 6020
Barium	54	ug/L		10/26/16 13:38	11/01/16 15:09	JMW	SW 6020
Beryllium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:41	JMW	SW 6020
Boron	270	ug/L		10/26/16 13:38	11/03/16 08:41	JMW	SW 6020
Cadmium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:41	JMW	SW 6020
Calcium	23	mg/L		10/26/16 13:38	11/02/16 13:32	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 15:09	JMW	SW 6020
Cobalt	< 2.0	ug/L		10/26/16 13:38	11/02/16 13:32	JMW	SW 6020
Lithium	< 10	ug/L		10/26/16 13:38	10/27/16 12:27	KJP	SW 6010*
Magnesium	12	mg/L		10/26/16 13:38	11/01/16 15:09	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 13:38	11/01/16 15:09	JMW	SW 6020
Molybdenum	4.8	ug/L		10/26/16 13:38	11/01/16 12:41	JMW	SW 6020
Potassium	7.5	mg/L		10/26/16 13:38	11/01/16 12:41	JMW	SW 6020
Selenium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:41	JMW	SW 6020
Sodium	20	mg/L		10/26/16 13:38	11/02/16 13:32	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 12:41	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-17
Name: GPa
Matrix: Surface Water - Grab

Sampled: 10/24/16 14:00
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	1900	mg/L		10/27/16 21:51	10/27/16 21:51	TAS	EPA 300.0
Nitrite-N	< 3.0	mg/L		10/26/16 11:42	10/26/16 11:42	TAS	EPA 300.0
Sulfate	17000	mg/L		11/01/16 09:58	11/01/16 09:58	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	7.16	pH Units		10/24/16 14:00	10/24/16 14:00	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	4.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	42.7	mg/L		10/27/16 17:31	10/27/16 17:31	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	17000	mg/L		10/27/16 12:04	10/27/16 12:28	ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 13:36	JMW	SW 6020
Arsenic	4.7	ug/L		10/26/16 13:38	11/02/16 15:00	JMW	SW 6020
Barium	120	ug/L		10/26/16 13:38	11/02/16 13:36	JMW	SW 6020
Beryllium	2.6	ug/L		10/26/16 13:38	11/02/16 14:16	JMW	SW 6020
Boron	59000	ug/L		10/26/16 13:38	11/03/16 08:44	JMW	SW 6020
Cadmium	40	ug/L		10/26/16 13:38	11/02/16 15:53	JMW	SW 6020
Calcium	450	mg/L		10/26/16 13:38	11/02/16 14:16	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 15:20	JMW	SW 6020
Cobalt	52	ug/L		10/26/16 13:38	11/02/16 15:00	JMW	SW 6020
Lithium	300	ug/L		10/26/16 13:38	10/27/16 12:30	KJP	SW 6010*
Magnesium	1500	mg/L		10/26/16 13:38	11/02/16 14:16	JMW	SW 6020
Mercury	< 0.80	ug/L		10/26/16 13:38	11/02/16 15:00	JMW	SW 6020
Molybdenum	130	ug/L		10/26/16 13:38	11/02/16 14:16	JMW	SW 6020
Potassium	210	mg/L		10/26/16 13:38	11/03/16 09:03	JMW	SW 6020
Selenium	890	ug/L		10/26/16 13:38	11/02/16 15:00	JMW	SW 6020
Sodium	620	mg/L		10/26/16 13:38	11/02/16 13:36	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 15:20	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-18
Name: GPb
Matrix: Surface Water - Grab

Sampled: 10/24/16 14:10
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	2600	mg/L		10/27/16 22:26	10/27/16 22:26	TAS	EPA 300.0
Nitrite-N	< 3.0	mg/L		10/26/16 12:00	10/26/16 12:00	TAS	EPA 300.0
Sulfate	27000	mg/L		10/28/16 14:39	10/28/16 14:39	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.65	pH Units		10/24/16 14:10	10/24/16 14:10	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	10	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	69.4	mg/L		10/27/16 15:56	10/27/16 15:56	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	28000	mg/L		10/27/16 12:04	10/27/16 12:28	ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	8.6	ug/L		10/26/16 13:38	11/02/16 14:20	JMW	SW 6020
Arsenic	92	ug/L		10/26/16 13:38	11/02/16 15:03	JMW	SW 6020
Barium	1100	ug/L		10/26/16 13:38	11/02/16 14:20	JMW	SW 6020
Beryllium	< 20	ug/L		10/26/16 13:38	11/02/16 14:34	JMW	SW 6020
Boron	97000	ug/L		10/26/16 13:38	11/03/16 08:45	JMW	SW 6020
Cadmium	67	ug/L		10/26/16 13:38	11/02/16 15:55	JMW	SW 6020
Calcium	1400	mg/L		10/26/16 13:38	11/02/16 14:34	JMW	SW 6020
Chromium	150	ug/L		10/26/16 13:38	11/02/16 15:03	JMW	SW 6020
Cobalt	110	ug/L		10/26/16 13:38	11/02/16 15:03	JMW	SW 6020
Lithium	480	ug/L		10/26/16 13:38	10/27/16 12:33	KJP	SW 6010*
Magnesium	2500	mg/L		10/26/16 13:38	11/02/16 14:34	JMW	SW 6020
Mercury	27	ug/L		10/26/16 13:38	11/02/16 15:03	JMW	SW 6020
Molybdenum	140	ug/L		10/26/16 13:38	11/02/16 15:03	JMW	SW 6020
Potassium	360	mg/L		10/26/16 13:38	11/03/16 08:45	JMW	SW 6020
Selenium	1500	ug/L		10/26/16 13:38	11/02/16 15:03	JMW	SW 6020
Sodium	1000	mg/L		10/26/16 13:38	11/02/16 14:34	JMW	SW 6020
Thallium	< 4.0	ug/L		10/26/16 13:38	11/07/16 15:07	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-19
Name: GPc
Matrix: Surface Water - Grab

Sampled: 10/24/16 14:20
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	1800	mg/L		10/28/16 01:58	10/28/16 01:58	TAS	EPA 300.0
Nitrite-N	< 3.0	mg/L		10/26/16 12:18	10/26/16 12:18	TAS	EPA 300.0
Sulfate	20000	mg/L		10/28/16 02:16	10/28/16 02:16	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.73	pH Units		10/24/16 14:20	10/24/16 14:20	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	5.5	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	49.2	mg/L		10/27/16 17:35	10/27/16 17:35	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	17000	mg/L		10/27/16 12:04	10/27/16 12:28	ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 6.0	ug/L		10/26/16 13:38	11/02/16 14:23	JMW	SW 6020
Arsenic	4.4	ug/L		10/26/16 13:38	11/02/16 15:07	JMW	SW 6020
Barium	110	ug/L		10/26/16 13:38	11/02/16 13:43	JMW	SW 6020
Beryllium	2.6	ug/L		10/26/16 13:38	11/02/16 14:23	JMW	SW 6020
Boron	72000	ug/L		10/26/16 13:38	11/03/16 08:46	JMW	SW 6020
Cadmium	41	ug/L		10/26/16 13:38	11/02/16 15:56	JMW	SW 6020
Calcium	570	mg/L		10/26/16 13:38	11/02/16 14:38	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 15:27	JMW	SW 6020
Cobalt	54	ug/L		10/26/16 13:38	11/02/16 15:07	JMW	SW 6020
Lithium	300	ug/L		10/26/16 13:38	10/27/16 12:36	KJP	SW 6010*
Magnesium	1500	mg/L		10/26/16 13:38	11/02/16 14:23	JMW	SW 6020
Mercury	< 0.80	ug/L		10/26/16 13:38	11/02/16 15:07	JMW	SW 6020
Molybdenum	120	ug/L		10/26/16 13:38	11/02/16 14:23	JMW	SW 6020
Potassium	260	mg/L		10/26/16 13:38	11/03/16 08:46	JMW	SW 6020
Selenium	890	ug/L		10/26/16 13:38	11/02/16 15:07	JMW	SW 6020
Sodium	650	mg/L		10/26/16 13:38	11/02/16 13:43	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 15:27	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-20
Name: GPd
Matrix: Surface Water - Grab

Sampled: 10/24/16 14:30
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	1900	mg/L		10/28/16 03:09	10/28/16 03:09	TAS	EPA 300.0
Nitrite-N	< 3.0	mg/L		10/26/16 12:36	10/26/16 12:36	TAS	EPA 300.0
Sulfate	19000	mg/L		10/28/16 03:26	10/28/16 03:26	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.73	pH Units		10/24/16 14:30	10/24/16 14:30	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	6.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	51.3	mg/L		10/27/16 17:39	10/27/16 17:39	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	16000	mg/L		10/27/16 12:04	10/27/16 12:28	ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 13:38	11/02/16 13:47	JMW	SW 6020
Arsenic	4.2	ug/L		10/26/16 13:38	11/02/16 15:10	JMW	SW 6020
Barium	110	ug/L		10/26/16 13:38	11/02/16 13:47	JMW	SW 6020
Beryllium	< 20	ug/L		10/26/16 13:38	11/02/16 14:41	JMW	SW 6020
Boron	66000	ug/L		10/26/16 13:38	11/03/16 08:48	JMW	SW 6020
Cadmium	38	ug/L		10/26/16 13:38	11/02/16 15:57	JMW	SW 6020
Calcium	560	mg/L		10/26/16 13:38	11/02/16 14:41	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 13:38	11/01/16 15:31	JMW	SW 6020
Cobalt	52	ug/L		10/26/16 13:38	11/02/16 15:10	JMW	SW 6020
Lithium	300	ug/L		10/26/16 13:38	10/27/16 12:39	KJP	SW 6010*
Magnesium	1500	mg/L		10/26/16 13:38	11/02/16 14:27	JMW	SW 6020
Mercury	< 0.80	ug/L		10/26/16 13:38	11/02/16 15:10	JMW	SW 6020
Molybdenum	120	ug/L		10/26/16 13:38	11/02/16 14:27	JMW	SW 6020
Potassium	230	mg/L		10/26/16 13:38	11/03/16 08:48	JMW	SW 6020
Selenium	800	ug/L		10/26/16 13:38	11/01/16 15:31	JMW	SW 6020
Sodium	660	mg/L		10/26/16 13:38	11/02/16 13:47	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 13:38	11/01/16 15:31	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-21
Name: RPb
Matrix: Surface Water - Grab

Sampled: 10/24/16 14:50
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	1800	mg/L		10/28/16 03:44	10/28/16 03:44	TAS	EPA 300.0
Nitrite-N	< 3.0	mg/L		10/26/16 12:53	10/26/16 12:53	TAS	EPA 300.0
Sulfate	18000	mg/L		10/28/16 04:01	10/28/16 04:01	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.49	pH Units		10/24/16 14:50	10/24/16 14:50	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	44.4	mg/L		10/27/16 17:44	10/27/16 17:44	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	16000	mg/L		10/27/16 12:04	10/27/16 12:28	ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 11:03	11/01/16 09:42	JMW	SW 6020
Arsenic	2.8	ug/L		10/26/16 11:03	11/02/16 11:16	JMW	SW 6020
Barium	90	ug/L		10/26/16 11:03	11/01/16 09:42	JMW	SW 6020
Beryllium	2.1	ug/L		10/26/16 11:03	11/01/16 10:30	JMW	SW 6020
Boron	56000	ug/L		10/26/16 11:03	11/02/16 16:34	JMW	SW 6020
Cadmium	33	ug/L		10/26/16 11:03	11/02/16 11:32	JMW	SW 6020
Calcium	380	mg/L		10/26/16 11:03	11/01/16 10:30	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 11:03	11/01/16 09:42	JMW	SW 6020
Cobalt	45	ug/L		10/26/16 11:03	11/01/16 09:42	JMW	SW 6020
Lithium	310	ug/L		10/26/16 11:03	10/27/16 11:01	KJP	SW 6010*
Magnesium	1200	mg/L		10/26/16 11:03	11/01/16 10:30	JMW	SW 6020
Mercury	< 0.40	ug/L		10/26/16 11:03	11/02/16 11:16	JMW	SW 6020
Molybdenum	64	ug/L		10/26/16 11:03	11/01/16 10:30	JMW	SW 6020
Potassium	210	mg/L		10/26/16 11:03	11/02/16 11:32	JMW	SW 6020
Selenium	780	ug/L		10/26/16 11:03	11/02/16 11:16	JMW	SW 6020
Sodium	470	mg/L		10/26/16 11:03	11/01/16 09:42	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 11:03	11/01/16 09:42	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-22
Name: RPc
Matrix: Surface Water - Grab

Sampled: 10/24/16 15:00
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	2000	mg/L		10/28/16 04:19	10/28/16 04:19	TAS	EPA 300.0
Nitrite-N	< 3.0	mg/L		10/26/16 14:05	10/26/16 14:05	TAS	EPA 300.0
Sulfate	20000	mg/L		10/28/16 04:37	10/28/16 04:37	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.32	pH Units		10/24/16 15:00	10/24/16 15:00	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	45.0	mg/L		10/27/16 17:48	10/27/16 17:48	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	16000	mg/L		10/27/16 12:04	10/27/16 12:28	ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 11:03	11/01/16 09:46	JMW	SW 6020
Arsenic	3.1	ug/L		10/26/16 11:03	11/02/16 11:20	JMW	SW 6020
Barium	88	ug/L		10/26/16 11:03	11/01/16 09:46	JMW	SW 6020
Beryllium	2.2	ug/L		10/26/16 11:03	11/01/16 10:34	JMW	SW 6020
Boron	59000	ug/L		10/26/16 11:03	11/02/16 16:36	JMW	SW 6020
Cadmium	37	ug/L		10/26/16 11:03	11/02/16 11:36	JMW	SW 6020
Calcium	380	mg/L		10/26/16 11:03	11/01/16 10:34	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 11:03	11/01/16 09:46	JMW	SW 6020
Cobalt	43	ug/L		10/26/16 11:03	11/01/16 09:46	JMW	SW 6020
Lithium	310	ug/L		10/26/16 11:03	10/27/16 11:04	KJP	SW 6010*
Magnesium	1200	mg/L		10/26/16 11:03	11/01/16 10:34	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 11:03	11/02/16 10:36	JMW	SW 6020
Molybdenum	64	ug/L		10/26/16 11:03	11/01/16 10:34	JMW	SW 6020
Potassium	200	mg/L		10/26/16 11:03	11/02/16 11:36	JMW	SW 6020
Selenium	830	ug/L		10/26/16 11:03	11/02/16 11:20	JMW	SW 6020
Sodium	440	mg/L		10/26/16 11:03	11/01/16 09:46	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 11:03	11/01/16 09:46	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-23
Name: RPd
Matrix: Surface Water - Grab

Sampled: 10/24/16 15:05
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	1600	mg/L		10/28/16 04:25	10/28/16 04:25	TAS	EPA 300.0
Nitrite-N	< 3.0	mg/L		10/26/16 14:23	10/26/16 14:23	TAS	EPA 300.0
Sulfate	16000	mg/L		10/28/16 04:43	10/28/16 04:43	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.32	pH Units		10/24/16 15:05	10/24/16 15:05	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	51.2	mg/L		10/27/16 17:53	10/27/16 17:53	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	17000	mg/L		10/27/16 12:04	10/27/16 12:28	ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 11:03	11/01/16 09:49	JMW	SW 6020
Arsenic	3.4	ug/L		10/26/16 11:03	11/02/16 11:23	JMW	SW 6020
Barium	89	ug/L		10/26/16 11:03	11/01/16 09:49	JMW	SW 6020
Beryllium	2.4	ug/L		10/26/16 11:03	11/01/16 10:37	JMW	SW 6020
Boron	59000	ug/L		10/26/16 11:03	11/02/16 16:37	JMW	SW 6020
Cadmium	36	ug/L		10/26/16 11:03	11/02/16 11:40	JMW	SW 6020
Calcium	400	mg/L		10/26/16 11:03	11/01/16 10:37	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 11:03	11/01/16 09:49	JMW	SW 6020
Cobalt	45	ug/L		10/26/16 11:03	11/01/16 09:49	JMW	SW 6020
Lithium	310	ug/L		10/26/16 11:03	10/27/16 11:13	KJP	SW 6010*
Magnesium	1300	mg/L		10/26/16 11:03	11/01/16 10:37	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 11:03	11/02/16 10:39	JMW	SW 6020
Molybdenum	66	ug/L		10/26/16 11:03	11/01/16 10:37	JMW	SW 6020
Potassium	200	mg/L		10/26/16 11:03	11/02/16 11:40	JMW	SW 6020
Selenium	860	ug/L		10/26/16 11:03	11/02/16 11:23	JMW	SW 6020
Sodium	460	mg/L		10/26/16 11:03	11/01/16 09:49	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 11:03	11/01/16 09:49	JMW	SW 6020



ANALYTICAL RESULTS

Sample: 6103663-24
Name: RPa
Matrix: Surface Water - Grab

Sampled: 10/24/16 14:40
Received: 10/25/16 07:45

Parameter	Result	Unit	Qualifier	Prepared	Analyzed	Analyst	Method
<u>Anions - PIA</u>							
Chloride	1600	mg/L		10/28/16 05:02	10/28/16 05:02	TAS	EPA 300.0
Nitrite-N	< 3.0	mg/L		10/26/16 13:11	10/26/16 13:11	TAS	EPA 300.0
Sulfate	17000	mg/L		10/28/16 05:20	10/28/16 05:20	TAS	EPA 300.0
<u>Field - PIA</u>							
pH, Field Measured	6.70	pH Units		10/24/16 14:40	10/24/16 14:40	FIELD	Field*
<u>General Chemistry - PIA</u>							
Alkalinity - bicarbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Alkalinity - carbonate as CaCO3	< 2.0	mg/L		10/31/16 13:36	10/31/16 13:36	LAM	SM 2320B*
Fluoride	47.0	mg/L		10/27/16 15:52	10/27/16 15:52	TTH	SM 4500-F C
Solids - total dissolved solids (TDS)	16000	mg/L		10/27/16 12:04	10/27/16 12:28	ARL	SM 2540C
<u>Total Metals - PIA</u>							
Antimony	< 3.0	ug/L		10/26/16 11:03	11/01/16 09:53	JMW	SW 6020
Arsenic	3.3	ug/L		10/26/16 11:03	11/02/16 11:27	JMW	SW 6020
Barium	89	ug/L		10/26/16 11:03	11/01/16 09:53	JMW	SW 6020
Beryllium	2.3	ug/L		10/26/16 11:03	11/01/16 10:41	JMW	SW 6020
Boron	60000	ug/L		10/26/16 11:03	11/02/16 16:38	JMW	SW 6020
Cadmium	37	ug/L		10/26/16 11:03	11/02/16 11:43	JMW	SW 6020
Calcium	380	mg/L		10/26/16 11:03	11/01/16 10:41	JMW	SW 6020
Chromium	< 4.0	ug/L		10/26/16 11:03	11/01/16 09:53	JMW	SW 6020
Cobalt	44	ug/L		10/26/16 11:03	11/01/16 09:53	JMW	SW 6020
Lithium	310	ug/L		10/26/16 11:03	10/27/16 11:16	KJP	SW 6010*
Magnesium	1200	mg/L		10/26/16 11:03	11/01/16 10:41	JMW	SW 6020
Mercury	< 0.20	ug/L		10/26/16 11:03	11/02/16 10:43	JMW	SW 6020
Molybdenum	63	ug/L		10/26/16 11:03	11/01/16 10:41	JMW	SW 6020
Potassium	190	mg/L		10/26/16 11:03	11/02/16 11:43	JMW	SW 6020
Selenium	840	ug/L		10/26/16 11:03	11/02/16 11:27	JMW	SW 6020
Sodium	450	mg/L		10/26/16 11:03	11/01/16 09:53	JMW	SW 6020
Thallium	< 1.0	ug/L		10/26/16 11:03	11/01/16 09:53	JMW	SW 6020



NOTES

Specific method revisions used for analysis are available upon request.

Certifications

PIA - Peoria, IL

TNI Accreditation for Drinking Water, Wastewater, Hazardous and Solid Wastes Fields of Testing through IL EPA Lab No. 100230
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 17553
Missouri Department of Natural Resources Certificate of Approval for Microbiological Laboratory Service No. 870
Drinking Water Certifications: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Hazardous/Solid Waste Certifications: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO

USEPA DMR-QA Program

STL - St. Louis, MO

TNI Accreditation for Wastewater, Hazardous and Solid Wastes Fields of Testing through KS Lab No. E-10389
Illinois Department of Public Health Bacteriological Analysis in Drinking Water Approved Laboratory Registry No. 171050
Drinking Water Certifications: Missouri (1050)
Missouri Department of Natural Resources

* Not a TNI accredited analyte

Certified by: Gail Schindler, Project Manager

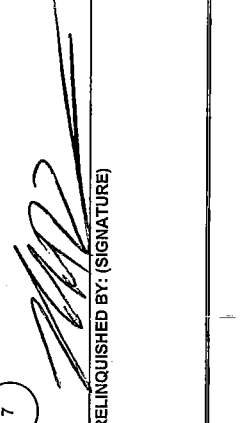
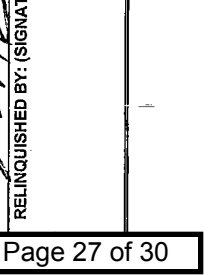


PDC LABORATORIES, INC.
 2231 WEST ALTORFER DRIVE
 PEORIA, IL 61615

PHONE # 309-692-9688
 FAX # 309-692-9689

CHAIN OF CUSTODY RECORD

6/5/10-26-16


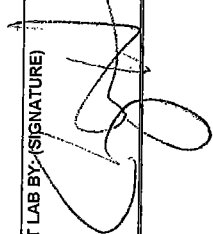
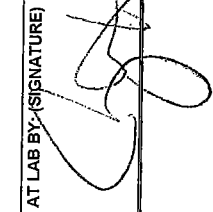

1 CLIENT <u>Hanson Professional Services</u> <u>COFFEEN ENERGY CENTER</u>		ALL SHADED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)		3 ANALYSIS REQUESTED 6/5/10 26-16 SB, AS, BA, BE, AL, KH, CO3 B, CD, CA, ALK, CO3, CL CR, CR6, CO, CO, U, N, F FE, FB, LB, LM, GM, HG, MO M, G, RO, PHENOL, P, SE MG, NA, SO4, TL, TDS, ZN TSS, NO2, NO3, NH4, TKN		(FOR LAB USE ONLY) LOGIN # <u>6103663-24</u> LOGGED BY: <u>APM</u> NATURAL RESOURCE TECHNOLOGY COFFEEN POND LAKE GAIL J SCHINDLER	
ADDRESS 134 CIPS LANE CITY STATE ZIP COFFEEN IL 62017		MEANS SHIPPED DATE SHIPPED		MATRIX TYPES: WW- WASTEWATER DW- DRINKING WATER GW- GROUND WATER WWSL- SLUDGE MAS- SOLID OTHER:		REMARKS	
CONTACT PERSON JOHN ROMANG		PHONE NUMBER FAX NUMBER		MATRIX TYPE TOTAL # OF CONT		CUSTOMER LIST	
SAMPLE DESCRIPTION API a API b API c API d API e API f API g API h API e API f API g		DATE COLLECTED TIME COLLECTED DATE COLLECTED TIME COLLECTED DATE COLLECTED TIME COLLECTED DATE COLLECTED TIME COLLECTED DATE COLLECTED TIME COLLECTED DATE COLLECTED TIME COLLECTED DATE COLLECTED TIME COLLECTED DATE COLLECTED TIME COLLECTED		SAMPLE TYPE GRAB COMP		PH 6.99 PH 7.01 PH 7.05 PH 7.21 PH 7.12 PH 7.20 PH 7.21 PH 7.41 PH 6.49 PH 6.42 PH 6.46	
5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) X RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE RUSH RESULTS VIA (PLEASE CIRCLE) FAX # IF DIFFERENT FROM ABOVE:		NORMAL RUSH PHONE		6 The sample temperature will be measured upon receipt at the lab. By initialing this area you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area you allow the lab to proceed with analytical testing regardless of the sample temperature.		COMMENTS: (FOR LAB USE ONLY)	
7 RELINQUISHED BY: (SIGNATURE) 		RECEIVED BY: (SIGNATURE) 		DATE TIME DATE TIME		SAMPLE TEMPERATURE UPON RECEIPT CHILL PROCESS STARTED PRIOR TO RECEIPT BOTTLES RECEIVED ON ICE BOTTLES RECEIVED IN GOOD CONDITION BOTTLES FILLED TO APPROX. THE NECK SAMPLES RECEIVED WITHIN HOLD TIME(S)	

CHAIN OF CUSTODY RECORD

PDC LABORATORIES, INC.
 2231 WEST ALTORFER DRIVE
 PEORIA, IL 61615
 PHONE # 309-692-9688
 FAX # 309-692-9689

gjs 10-26-16

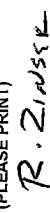


ALL SHADED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT)

CLIENT Hanson Professional Services COFFEEN ENERGY CENTER 134 CIPS LANE COFFEEN IL 62017 JOHN ROMANG		PROJECT NUMBER P.O. NUMBER PHONE NUMBER FAX NUMBER		MEANS SHIPPED DATE SHIPPED		ANALYSIS REQUESTED 6/5 10-26-16		(FOR LAB USE ONLY) LOGIN # LOGGED BY: NATURAL RESOURCE TECHNOLOGY COFFEEN POND LAKE GAIL J SCHINDLER	
SAMPLER (PLEASE PRINT) R. ZINWISER SAMPLER'S SIGNATURE 		DATE COLLECTED TIME COLLECTED SAMPLE TYPE GRAB COMP		MATRIX TYPES: WW- WASTEWATER DW- DRINKING WATER GW- GROUND WATER WWSL- SLUDGE NAS- SOLID OTHER:		SB, AS, BA, BE, ALKHCOS B, CD, CA, ALK COS, CL CR, CP, 6, CO, CR, CN, F FE, PB, LI, MG, KM, HG, MO M, GO, PH, NI, OL, P, SE, AG, NA, SO4, TL, TDS, ZN TSS, NO2, NO3, NH3, TN		REMARKS PH 7.17 PH 7.72 PH 7.52 PH 7.62 PH 7.30 PH 7.16 PH 6.65 PH 6.73 PH 6.49 PH 6.32	
SAMPLE DESCRIPTION AP2 h CL a CL b CL c CL d GP a GP b GP c GP d RP b RP c		DATE COLLECTED TIME COLLECTED SAMPLE TYPE GRAB COMP		MATRIX TYPE SW SW SW SW SW SW SW SW SW SW SW		TOTAL # OF CONT 7 7 7 7 7 7 7 7 7 7 7 7		The sample temperature will be measured upon receipt at the lab. By initialing this area you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area you allow the lab to proceed with analytical testing regardless of the sample temperature.	
TURNAROUND TIME REQUESTED (PLEASE CIRCLE) X/RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE RUSH RESULTS VIA (PLEASE CIRCLE)		NORMAL RUSH PHONE		RECEIVED BY: (SIGNATURE) 		RECEIVED AT LAB BY: (SIGNATURE) 		COMMENTS: (FOR LAB USE ONLY) SAMPLE TEMPERATURE UPON RECEIPT CHILL PROCESS STARTED PRIOR TO RECEIPT SAMPLE(S) RECEIVED ON ICE BOTTLES RECEIVED IN GOOD CONDITION BOTTLES FILLED TO APPROX. THE NECK SAMPLES RECEIVED WITHIN HOLD TIME(S)	
RELINQUISHED BY: (SIGNATURE) 		DATE TIME 10/25/16 7:45		DATE TIME 10/25/16 7:45		DATE TIME 10/25/16 7:45		DATE TIME 10/25/16 7:45	

CHAIN OF CUSTODY RECORD

PDC LABORATORIES, INC.
 2231 WEST ALTORFER DRIVE
 PEORIA, IL 61615
 PHONE # 309-692-9688
 FAX # 309-692-9689

685 102616

<p>1 CLIENT Hanson Professional Services COFFEEN ENERGY CENTER</p>	<p>ALL SHADED AREAS MUST BE COMPLETED BY CLIENT (PLEASE PRINT) PROJECT NUMBER _____ P.O. NUMBER _____</p>	<p>MEANS SHIPPED _____ DATE SHIPPED _____</p>	<p>ANALYSIS REQUESTED 3 As 102616</p>	<p>(FOR LAB USE ONLY) LOGIN # _____ LOGGED BY: _____ NATURAL RESOURCE TECHNOLOGY COFFEEN POND LAKE GAIL J SCHINDLER</p>
<p>ADDRESS 134 CIPS LANE</p>	<p>PHONE NUMBER _____ FAX NUMBER _____</p>	<p>MATRIX TYPES: WW- WASTEWATER DW- DRINKING WATER GW- GROUND WATER WWSL- SLUDGE NAS- SOLID OTHER: _____</p>	<p>SB, AS, BA, BF, ALKHC03 B, CD, CA, ALK C03, CL CR, CR-6, CO, CU, DN, F FE, FB, LI, MG, MN, HG, MO NI, G, O, PHE, POL, P, SE AG, NA, S, O4, TL, TDS, Z, N TS, NO2, NO3, NH3, TN</p>	<p>REMARKS</p>
<p>2 CITY STATE ZIP COFFEEN IL 62017</p>	<p>SAMPLER (PLEASE PRINT) R. Z. WSK</p>	<p>MATRIX TYPE</p>	<p>TOTAL # OF CONT</p>	<p>REMARKS</p>
<p>CONTACT PERSON JOHN ROMANG</p>	<p>SAMPLER'S SIGNATURE </p>	<p>DATE COLLECTED</p>	<p>TIME COLLECTED</p>	<p>REMARKS</p>
<p>SAMPLE DESCRIPTION RPd</p>	<p>DATE COLLECTED</p>	<p>TIME COLLECTED</p>	<p>SAMPLE TYPE GRAB COMP</p>	<p>REMARKS pH 6.32</p>
<p>SAMPLE DESCRIPTION RPa</p>	<p>DATE COLLECTED</p>	<p>TIME COLLECTED</p>	<p>SAMPLE TYPE GRAB COMP</p>	<p>REMARKS pH 6.70</p>
<p>5 TURNAROUND TIME REQUESTED (PLEASE CIRCLE) XRUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE) RUSH RESULTS VIA (PLEASE CIRCLE) FAX # IF DIFFERENT FROM ABOVE:</p>	<p>NORMAL DATE _____ TIME _____</p>	<p>RUSH DATE _____ TIME _____</p>	<p>6</p>	<p>The sample temperature will be measured upon receipt at the lab. By initialing this area you request that the lab notify you, before proceeding with analysis, if the sample temperature is outside of the range of 0.1-6.0°C. By not initialing this area you allow the lab to proceed with analytical testing regardless of the sample temperature.</p>
<p>7 RELINQUISHED BY: (SIGNATURE) </p>	<p>RECEIVED BY: (SIGNATURE) </p>	<p>DATE 10/25/16 TIME 7:45</p>	<p>8</p>	<p>COMMENTS: (FOR LAB USE ONLY) SAMPLE TEMPERATURE UPON RECEIPT _____ °C CHILL PROCESS STARTED PRIOR TO RECEIPT _____ SAMPLE(S) RECEIVED ON ICE _____ BOTTLES RECEIVED IN GOOD CONDITION _____ BOTTLES FILLED TO APPROX. THE NECK _____ SAMPLES RECEIVED WITHIN HOLD TIME(S) _____</p>

Chain of Custody Parameters (as totals)

Antimony
Arsenic
Barium
Beryllium
Bicarbonate Alkalinity
Boron
Cadmium
Calcium
Carbonate Alkalinity
Chloride
Chromium
Cobalt
Fluoride
Lithium
Magnesium
Mercury
Molybdenum
Nitrite
pH
Potassium
Selenium
Sodium
Sulfate
Thallium
Total Dissolved Solids (TDS)

ATTACHMENT 7
Sequential Extraction Procedure Laboratory
Analytical Report

 **ANALYTICAL REPORT****PREPARED FOR**

Attn: Michael Healey
Sirem, div of Geosyntec Consultants
130 Stone Rd West
Guelph, Ontario N1G 3Z2

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JOB DESCRIPTION

Coffeen MNA

JOB NUMBER

140-23157-1

Eurofins Knoxville

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins TestAmerica Project Manager.

Authorization



Authorized for release by
Ryan Henry, Project Manager I
WilliamR.Henry@et.eurofinsus.com
(865)291-3000

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Revision 1



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Definitions/Glossary

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Qualifiers

Metals

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
B	Compound was found in the blank and sample.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Job ID: 140-23157-1

Laboratory: Eurofins Knoxville

Narrative

Job Narrative
140-23157-1
Revised

Revision

The report being provided is a revision of the original report sent on 6/15/2021. The report (revision 1) is being revised to include a different analyte list for sample 2.

Receipt

The samples were received on 5/19/2021 at 10:15am and arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 12.8° C.

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: G1001-(6-11) (140-23157-1), 401B-(16-20) (140-23157-2) and 270A-(12-16) (140-23157-3). The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.

The Field Sampler was not listed on the Chain of Custody.

The Chain-of-Custody (COC) was incomplete as received and/or improperly completed. COC not relinquished.

Metals

7 Step Sequential Extraction Procedure

These soil samples were prepared and analyzed using Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0008, "7 Step Sequential Extraction Procedure". SW-846 Method 6010B as incorporated in Eurofins TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analyses.

An aliquot of each sample was sequentially extracted using the steps listed below:

- Step 1 - Exchangeable Fraction: A 5 gram aliquot of sample was extracted with 25 mL of 1M magnesium sulfate (MgSO₄), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 2 - Carbonate Fraction: The sample residue from step 1 was extracted with 25 mL of 1M sodium acetate/acetic acid (NaOAc/HOAc) at pH 5, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 3 - Non-crystalline Materials Fraction: The sample residue from step 2 was extracted with 25 mL of 0.2M ammonium oxalate (pH 3), centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 4 - Metal Hydroxide Fraction: The sample residue from step 3 was extracted with 25 mL of 1M hydroxylamine hydrochloride solution in 25% v/v acetic acid, centrifuged and filtered. 5 mL of the resulting leachate was digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 5 - Organic-bound Fraction: The sample residue from step 4 was extracted three times with 25 mL of 5% sodium hypochlorite (NaClO) at pH 9.5, centrifuged and filtered. The resulting leachates were combined and 5 mL were digested using method 3010A and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 6 - Acid/Sulfide Fraction: The sample residue from step 5 was extracted with 25 mL of a 3:1:2 v/v solution of HCl-HNO₃-H₂O, centrifuged and filtered. 5 mL of the resulting leachate was diluted to 50 mL with reagent water and analyzed by method 6010B. Results are reported in mg/kg on a dry weight basis.
- Step 7 - Residual Fraction: A 1.0 g aliquot of the sample residue from step 6 was digested using HF, HNO₃, HCl and H₃BO₃. The digestate was analyzed by ICP using method 6010B. Results are reported in mg/kg on a dry weight basis.

In addition, a 1.0 g aliquot of the original sample was digested using HF, HNO₃, HCl and H₃BO₃. The digestate was analyzed by ICP using method 6010B. Total metal results are reported in mg/kg on a dry weight basis.

Case Narrative

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Job ID: 140-23157-1 (Continued)

Laboratory: Eurofins Knoxville (Continued)

Results were calculated using the following equation:

$$\text{Result, } \mu\text{g/g or mg/Kg, dry weight} = (C \times V \times V1 \times D) / (W \times S \times V2)$$

Where:

- C = Concentration from instrument readout, $\mu\text{g/mL}$
- V = Final volume of digestate, mL
- D = Instrument dilution factor
- V1 = Total volume of leachate, mL
- V2 = Volume of leachate digested, mL
- W = Wet weight of sample, g
- S = Percent solids/100

A method blank, laboratory control sample and laboratory control sample duplicate were prepared and analyzed with each SEP step in order to provide information about both the presence of elements of interest in the extraction solutions, and the recovery of elements of interest from the extraction solutions. Results outside of laboratory QC limits do not reflect out of control performance, but rather the effect of the extraction solution upon the analyte.

A laboratory sample duplicate was prepared and analyzed with each batch of samples in order to provide information regarding the reproducibility of the procedure.

SEP Report Notes:

The final report lists the results for each step, the result for the total digestion of the sample, and a sum of the results of steps 1 through 7 by element.

Magnesium was not reported for step 1 because the extraction solution for this step (magnesium sulfate) contains high levels of magnesium. Sodium was not reported for steps 2 and 5 since the extraction solutions for these steps contain high levels of sodium. The sum of steps 1 through 7 is much higher than the total result for sodium and magnesium due to the magnesium and sodium introduced by the extraction solutions.

The digestates for steps 1, 2 and 5 were analyzed at a dilution due to instrument problems caused by the high solids content of the digestates. The reporting limits were adjusted accordingly.

Method 6010B: The following samples were diluted due to the presence of titanium which interferes with Cobalt: G1001-(6-11) (140-23157-1) and 401B-(16-20) (140-23157-2). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 140-50371 and 140-50451 and analytical batch 140-50529 recovered outside control limits for the following analyte: Lithium. This analyte was biased high in the LCS and LCSD and was not detected in the associated samples; therefore, the data have been reported. Lithium results for the samples were either non-detect or estimated values.

Method 6010B SEP: The following samples were diluted due to the presence of silicon which interferes with Arsenic: G1001-(6-11) (140-23157-1), 401B-(16-20) (140-23157-2) and 270A-(12-16) (140-23157-3). Elevated reporting limits (RLs) are provided.

Method 6010B SEP: The method blank for preparation batch 140-50257 and 140-50291 and analytical batch 140-50418 contained Manganese above the reporting limit (RL). Associated sample was not re-extracted and/or re-analyzed because result was greater than 10X the value found in the method blank.

Method 6010B SEP: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 140-50257 and 140-50291 and analytical batch 140-50418 recovered outside control limits for the following analyte: Manganese.

Method 6010B SEP: The method blank for step 5 has Iron detected above the reporting limit. The following samples were affected:

Case Narrative

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Job ID: 140-23157-1 (Continued)

Laboratory: Eurofins Knoxville (Continued)

401B-(16-20) (140-23157-2) and (MB 140-50371/16-B ^5)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

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Sample Summary

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
140-23157-1	G1001-(6-11)	Solid	05/17/21 10:00	05/19/21 10:15
140-23157-2	401B-(16-20)	Solid	05/17/21 10:15	05/19/21 10:15
140-23157-3	270A-(12-16)	Solid	05/17/21 10:30	05/19/21 10:15

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Client Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: G1001-(6-11)

Lab Sample ID: 140-23157-1

Date Collected: 05/17/21 10:00

Matrix: Solid

Date Received: 05/19/21 10:15

Percent Solids: 90.1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		2.2	0.58	mg/Kg	☼	05/27/21 08:00	06/02/21 12:49	4
Boron	ND		44	44	mg/Kg	☼	05/27/21 08:00	06/02/21 12:49	4
Cobalt	ND		11	0.20	mg/Kg	☼	05/27/21 08:00	06/02/21 12:49	4
Lithium	ND		11	0.67	mg/Kg	☼	05/27/21 08:00	06/02/21 12:49	4
Molybdenum	ND		8.9	0.36	mg/Kg	☼	05/27/21 08:00	06/02/21 12:49	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.7	0.43	mg/Kg	☼	05/28/21 08:00	06/02/21 14:42	3
Boron	ND		33	33	mg/Kg	☼	05/28/21 08:00	06/02/21 14:42	3
Cobalt	1.2	J	8.3	0.21	mg/Kg	☼	05/28/21 08:00	06/02/21 14:42	3
Lithium	ND		8.3	0.50	mg/Kg	☼	05/28/21 08:00	06/02/21 14:42	3
Molybdenum	ND		6.7	0.27	mg/Kg	☼	05/28/21 08:00	06/02/21 14:42	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.43	J	0.56	0.14	mg/Kg	☼	06/01/21 08:00	06/02/21 16:34	1
Boron	ND		11	11	mg/Kg	☼	06/01/21 08:00	06/02/21 16:34	1
Cobalt	0.74	J	2.8	0.050	mg/Kg	☼	06/01/21 08:00	06/02/21 16:34	1
Lithium	ND		2.8	0.17	mg/Kg	☼	06/01/21 08:00	06/02/21 16:34	1
Molybdenum	0.19	J	2.2	0.091	mg/Kg	☼	06/01/21 08:00	06/02/21 16:34	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.6	B	0.56	0.24	mg/Kg	☼	06/02/21 08:00	06/05/21 12:15	1
Boron	ND		11	11	mg/Kg	☼	06/02/21 08:00	06/05/21 12:15	1
Cobalt	1.5	J	2.8	0.059	mg/Kg	☼	06/02/21 08:00	06/05/21 12:15	1
Lithium	2.4	J	2.8	0.17	mg/Kg	☼	06/02/21 08:00	06/05/21 12:15	1
Molybdenum	0.59	J	2.2	0.091	mg/Kg	☼	06/02/21 08:00	06/05/21 12:15	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		8.3	2.1	mg/Kg	☼	06/04/21 08:00	06/05/21 14:09	5
Boron	ND		170	170	mg/Kg	☼	06/04/21 08:00	06/05/21 14:09	5
Cobalt	ND	*1	42	0.67	mg/Kg	☼	06/04/21 08:00	06/05/21 14:09	5
Lithium	8.8	J B *+	42	2.4	mg/Kg	☼	06/04/21 08:00	06/05/21 14:09	5
Molybdenum	ND		33	1.4	mg/Kg	☼	06/04/21 08:00	06/05/21 14:09	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.1		0.56	0.17	mg/Kg	☼	06/04/21 08:00	06/05/21 16:02	1
Boron	ND		11	11	mg/Kg	☼	06/04/21 08:00	06/05/21 16:02	1
Cobalt	2.0	J	2.8	0.051	mg/Kg	☼	06/04/21 08:00	06/05/21 16:02	1
Lithium	6.8	B	2.8	0.17	mg/Kg	☼	06/04/21 08:00	06/05/21 16:02	1
Molybdenum	0.21	J	2.2	0.11	mg/Kg	☼	06/04/21 08:00	06/05/21 16:02	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.0	B	1.1	0.29	mg/Kg	☼	06/07/21 08:00	06/09/21 14:39	2
Cobalt	0.69	J	5.6	0.058	mg/Kg	☼	06/07/21 08:00	06/09/21 14:39	2
Lithium	11		2.8	0.17	mg/Kg	☼	06/07/21 08:00	06/09/21 13:18	1

Eurofins Knoxville

Client Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: G1001-(6-11)

Lab Sample ID: 140-23157-1

Date Collected: 05/17/21 10:00

Matrix: Solid

Date Received: 05/19/21 10:15

Percent Solids: 90.1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	0.10	J	2.2	0.091	mg/Kg	☼	06/07/21 08:00	06/09/21 13:18	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.1		0.50	0.13	mg/Kg			06/13/21 11:52	1
Cobalt	6.1		2.5	0.023	mg/Kg			06/13/21 11:52	1
Lithium	29		2.5	0.15	mg/Kg			06/13/21 11:52	1
Molybdenum	1.1	J	2.0	0.082	mg/Kg			06/13/21 11:52	1

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	8.6	B	0.56	0.14	mg/Kg	☼	05/27/21 08:00	06/10/21 13:08	1
Cobalt	5.3	J	5.6	0.058	mg/Kg	☼	05/27/21 08:00	06/10/21 14:47	2
Lithium	21		2.8	0.17	mg/Kg	☼	05/27/21 08:00	06/10/21 13:08	1
Molybdenum	1.5	J	2.2	0.091	mg/Kg	☼	05/27/21 08:00	06/10/21 13:08	1

Client Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: 401B-(16-20)

Lab Sample ID: 140-23157-2

Date Collected: 05/17/21 10:15

Matrix: Solid

Date Received: 05/19/21 10:15

Percent Solids: 86.5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		2.3	0.60	mg/Kg	☼	05/27/21 08:00	06/02/21 12:54	4
Boron	ND		46	46	mg/Kg	☼	05/27/21 08:00	06/02/21 12:54	4
Cobalt	ND		12	0.21	mg/Kg	☼	05/27/21 08:00	06/02/21 12:54	4
Lithium	ND		12	0.69	mg/Kg	☼	05/27/21 08:00	06/02/21 12:54	4
Molybdenum	ND		9.3	0.38	mg/Kg	☼	05/27/21 08:00	06/02/21 12:54	4
Iron	ND		23	13	mg/Kg	☼	05/27/21 08:00	06/02/21 12:54	4
Manganese	17		3.5	0.14	mg/Kg	☼	05/27/21 08:00	06/02/21 12:54	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.7	0.45	mg/Kg	☼	05/28/21 08:00	06/02/21 14:47	3
Boron	ND		35	35	mg/Kg	☼	05/28/21 08:00	06/02/21 14:47	3
Cobalt	ND		8.7	0.22	mg/Kg	☼	05/28/21 08:00	06/02/21 14:47	3
Lithium	ND		8.7	0.52	mg/Kg	☼	05/28/21 08:00	06/02/21 14:47	3
Molybdenum	ND		6.9	0.28	mg/Kg	☼	05/28/21 08:00	06/02/21 14:47	3
Iron	ND		17	10	mg/Kg	☼	05/28/21 08:00	06/02/21 14:47	3
Manganese	8.1		2.6	0.97	mg/Kg	☼	05/28/21 08:00	06/02/21 14:47	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.59		0.58	0.15	mg/Kg	☼	06/01/21 08:00	06/02/21 16:39	1
Boron	ND		12	12	mg/Kg	☼	06/01/21 08:00	06/02/21 16:39	1
Cobalt	2.4	J	2.9	0.052	mg/Kg	☼	06/01/21 08:00	06/02/21 16:39	1
Lithium	0.17	J	2.9	0.17	mg/Kg	☼	06/01/21 08:00	06/02/21 16:39	1
Molybdenum	0.16	J	2.3	0.095	mg/Kg	☼	06/01/21 08:00	06/02/21 16:39	1
Iron	580		5.8	3.4	mg/Kg	☼	06/01/21 08:00	06/02/21 16:39	1
Manganese	340	B **	0.87	0.031	mg/Kg	☼	06/01/21 08:00	06/02/21 16:39	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.6	B	0.58	0.25	mg/Kg	☼	06/02/21 08:00	06/05/21 12:20	1
Boron	ND		12	12	mg/Kg	☼	06/02/21 08:00	06/05/21 12:20	1
Cobalt	1.9	J	2.9	0.061	mg/Kg	☼	06/02/21 08:00	06/05/21 12:20	1
Lithium	2.9		2.9	0.17	mg/Kg	☼	06/02/21 08:00	06/05/21 12:20	1
Molybdenum	0.17	J	2.3	0.095	mg/Kg	☼	06/02/21 08:00	06/05/21 12:20	1
Iron	6400		5.8	3.4	mg/Kg	☼	06/02/21 08:00	06/05/21 12:20	1
Manganese	130		0.87	0.15	mg/Kg	☼	06/02/21 08:00	06/05/21 12:20	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		8.7	2.2	mg/Kg	☼	06/04/21 08:00	06/05/21 14:14	5
Boron	ND		170	170	mg/Kg	☼	06/04/21 08:00	06/05/21 14:14	5
Cobalt	ND	*1	43	0.69	mg/Kg	☼	06/04/21 08:00	06/05/21 14:14	5
Lithium	8.9	J B **	43	2.5	mg/Kg	☼	06/04/21 08:00	06/05/21 14:14	5
Molybdenum	ND		35	1.4	mg/Kg	☼	06/04/21 08:00	06/05/21 14:14	5
Iron	160	B	87	51	mg/Kg	☼	06/04/21 08:00	06/05/21 14:14	5
Manganese	ND	*1	13	2.1	mg/Kg	☼	06/04/21 08:00	06/05/21 14:14	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5		0.58	0.17	mg/Kg	☼	06/04/21 08:00	06/05/21 16:07	1

Eurofins Knoxville

Client Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: 401B-(16-20)

Lab Sample ID: 140-23157-2

Date Collected: 05/17/21 10:15

Matrix: Solid

Date Received: 05/19/21 10:15

Percent Solids: 86.5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Boron	ND		12	12	mg/Kg	✳	06/04/21 08:00	06/05/21 16:07	1
Cobalt	0.85	J	2.9	0.053	mg/Kg	✳	06/04/21 08:00	06/05/21 16:07	1
Lithium	4.5	B	2.9	0.17	mg/Kg	✳	06/04/21 08:00	06/05/21 16:07	1
Molybdenum	ND		2.3	0.11	mg/Kg	✳	06/04/21 08:00	06/05/21 16:07	1
Iron	5100		5.8	3.4	mg/Kg	✳	06/04/21 08:00	06/05/21 16:07	1
Manganese	29		0.87	0.29	mg/Kg	✳	06/04/21 08:00	06/05/21 16:07	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.9	B	1.2	0.30	mg/Kg	✳	06/07/21 08:00	06/09/21 14:44	2
Cobalt	0.061	J	2.9	0.030	mg/Kg	✳	06/07/21 08:00	06/09/21 13:23	1
Lithium	9.2		2.9	0.17	mg/Kg	✳	06/07/21 08:00	06/09/21 13:23	1
Molybdenum	ND		2.3	0.095	mg/Kg	✳	06/07/21 08:00	06/09/21 13:23	1
Iron	3000		5.8	4.7	mg/Kg	✳	06/07/21 08:00	06/09/21 13:23	1
Manganese	32		0.87	0.13	mg/Kg	✳	06/07/21 08:00	06/09/21 13:23	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.6		0.50	0.13	mg/Kg			06/13/21 11:52	1
Cobalt	5.1		2.5	0.023	mg/Kg			06/13/21 11:52	1
Lithium	26		2.5	0.15	mg/Kg			06/13/21 11:52	1
Molybdenum	0.34	J	2.0	0.082	mg/Kg			06/13/21 11:52	1
Iron	15000		5.0	4.1	mg/Kg			06/13/21 11:52	1
Manganese	550		0.75	0.052	mg/Kg			06/13/21 11:52	1

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.4	B	0.58	0.15	mg/Kg	✳	05/27/21 08:00	06/10/21 13:13	1
Cobalt	7.7		5.8	0.060	mg/Kg	✳	05/27/21 08:00	06/10/21 14:52	2
Lithium	18		2.9	0.17	mg/Kg	✳	05/27/21 08:00	06/10/21 13:13	1
Molybdenum	0.52	J	2.3	0.095	mg/Kg	✳	05/27/21 08:00	06/10/21 13:13	1
Iron	16000		5.8	4.7	mg/Kg	✳	05/27/21 08:00	06/10/21 13:13	1
Manganese	920	B	0.87	0.13	mg/Kg	✳	05/27/21 08:00	06/10/21 13:13	1

Client Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: 270A-(12-16)

Lab Sample ID: 140-23157-3

Date Collected: 05/17/21 10:30

Matrix: Solid

Date Received: 05/19/21 10:15

Percent Solids: 85.8

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		2.3	0.61	mg/Kg	☼	05/27/21 08:00	06/02/21 12:59	4
Boron	ND		47	47	mg/Kg	☼	05/27/21 08:00	06/02/21 12:59	4
Cobalt	ND		12	0.21	mg/Kg	☼	05/27/21 08:00	06/02/21 12:59	4
Lithium	ND		12	0.70	mg/Kg	☼	05/27/21 08:00	06/02/21 12:59	4
Molybdenum	ND		9.3	0.38	mg/Kg	☼	05/27/21 08:00	06/02/21 12:59	4

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 2

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.7	0.45	mg/Kg	☼	05/28/21 08:00	06/02/21 14:52	3
Boron	ND		35	35	mg/Kg	☼	05/28/21 08:00	06/02/21 14:52	3
Cobalt	ND		8.7	0.22	mg/Kg	☼	05/28/21 08:00	06/02/21 14:52	3
Lithium	ND		8.7	0.52	mg/Kg	☼	05/28/21 08:00	06/02/21 14:52	3
Molybdenum	ND		7.0	0.29	mg/Kg	☼	05/28/21 08:00	06/02/21 14:52	3

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 3

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.0		0.58	0.15	mg/Kg	☼	06/01/21 08:00	06/02/21 16:44	1
Boron	ND		12	12	mg/Kg	☼	06/01/21 08:00	06/02/21 16:44	1
Cobalt	4.3		2.9	0.052	mg/Kg	☼	06/01/21 08:00	06/02/21 16:44	1
Lithium	0.35	J	2.9	0.17	mg/Kg	☼	06/01/21 08:00	06/02/21 16:44	1
Molybdenum	0.26	J	2.3	0.096	mg/Kg	☼	06/01/21 08:00	06/02/21 16:44	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 4

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.0	B	0.58	0.26	mg/Kg	☼	06/02/21 08:00	06/05/21 12:25	1
Boron	ND		12	12	mg/Kg	☼	06/02/21 08:00	06/05/21 12:25	1
Cobalt	2.8	J	2.9	0.062	mg/Kg	☼	06/02/21 08:00	06/05/21 12:25	1
Lithium	2.4	J	2.9	0.17	mg/Kg	☼	06/02/21 08:00	06/05/21 12:25	1
Molybdenum	0.35	J	2.3	0.096	mg/Kg	☼	06/02/21 08:00	06/05/21 12:25	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 5

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		8.7	2.2	mg/Kg	☼	06/04/21 08:00	06/05/21 14:19	5
Boron	ND		170	170	mg/Kg	☼	06/04/21 08:00	06/05/21 14:19	5
Cobalt	ND	*1	44	0.70	mg/Kg	☼	06/04/21 08:00	06/05/21 14:19	5
Lithium	8.8	J B *+	44	2.6	mg/Kg	☼	06/04/21 08:00	06/05/21 14:19	5
Molybdenum	ND		35	1.5	mg/Kg	☼	06/04/21 08:00	06/05/21 14:19	5

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 6

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.2		0.58	0.17	mg/Kg	☼	06/04/21 08:00	06/05/21 16:12	1
Boron	ND		12	12	mg/Kg	☼	06/04/21 08:00	06/05/21 16:12	1
Cobalt	1.6	J	2.9	0.054	mg/Kg	☼	06/04/21 08:00	06/05/21 16:12	1
Lithium	4.6	B	2.9	0.17	mg/Kg	☼	06/04/21 08:00	06/05/21 16:12	1
Molybdenum	0.14	J	2.3	0.12	mg/Kg	☼	06/04/21 08:00	06/05/21 16:12	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.1	B	1.2	0.30	mg/Kg	☼	06/07/21 08:00	06/09/21 14:49	2
Cobalt	0.36	J	2.9	0.030	mg/Kg	☼	06/07/21 08:00	06/09/21 13:28	1
Lithium	9.8		2.9	0.17	mg/Kg	☼	06/07/21 08:00	06/09/21 13:28	1

Eurofins Knoxville

Client Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: 270A-(12-16)

Lab Sample ID: 140-23157-3

Date Collected: 05/17/21 10:30

Matrix: Solid

Date Received: 05/19/21 10:15

Percent Solids: 85.8

Method: SW846 6010B SEP - SEP Metals (ICP) - Step 7 (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Molybdenum	ND		2.3	0.096	mg/Kg	☼	06/07/21 08:00	06/09/21 13:28	1

Method: SW846 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	12		0.50	0.13	mg/Kg			06/13/21 11:52	1
Cobalt	9.1		2.5	0.023	mg/Kg			06/13/21 11:52	1
Lithium	26		2.5	0.15	mg/Kg			06/13/21 11:52	1
Molybdenum	0.75	J	2.0	0.082	mg/Kg			06/13/21 11:52	1

Method: SW846 6010B - SEP Metals (ICP) - Total

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	9.5	B	0.58	0.15	mg/Kg	☼	05/27/21 08:00	06/10/21 13:28	1
Cobalt	7.3		2.9	0.030	mg/Kg	☼	05/27/21 08:00	06/10/21 13:28	1
Lithium	15		2.9	0.17	mg/Kg	☼	05/27/21 08:00	06/10/21 13:28	1
Molybdenum	0.65	J	2.3	0.096	mg/Kg	☼	05/27/21 08:00	06/10/21 13:28	1

Default Detection Limits

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Method: 6010B SEP - SEP Metals (ICP) - Step 1

Prep: 3010A

SEP: Exchangeable

Analyte	RL	MDL	Units
Arsenic	0.50	0.13	mg/Kg
Boron	10	10	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.031	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 2

Prep: 3010A

SEP: Carbonate

Analyte	RL	MDL	Units
Arsenic	0.50	0.13	mg/Kg
Boron	10	10	mg/Kg
Cobalt	2.5	0.063	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.28	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 3

Prep: 3010A

SEP: Non-Crystalline

Analyte	RL	MDL	Units
Arsenic	0.50	0.13	mg/Kg
Boron	10	10	mg/Kg
Cobalt	2.5	0.045	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.027	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 4

Prep: 3010A

SEP: Metal Hydroxide

Analyte	RL	MDL	Units
Arsenic	0.50	0.22	mg/Kg
Boron	10	10	mg/Kg
Cobalt	2.5	0.053	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.13	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 5

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Arsenic	1.5	0.38	mg/Kg
Boron	30	30	mg/Kg

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Default Detection Limits

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Method: 6010B SEP - SEP Metals (ICP) - Step 5 (Continued)

Prep: 3010A

SEP: Organic-Bound

Analyte	RL	MDL	Units
Cobalt	7.5	0.12	mg/Kg
Iron	15	8.8	mg/Kg
Lithium	7.5	0.44	mg/Kg
Manganese	2.3	0.37	mg/Kg
Molybdenum	6.0	0.25	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 6

SEP: Acid/Sulfide

Analyte	RL	MDL	Units
Arsenic	0.50	0.15	mg/Kg
Boron	10	10	mg/Kg
Cobalt	2.5	0.046	mg/Kg
Iron	5.0	2.9	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.25	mg/Kg
Molybdenum	2.0	0.099	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Step 7

Prep: Residual

Analyte	RL	MDL	Units
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B SEP - SEP Metals (ICP) - Sum of Steps 1-7

Analyte	RL	MDL	Units
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.023	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.052	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

Method: 6010B - SEP Metals (ICP) - Total

Prep: Total

Analyte	RL	MDL	Units
Arsenic	0.50	0.13	mg/Kg
Cobalt	2.5	0.026	mg/Kg
Iron	5.0	4.1	mg/Kg
Lithium	2.5	0.15	mg/Kg
Manganese	0.75	0.11	mg/Kg
Molybdenum	2.0	0.082	mg/Kg

QC Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Method: 6010B - SEP Metals (ICP) - Total

Lab Sample ID: MB 140-50176/17-A
Matrix: Solid
Analysis Batch: 50709

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 50176

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	0.240	J	0.50	0.13	mg/Kg		05/27/21 08:00	06/10/21 11:30	1
Cobalt	ND		2.5	0.026	mg/Kg		05/27/21 08:00	06/10/21 11:30	1
Lithium	ND		2.5	0.15	mg/Kg		05/27/21 08:00	06/10/21 11:30	1
Molybdenum	ND		2.0	0.082	mg/Kg		05/27/21 08:00	06/10/21 11:30	1
Iron	ND		5.0	4.1	mg/Kg		05/27/21 08:00	06/10/21 11:30	1
Manganese	0.736	J	0.75	0.11	mg/Kg		05/27/21 08:00	06/10/21 11:30	1

Lab Sample ID: LCS 140-50176/18-A
Matrix: Solid
Analysis Batch: 50709

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 50176

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cobalt	5.00	5.11		mg/Kg		102	80 - 125
Lithium	5.00	4.95		mg/Kg		99	80 - 120
Molybdenum	25.0	25.7		mg/Kg		103	80 - 125
Iron	50.0	53.9		mg/Kg		108	80 - 120
Manganese	5.00	5.26		mg/Kg		105	80 - 120

Lab Sample ID: LCSD 140-50176/19-A
Matrix: Solid
Analysis Batch: 50709

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 50176

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	
								RPD	Limit
Arsenic	5.00	5.02		mg/Kg		100	80 - 120	2	30
Cobalt	5.00	5.01		mg/Kg		100	80 - 125	2	30
Lithium	5.00	4.86		mg/Kg		97	80 - 120	2	30
Molybdenum	25.0	25.2		mg/Kg		101	80 - 125	2	30
Iron	50.0	56.3		mg/Kg		113	80 - 120	4	30
Manganese	5.00	5.29		mg/Kg		106	80 - 120	1	30

Method: 6010B SEP - SEP Metals (ICP)

Lab Sample ID: MB 140-50177/16-B ^4
Matrix: Solid
Analysis Batch: 50418

Client Sample ID: Method Blank
Prep Type: Step 1
Prep Batch: 50219

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		2.0	0.52	mg/Kg		05/27/21 08:00	06/02/21 11:27	4
Boron	ND		40	40	mg/Kg		05/27/21 08:00	06/02/21 11:27	4
Cobalt	ND		10	0.18	mg/Kg		05/27/21 08:00	06/02/21 11:27	4
Lithium	ND		10	0.60	mg/Kg		05/27/21 08:00	06/02/21 11:27	4
Molybdenum	ND		8.0	0.33	mg/Kg		05/27/21 08:00	06/02/21 11:27	4
Iron	ND		20	12	mg/Kg		05/27/21 08:00	06/02/21 11:27	4
Manganese	ND		3.0	0.12	mg/Kg		05/27/21 08:00	06/02/21 11:27	4

QC Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-50177/17-B ^5
Matrix: Solid
Analysis Batch: 50418

Client Sample ID: Lab Control Sample
Prep Type: Step 1
Prep Batch: 50219

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	5.00	4.85		mg/Kg		97	80 - 120
Boron	50.0	ND		mg/Kg		92	
Cobalt	5.00	4.80	J	mg/Kg		96	80 - 120
Lithium	5.00	4.95	J	mg/Kg		99	80 - 120
Molybdenum	25.0	24.3		mg/Kg		97	80 - 120
Iron	50.0	51.1		mg/Kg		102	80 - 120
Manganese	5.00	4.87		mg/Kg		97	80 - 120

Lab Sample ID: LCSD 140-50177/18-B ^5
Matrix: Solid
Analysis Batch: 50418

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 1
Prep Batch: 50219

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	5.00	4.83		mg/Kg		97	80 - 120	0	30
Boron	50.0	ND		mg/Kg		96		5	
Cobalt	5.00	4.94	J	mg/Kg		99	80 - 120	3	30
Lithium	5.00	4.67	J	mg/Kg		93	80 - 120	6	30
Molybdenum	25.0	24.6		mg/Kg		99	80 - 120	1	30
Iron	50.0	49.6		mg/Kg		99	80 - 120	3	30
Manganese	5.00	5.01		mg/Kg		100	80 - 120	3	30

Lab Sample ID: MB 140-50220/16-B ^3
Matrix: Solid
Analysis Batch: 50418

Client Sample ID: Method Blank
Prep Type: Step 2
Prep Batch: 50254

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.5	0.39	mg/Kg		05/28/21 08:00	06/02/21 13:18	3
Boron	ND		30	30	mg/Kg		05/28/21 08:00	06/02/21 13:18	3
Cobalt	ND		7.5	0.19	mg/Kg		05/28/21 08:00	06/02/21 13:18	3
Lithium	ND		7.5	0.45	mg/Kg		05/28/21 08:00	06/02/21 13:18	3
Molybdenum	ND		6.0	0.25	mg/Kg		05/28/21 08:00	06/02/21 13:18	3
Iron	ND		15	8.7	mg/Kg		05/28/21 08:00	06/02/21 13:18	3
Manganese	ND		2.3	0.84	mg/Kg		05/28/21 08:00	06/02/21 13:18	3

Lab Sample ID: LCS 140-50220/17-B ^5
Matrix: Solid
Analysis Batch: 50418

Client Sample ID: Lab Control Sample
Prep Type: Step 2
Prep Batch: 50254

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	5.00	4.29		mg/Kg		86	60 - 120
Boron	50.0	ND		mg/Kg		92	
Cobalt	5.00	4.72	J	mg/Kg		94	80 - 120
Lithium	5.00	4.91	J	mg/Kg		98	80 - 120
Molybdenum	25.0	20.8		mg/Kg		83	70 - 120
Iron	50.0	ND		mg/Kg		7	
Manganese	5.00	4.83		mg/Kg		97	80 - 120

QC Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-50220/18-B ^5
Matrix: Solid
Analysis Batch: 50418

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 2
Prep Batch: 50254

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	5.00	3.95		mg/Kg		79	60 - 120	8	30
Boron	50.0	ND		mg/Kg		94		2	
Cobalt	5.00	4.71	J	mg/Kg		94	80 - 120	0	30
Lithium	5.00	4.53	J	mg/Kg		91	80 - 120	8	30
Molybdenum	25.0	21.1		mg/Kg		84	70 - 120	2	30
Iron	50.0	ND		mg/Kg		21		97	
Manganese	5.00	4.88		mg/Kg		98	80 - 120	1	30

Lab Sample ID: MB 140-50257/16-B
Matrix: Solid
Analysis Batch: 50418

Client Sample ID: Method Blank
Prep Type: Step 3
Prep Batch: 50291

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.50	0.13	mg/Kg		06/01/21 08:00	06/02/21 15:12	1
Boron	ND		10	10	mg/Kg		06/01/21 08:00	06/02/21 15:12	1
Cobalt	ND		2.5	0.045	mg/Kg		06/01/21 08:00	06/02/21 15:12	1
Lithium	ND		2.5	0.15	mg/Kg		06/01/21 08:00	06/02/21 15:12	1
Molybdenum	ND		2.0	0.082	mg/Kg		06/01/21 08:00	06/02/21 15:12	1
Iron	ND		5.0	2.9	mg/Kg		06/01/21 08:00	06/02/21 15:12	1
Manganese	2.11		0.75	0.027	mg/Kg		06/01/21 08:00	06/02/21 15:12	1

Lab Sample ID: LCS 140-50257/17-B
Matrix: Solid
Analysis Batch: 50418

Client Sample ID: Lab Control Sample
Prep Type: Step 3
Prep Batch: 50291

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	5.00	4.85		mg/Kg		97	80 - 120
Boron	50.0	49.3		mg/Kg		99	
Cobalt	5.00	5.10		mg/Kg		102	80 - 120
Lithium	5.00	4.89		mg/Kg		98	80 - 120
Molybdenum	25.0	25.3		mg/Kg		101	80 - 120
Iron	50.0	51.9		mg/Kg		104	80 - 120
Manganese	5.00	6.35	*+	mg/Kg		127	80 - 120

Lab Sample ID: LCSD 140-50257/18-B
Matrix: Solid
Analysis Batch: 50418

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 3
Prep Batch: 50291

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	5.00	4.91		mg/Kg		98	80 - 120	1	30
Boron	50.0	49.7		mg/Kg		99		1	
Cobalt	5.00	5.18		mg/Kg		104	80 - 120	2	30
Lithium	5.00	4.93		mg/Kg		99	80 - 120	1	30
Molybdenum	25.0	25.5		mg/Kg		102	80 - 120	1	30
Iron	50.0	52.3		mg/Kg		105	80 - 120	1	30
Manganese	5.00	6.44	*+	mg/Kg		129	80 - 120	1	30

QC Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: MB 140-50292/16-B
Matrix: Solid
Analysis Batch: 50529

Client Sample ID: Method Blank
Prep Type: Step 4
Prep Batch: 50364

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	0.259	J	0.50	0.22	mg/Kg		06/02/21 08:00	06/05/21 10:52	1
Boron	ND		10	10	mg/Kg		06/02/21 08:00	06/05/21 10:52	1
Cobalt	ND		2.5	0.053	mg/Kg		06/02/21 08:00	06/05/21 10:52	1
Lithium	ND		2.5	0.15	mg/Kg		06/02/21 08:00	06/05/21 10:52	1
Molybdenum	ND		2.0	0.082	mg/Kg		06/02/21 08:00	06/05/21 10:52	1
Iron	ND		5.0	2.9	mg/Kg		06/02/21 08:00	06/05/21 10:52	1
Manganese	ND		0.75	0.13	mg/Kg		06/02/21 08:00	06/05/21 10:52	1

Lab Sample ID: LCS 140-50292/17-B
Matrix: Solid
Analysis Batch: 50529

Client Sample ID: Lab Control Sample
Prep Type: Step 4
Prep Batch: 50364

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec	
							Limits	
Arsenic	5.00	5.39		mg/Kg		108	80 - 130	
Boron	50.0	50.9		mg/Kg		102		
Cobalt	5.00	5.15		mg/Kg		103	80 - 120	
Lithium	5.00	5.22		mg/Kg		104	80 - 120	
Molybdenum	25.0	26.3		mg/Kg		105	80 - 120	
Iron	50.0	52.6		mg/Kg		105	80 - 120	
Manganese	5.00	5.29		mg/Kg		106	80 - 120	

Lab Sample ID: LCSD 140-50292/18-B
Matrix: Solid
Analysis Batch: 50529

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 4
Prep Batch: 50364

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	
							Limits		RPD	Limit
Arsenic	5.00	5.27		mg/Kg		105	80 - 130	2	30	
Boron	50.0	49.8		mg/Kg		100		2		
Cobalt	5.00	5.02		mg/Kg		100	80 - 120	3	30	
Lithium	5.00	5.08		mg/Kg		102	80 - 120	3	30	
Molybdenum	25.0	25.7		mg/Kg		103	80 - 120	2	30	
Iron	50.0	51.3		mg/Kg		103	80 - 120	2	30	
Manganese	5.00	5.16		mg/Kg		103	80 - 120	2	30	

Lab Sample ID: MB 140-50371/16-B ^5
Matrix: Solid
Analysis Batch: 50529

Client Sample ID: Method Blank
Prep Type: Step 5
Prep Batch: 50451

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		7.5	1.9	mg/Kg		06/04/21 08:00	06/05/21 12:44	5
Boron	ND		150	150	mg/Kg		06/04/21 08:00	06/05/21 12:44	5
Cobalt	ND		38	0.60	mg/Kg		06/04/21 08:00	06/05/21 12:44	5
Lithium	8.12	J	38	2.2	mg/Kg		06/04/21 08:00	06/05/21 12:44	5
Molybdenum	ND		30	1.3	mg/Kg		06/04/21 08:00	06/05/21 12:44	5
Iron	333		75	44	mg/Kg		06/04/21 08:00	06/05/21 12:44	5
Manganese	ND		11	1.9	mg/Kg		06/04/21 08:00	06/05/21 12:44	5

QC Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCS 140-50371/17-B ^5
Matrix: Solid
Analysis Batch: 50529

Client Sample ID: Lab Control Sample
Prep Type: Step 5
Prep Batch: 50451

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	15.0	11.3		mg/Kg		76	60 - 100
Boron	150	159		mg/Kg		106	
Cobalt	15.0	0.720	J	mg/Kg		5	1 - 60
Lithium	15.0	23.9	J *+	mg/Kg		159	80 - 150
Molybdenum	75.0	54.0		mg/Kg		72	60 - 100
Iron	150	87.9		mg/Kg		59	
Manganese	15.0	4.04	J	mg/Kg		27	1 - 60

Lab Sample ID: LCSD 140-50371/18-B ^5
Matrix: Solid
Analysis Batch: 50529

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 5
Prep Batch: 50451

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	15.0	12.3		mg/Kg		82	60 - 100	8	30
Boron	150	162		mg/Kg		108		1	
Cobalt	15.0	1.05	J *1	mg/Kg		7	1 - 60	37	30
Lithium	15.0	25.3	J *+	mg/Kg		169	80 - 150	6	30
Molybdenum	75.0	54.3		mg/Kg		72	60 - 100	1	30
Iron	150	ND		mg/Kg		4		174	
Manganese	15.0	ND	*1	mg/Kg		8	1 - 60	108	30

Lab Sample ID: MB 140-50452/16-A
Matrix: Solid
Analysis Batch: 50529

Client Sample ID: Method Blank
Prep Type: Step 6
Prep Batch: 50452

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.50	0.15	mg/Kg		06/04/21 08:00	06/05/21 14:39	1
Boron	ND		10	10	mg/Kg		06/04/21 08:00	06/05/21 14:39	1
Cobalt	ND		2.5	0.046	mg/Kg		06/04/21 08:00	06/05/21 14:39	1
Lithium	0.159	J	2.5	0.15	mg/Kg		06/04/21 08:00	06/05/21 14:39	1
Molybdenum	ND		2.0	0.099	mg/Kg		06/04/21 08:00	06/05/21 14:39	1
Iron	ND		5.0	2.9	mg/Kg		06/04/21 08:00	06/05/21 14:39	1
Manganese	ND		0.75	0.25	mg/Kg		06/04/21 08:00	06/05/21 14:39	1

Lab Sample ID: LCS 140-50452/17-A
Matrix: Solid
Analysis Batch: 50529

Client Sample ID: Lab Control Sample
Prep Type: Step 6
Prep Batch: 50452

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	5.00	4.92		mg/Kg		98	80 - 120
Boron	50.0	50.6		mg/Kg		101	
Cobalt	5.00	4.94		mg/Kg		99	80 - 120
Lithium	5.00	4.88		mg/Kg		98	80 - 120
Molybdenum	25.0	24.8		mg/Kg		99	80 - 120
Iron	50.0	48.8		mg/Kg		98	80 - 120
Manganese	5.00	4.94		mg/Kg		99	80 - 120

QC Sample Results

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Method: 6010B SEP - SEP Metals (ICP) (Continued)

Lab Sample ID: LCSD 140-50452/18-A
Matrix: Solid
Analysis Batch: 50529

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 6
Prep Batch: 50452

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Arsenic	5.00	4.85		mg/Kg		97	80 - 120	2	30	
Boron	50.0	49.8		mg/Kg		100		2		
Cobalt	5.00	4.88		mg/Kg		98	80 - 120	1	30	
Lithium	5.00	4.92		mg/Kg		98	80 - 120	1	30	
Molybdenum	25.0	24.5		mg/Kg		98	80 - 120	1	30	
Iron	50.0	48.0		mg/Kg		96	80 - 120	2	30	
Manganese	5.00	4.85		mg/Kg		97	80 - 120	2	30	

Lab Sample ID: MB 140-50497/16-A
Matrix: Solid
Analysis Batch: 50662

Client Sample ID: Method Blank
Prep Type: Step 7
Prep Batch: 50497

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	0.213	J	0.50	0.13	mg/Kg		06/07/21 08:00	06/09/21 11:46	1
Cobalt	ND		2.5	0.026	mg/Kg		06/07/21 08:00	06/09/21 11:46	1
Lithium	ND		2.5	0.15	mg/Kg		06/07/21 08:00	06/09/21 11:46	1
Molybdenum	ND		2.0	0.082	mg/Kg		06/07/21 08:00	06/09/21 11:46	1
Iron	ND		5.0	4.1	mg/Kg		06/07/21 08:00	06/09/21 11:46	1
Manganese	ND		0.75	0.11	mg/Kg		06/07/21 08:00	06/09/21 11:46	1

Lab Sample ID: LCS 140-50497/17-A
Matrix: Solid
Analysis Batch: 50662

Client Sample ID: Lab Control Sample
Prep Type: Step 7
Prep Batch: 50497

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec	
							Limits	RPD
Arsenic	5.00	5.16		mg/Kg		103	80 - 120	
Cobalt	5.00	5.17		mg/Kg		103	80 - 125	
Lithium	5.00	4.98		mg/Kg		100	80 - 120	
Molybdenum	25.0	26.1		mg/Kg		104	80 - 125	
Iron	50.0	53.1		mg/Kg		106	80 - 120	
Manganese	5.00	5.32		mg/Kg		106	80 - 120	

Lab Sample ID: LCSD 140-50497/18-A
Matrix: Solid
Analysis Batch: 50662

Client Sample ID: Lab Control Sample Dup
Prep Type: Step 7
Prep Batch: 50497

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec		RPD	Limit
							Limits	RPD		
Arsenic	5.00	5.12		mg/Kg		102	80 - 120	1	30	
Cobalt	5.00	5.13		mg/Kg		103	80 - 125	1	30	
Lithium	5.00	4.89		mg/Kg		98	80 - 120	2	30	
Molybdenum	25.0	25.8		mg/Kg		103	80 - 125	1	30	
Iron	50.0	52.5		mg/Kg		105	80 - 120	1	30	
Manganese	5.00	5.28		mg/Kg		106	80 - 120	1	30	

QC Association Summary

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Metals

Prep Batch: 50176

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Total/NA	Solid	Total	
140-23157-2	401B-(16-20)	Total/NA	Solid	Total	
140-23157-3	270A-(12-16)	Total/NA	Solid	Total	
MB 140-50176/17-A	Method Blank	Total/NA	Solid	Total	
LCS 140-50176/18-A	Lab Control Sample	Total/NA	Solid	Total	
LCSD 140-50176/19-A	Lab Control Sample Dup	Total/NA	Solid	Total	

SEP Batch: 50177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 1	Solid	Exchangeable	
140-23157-2	401B-(16-20)	Step 1	Solid	Exchangeable	
140-23157-3	270A-(12-16)	Step 1	Solid	Exchangeable	
MB 140-50177/16-B ^4	Method Blank	Step 1	Solid	Exchangeable	
LCS 140-50177/17-B ^5	Lab Control Sample	Step 1	Solid	Exchangeable	
LCSD 140-50177/18-B ^5	Lab Control Sample Dup	Step 1	Solid	Exchangeable	

Prep Batch: 50219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 1	Solid	3010A	50177
140-23157-2	401B-(16-20)	Step 1	Solid	3010A	50177
140-23157-3	270A-(12-16)	Step 1	Solid	3010A	50177
MB 140-50177/16-B ^4	Method Blank	Step 1	Solid	3010A	50177
LCS 140-50177/17-B ^5	Lab Control Sample	Step 1	Solid	3010A	50177
LCSD 140-50177/18-B ^5	Lab Control Sample Dup	Step 1	Solid	3010A	50177

SEP Batch: 50220

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 2	Solid	Carbonate	
140-23157-2	401B-(16-20)	Step 2	Solid	Carbonate	
140-23157-3	270A-(12-16)	Step 2	Solid	Carbonate	
MB 140-50220/16-B ^3	Method Blank	Step 2	Solid	Carbonate	
LCS 140-50220/17-B ^5	Lab Control Sample	Step 2	Solid	Carbonate	
LCSD 140-50220/18-B ^5	Lab Control Sample Dup	Step 2	Solid	Carbonate	

Prep Batch: 50254

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 2	Solid	3010A	50220
140-23157-2	401B-(16-20)	Step 2	Solid	3010A	50220
140-23157-3	270A-(12-16)	Step 2	Solid	3010A	50220
MB 140-50220/16-B ^3	Method Blank	Step 2	Solid	3010A	50220
LCS 140-50220/17-B ^5	Lab Control Sample	Step 2	Solid	3010A	50220
LCSD 140-50220/18-B ^5	Lab Control Sample Dup	Step 2	Solid	3010A	50220

SEP Batch: 50257

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 3	Solid	Non-Crystalline	
140-23157-2	401B-(16-20)	Step 3	Solid	Non-Crystalline	
140-23157-3	270A-(12-16)	Step 3	Solid	Non-Crystalline	
MB 140-50257/16-B	Method Blank	Step 3	Solid	Non-Crystalline	
LCS 140-50257/17-B	Lab Control Sample	Step 3	Solid	Non-Crystalline	
LCSD 140-50257/18-B	Lab Control Sample Dup	Step 3	Solid	Non-Crystalline	

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QC Association Summary

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Metals

Prep Batch: 50291

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 3	Solid	3010A	50257
140-23157-2	401B-(16-20)	Step 3	Solid	3010A	50257
140-23157-3	270A-(12-16)	Step 3	Solid	3010A	50257
MB 140-50257/16-B	Method Blank	Step 3	Solid	3010A	50257
LCS 140-50257/17-B	Lab Control Sample	Step 3	Solid	3010A	50257
LCSD 140-50257/18-B	Lab Control Sample Dup	Step 3	Solid	3010A	50257

SEP Batch: 50292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 4	Solid	Metal Hydroxide	
140-23157-2	401B-(16-20)	Step 4	Solid	Metal Hydroxide	
140-23157-3	270A-(12-16)	Step 4	Solid	Metal Hydroxide	
MB 140-50292/16-B	Method Blank	Step 4	Solid	Metal Hydroxide	
LCS 140-50292/17-B	Lab Control Sample	Step 4	Solid	Metal Hydroxide	
LCSD 140-50292/18-B	Lab Control Sample Dup	Step 4	Solid	Metal Hydroxide	

Prep Batch: 50364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 4	Solid	3010A	50292
140-23157-2	401B-(16-20)	Step 4	Solid	3010A	50292
140-23157-3	270A-(12-16)	Step 4	Solid	3010A	50292
MB 140-50292/16-B	Method Blank	Step 4	Solid	3010A	50292
LCS 140-50292/17-B	Lab Control Sample	Step 4	Solid	3010A	50292
LCSD 140-50292/18-B	Lab Control Sample Dup	Step 4	Solid	3010A	50292

SEP Batch: 50371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 5	Solid	Organic-Bound	
140-23157-2	401B-(16-20)	Step 5	Solid	Organic-Bound	
140-23157-3	270A-(12-16)	Step 5	Solid	Organic-Bound	
MB 140-50371/16-B ^5	Method Blank	Step 5	Solid	Organic-Bound	
LCS 140-50371/17-B ^5	Lab Control Sample	Step 5	Solid	Organic-Bound	
LCSD 140-50371/18-B ^5	Lab Control Sample Dup	Step 5	Solid	Organic-Bound	

Analysis Batch: 50418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 1	Solid	6010B SEP	50219
140-23157-1	G1001-(6-11)	Step 2	Solid	6010B SEP	50254
140-23157-1	G1001-(6-11)	Step 3	Solid	6010B SEP	50291
140-23157-2	401B-(16-20)	Step 1	Solid	6010B SEP	50219
140-23157-2	401B-(16-20)	Step 2	Solid	6010B SEP	50254
140-23157-2	401B-(16-20)	Step 3	Solid	6010B SEP	50291
140-23157-3	270A-(12-16)	Step 1	Solid	6010B SEP	50219
140-23157-3	270A-(12-16)	Step 2	Solid	6010B SEP	50254
140-23157-3	270A-(12-16)	Step 3	Solid	6010B SEP	50291
MB 140-50177/16-B ^4	Method Blank	Step 1	Solid	6010B SEP	50219
MB 140-50220/16-B ^3	Method Blank	Step 2	Solid	6010B SEP	50254
MB 140-50257/16-B	Method Blank	Step 3	Solid	6010B SEP	50291
LCS 140-50177/17-B ^5	Lab Control Sample	Step 1	Solid	6010B SEP	50219
LCS 140-50220/17-B ^5	Lab Control Sample	Step 2	Solid	6010B SEP	50254
LCS 140-50257/17-B	Lab Control Sample	Step 3	Solid	6010B SEP	50291

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QC Association Summary

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Metals (Continued)

Analysis Batch: 50418 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCSD 140-50177/18-B ^5	Lab Control Sample Dup	Step 1	Solid	6010B SEP	50219
LCSD 140-50220/18-B ^5	Lab Control Sample Dup	Step 2	Solid	6010B SEP	50254
LCSD 140-50257/18-B	Lab Control Sample Dup	Step 3	Solid	6010B SEP	50291

Prep Batch: 50451

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 5	Solid	3010A	50371
140-23157-2	401B-(16-20)	Step 5	Solid	3010A	50371
140-23157-3	270A-(12-16)	Step 5	Solid	3010A	50371
MB 140-50371/16-B ^5	Method Blank	Step 5	Solid	3010A	50371
LCS 140-50371/17-B ^5	Lab Control Sample	Step 5	Solid	3010A	50371
LCSD 140-50371/18-B ^5	Lab Control Sample Dup	Step 5	Solid	3010A	50371

SEP Batch: 50452

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 6	Solid	Acid/Sulfide	
140-23157-2	401B-(16-20)	Step 6	Solid	Acid/Sulfide	
140-23157-3	270A-(12-16)	Step 6	Solid	Acid/Sulfide	
MB 140-50452/16-A	Method Blank	Step 6	Solid	Acid/Sulfide	
LCS 140-50452/17-A	Lab Control Sample	Step 6	Solid	Acid/Sulfide	
LCSD 140-50452/18-A	Lab Control Sample Dup	Step 6	Solid	Acid/Sulfide	

Prep Batch: 50497

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 7	Solid	Residual	
140-23157-2	401B-(16-20)	Step 7	Solid	Residual	
140-23157-3	270A-(12-16)	Step 7	Solid	Residual	
MB 140-50497/16-A	Method Blank	Step 7	Solid	Residual	
LCS 140-50497/17-A	Lab Control Sample	Step 7	Solid	Residual	
LCSD 140-50497/18-A	Lab Control Sample Dup	Step 7	Solid	Residual	

Analysis Batch: 50529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 4	Solid	6010B SEP	50364
140-23157-1	G1001-(6-11)	Step 5	Solid	6010B SEP	50451
140-23157-1	G1001-(6-11)	Step 6	Solid	6010B SEP	50452
140-23157-2	401B-(16-20)	Step 4	Solid	6010B SEP	50364
140-23157-2	401B-(16-20)	Step 5	Solid	6010B SEP	50451
140-23157-2	401B-(16-20)	Step 6	Solid	6010B SEP	50452
140-23157-3	270A-(12-16)	Step 4	Solid	6010B SEP	50364
140-23157-3	270A-(12-16)	Step 5	Solid	6010B SEP	50451
140-23157-3	270A-(12-16)	Step 6	Solid	6010B SEP	50452
MB 140-50292/16-B	Method Blank	Step 4	Solid	6010B SEP	50364
MB 140-50371/16-B ^5	Method Blank	Step 5	Solid	6010B SEP	50451
MB 140-50452/16-A	Method Blank	Step 6	Solid	6010B SEP	50452
LCS 140-50292/17-B	Lab Control Sample	Step 4	Solid	6010B SEP	50364
LCS 140-50371/17-B ^5	Lab Control Sample	Step 5	Solid	6010B SEP	50451
LCS 140-50452/17-A	Lab Control Sample	Step 6	Solid	6010B SEP	50452
LCSD 140-50292/18-B	Lab Control Sample Dup	Step 4	Solid	6010B SEP	50364
LCSD 140-50371/18-B ^5	Lab Control Sample Dup	Step 5	Solid	6010B SEP	50451
LCSD 140-50452/18-A	Lab Control Sample Dup	Step 6	Solid	6010B SEP	50452

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QC Association Summary

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Metals

Analysis Batch: 50662

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Step 7	Solid	6010B SEP	50497
140-23157-1	G1001-(6-11)	Step 7	Solid	6010B SEP	50497
140-23157-2	401B-(16-20)	Step 7	Solid	6010B SEP	50497
140-23157-2	401B-(16-20)	Step 7	Solid	6010B SEP	50497
140-23157-3	270A-(12-16)	Step 7	Solid	6010B SEP	50497
140-23157-3	270A-(12-16)	Step 7	Solid	6010B SEP	50497
MB 140-50497/16-A	Method Blank	Step 7	Solid	6010B SEP	50497
LCS 140-50497/17-A	Lab Control Sample	Step 7	Solid	6010B SEP	50497
LCSD 140-50497/18-A	Lab Control Sample Dup	Step 7	Solid	6010B SEP	50497

Analysis Batch: 50709

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Total/NA	Solid	6010B	50176
140-23157-1	G1001-(6-11)	Total/NA	Solid	6010B	50176
140-23157-2	401B-(16-20)	Total/NA	Solid	6010B	50176
140-23157-2	401B-(16-20)	Total/NA	Solid	6010B	50176
140-23157-3	270A-(12-16)	Total/NA	Solid	6010B	50176
MB 140-50176/17-A	Method Blank	Total/NA	Solid	6010B	50176
LCS 140-50176/18-A	Lab Control Sample	Total/NA	Solid	6010B	50176
LCSD 140-50176/19-A	Lab Control Sample Dup	Total/NA	Solid	6010B	50176

Analysis Batch: 50770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Sum of Steps 1-7	Solid	6010B SEP	
140-23157-2	401B-(16-20)	Sum of Steps 1-7	Solid	6010B SEP	
140-23157-3	270A-(12-16)	Sum of Steps 1-7	Solid	6010B SEP	

General Chemistry

Analysis Batch: 50469

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
140-23157-1	G1001-(6-11)	Total/NA	Solid	Moisture	
140-23157-2	401B-(16-20)	Total/NA	Solid	Moisture	
140-23157-3	270A-(12-16)	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: G1001-(6-11)

Lab Sample ID: 140-23157-1

Date Collected: 05/17/21 10:00

Matrix: Solid

Date Received: 05/19/21 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab	
Sum of Steps 1-7	Analysis	6010B SEP		1			50770	06/13/21 11:52	DKW	EET KNX	
		Instrument ID: NOEQUIP									
Total/NA	Analysis	Moisture		1			50469	06/04/21 07:47	BKD	EET KNX	
		Instrument ID: NOEQUIP									

Client Sample ID: G1001-(6-11)

Lab Sample ID: 140-23157-1

Date Collected: 05/17/21 10:00

Matrix: Solid

Date Received: 05/19/21 10:15

Percent Solids: 90.1

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab	
Total/NA	Prep	Total			1.000 g	50 mL	50176	05/27/21 08:00	JTB	EET KNX	
Total/NA	Analysis	6010B		1			50709	06/10/21 13:08	KNC	EET KNX	
		Instrument ID: DUO									
Total/NA	Prep	Total			1.000 g	50 mL	50176	05/27/21 08:00	JTB	EET KNX	
Total/NA	Analysis	6010B		2			50709	06/10/21 14:47	KNC	EET KNX	
		Instrument ID: DUO									
Step 1	SEP	Exchangeable			5.000 g	25 mL	50177	05/26/21 08:00	JTB	EET KNX	
Step 1	Prep	3010A			5 mL	50 mL	50219	05/27/21 08:00	KNC	EET KNX	
Step 1	Analysis	6010B SEP		4			50418	06/02/21 12:49	KNC	EET KNX	
		Instrument ID: DUO									
Step 2	SEP	Carbonate			5 g	25 mL	50220	05/27/21 08:00	JTB	EET KNX	
Step 2	Prep	3010A			5 mL	50 mL	50254	05/28/21 08:00	KNC	EET KNX	
Step 2	Analysis	6010B SEP		3			50418	06/02/21 14:42	KNC	EET KNX	
		Instrument ID: DUO									
Step 3	SEP	Non-Crystalline			5 g	25 mL	50257	05/28/21 08:00	JTB	EET KNX	
Step 3	Prep	3010A			5 mL	50 mL	50291	06/01/21 08:00	KNC	EET KNX	
Step 3	Analysis	6010B SEP		1			50418	06/02/21 16:34	KNC	EET KNX	
		Instrument ID: DUO									
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	50292	06/01/21 08:00	KNC	EET KNX	
Step 4	Prep	3010A			5 mL	50 mL	50364	06/02/21 08:00	KNC	EET KNX	
Step 4	Analysis	6010B SEP		1			50529	06/05/21 12:15	KNC	EET KNX	
		Instrument ID: DUO									
Step 5	SEP	Organic-Bound			5.000 g	75 mL	50371	06/02/21 08:00	KNC	EET KNX	
Step 5	Prep	3010A			5 mL	50 mL	50451	06/04/21 08:00	JTB	EET KNX	
Step 5	Analysis	6010B SEP		5			50529	06/05/21 14:09	KNC	EET KNX	
		Instrument ID: DUO									
Step 6	SEP	Acid/Sulfide			5 g	250 mL	50452	06/04/21 08:00	JTB	EET KNX	
Step 6	Analysis	6010B SEP		1			50529	06/05/21 16:02	KNC	EET KNX	
		Instrument ID: DUO									
Step 7	Prep	Residual			1 g	50 mL	50497	06/07/21 08:00	JTB	EET KNX	
Step 7	Analysis	6010B SEP		1			50662	06/09/21 13:18	KNC	EET KNX	
		Instrument ID: DUO									
Step 7	Prep	Residual			1 g	50 mL	50497	06/07/21 08:00	JTB	EET KNX	
Step 7	Analysis	6010B SEP		2			50662	06/09/21 14:39	KNC	EET KNX	
		Instrument ID: DUO									

Eurofins Knoxville

Lab Chronicle

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: 401B-(16-20)

Lab Sample ID: 140-23157-2

Date Collected: 05/17/21 10:15

Matrix: Solid

Date Received: 05/19/21 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			50770	06/13/21 11:52	DKW	EET KNX
		Instrument ID: NOEQUIP								
Total/NA	Analysis	Moisture		1			50469	06/04/21 07:47	BKD	EET KNX
		Instrument ID: NOEQUIP								

Client Sample ID: 401B-(16-20)

Lab Sample ID: 140-23157-2

Date Collected: 05/17/21 10:15

Matrix: Solid

Date Received: 05/19/21 10:15

Percent Solids: 86.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	50176	05/27/21 08:00	JTB	EET KNX
Total/NA	Analysis	6010B		1			50709	06/10/21 13:13	KNC	EET KNX
		Instrument ID: DUO								
Total/NA	Prep	Total			1.000 g	50 mL	50176	05/27/21 08:00	JTB	EET KNX
Total/NA	Analysis	6010B		2			50709	06/10/21 14:52	KNC	EET KNX
		Instrument ID: DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	50177	05/26/21 08:00	JTB	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	50219	05/27/21 08:00	KNC	EET KNX
Step 1	Analysis	6010B SEP		4			50418	06/02/21 12:54	KNC	EET KNX
		Instrument ID: DUO								
Step 2	SEP	Carbonate			5 g	25 mL	50220	05/27/21 08:00	JTB	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	50254	05/28/21 08:00	KNC	EET KNX
Step 2	Analysis	6010B SEP		3			50418	06/02/21 14:47	KNC	EET KNX
		Instrument ID: DUO								
Step 3	SEP	Non-Crystalline			5 g	25 mL	50257	05/28/21 08:00	JTB	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	50291	06/01/21 08:00	KNC	EET KNX
Step 3	Analysis	6010B SEP		1			50418	06/02/21 16:39	KNC	EET KNX
		Instrument ID: DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	50292	06/01/21 08:00	KNC	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	50364	06/02/21 08:00	KNC	EET KNX
Step 4	Analysis	6010B SEP		1			50529	06/05/21 12:20	KNC	EET KNX
		Instrument ID: DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	50371	06/02/21 08:00	KNC	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	50451	06/04/21 08:00	JTB	EET KNX
Step 5	Analysis	6010B SEP		5			50529	06/05/21 14:14	KNC	EET KNX
		Instrument ID: DUO								
Step 6	SEP	Acid/Sulfide			5 g	250 mL	50452	06/04/21 08:00	JTB	EET KNX
Step 6	Analysis	6010B SEP		1			50529	06/05/21 16:07	KNC	EET KNX
		Instrument ID: DUO								
Step 7	Prep	Residual			1 g	50 mL	50497	06/07/21 08:00	JTB	EET KNX
Step 7	Analysis	6010B SEP		1			50662	06/09/21 13:23	KNC	EET KNX
		Instrument ID: DUO								
Step 7	Prep	Residual			1 g	50 mL	50497	06/07/21 08:00	JTB	EET KNX
Step 7	Analysis	6010B SEP		2			50662	06/09/21 14:44	KNC	EET KNX
		Instrument ID: DUO								

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Lab Chronicle

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: 270A-(12-16)

Lab Sample ID: 140-23157-3

Date Collected: 05/17/21 10:30

Matrix: Solid

Date Received: 05/19/21 10:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Sum of Steps 1-7	Analysis	6010B SEP		1			50770	06/13/21 11:52	DKW	EET KNX
		Instrument ID: NOEQUIP								
Total/NA	Analysis	Moisture		1			50469	06/04/21 07:47	BKD	EET KNX
		Instrument ID: NOEQUIP								

Client Sample ID: 270A-(12-16)

Lab Sample ID: 140-23157-3

Date Collected: 05/17/21 10:30

Matrix: Solid

Date Received: 05/19/21 10:15

Percent Solids: 85.8

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	50176	05/27/21 08:00	JTB	EET KNX
Total/NA	Analysis	6010B		1			50709	06/10/21 13:28	KNC	EET KNX
		Instrument ID: DUO								
Step 1	SEP	Exchangeable			5.000 g	25 mL	50177	05/26/21 08:00	JTB	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	50219	05/27/21 08:00	KNC	EET KNX
Step 1	Analysis	6010B SEP		4			50418	06/02/21 12:59	KNC	EET KNX
		Instrument ID: DUO								
Step 2	SEP	Carbonate			5 g	25 mL	50220	05/27/21 08:00	JTB	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	50254	05/28/21 08:00	KNC	EET KNX
Step 2	Analysis	6010B SEP		3			50418	06/02/21 14:52	KNC	EET KNX
		Instrument ID: DUO								
Step 3	SEP	Non-Crystalline			5 g	25 mL	50257	05/28/21 08:00	JTB	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	50291	06/01/21 08:00	KNC	EET KNX
Step 3	Analysis	6010B SEP		1			50418	06/02/21 16:44	KNC	EET KNX
		Instrument ID: DUO								
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	50292	06/01/21 08:00	KNC	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	50364	06/02/21 08:00	KNC	EET KNX
Step 4	Analysis	6010B SEP		1			50529	06/05/21 12:25	KNC	EET KNX
		Instrument ID: DUO								
Step 5	SEP	Organic-Bound			5.000 g	75 mL	50371	06/02/21 08:00	KNC	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	50451	06/04/21 08:00	JTB	EET KNX
Step 5	Analysis	6010B SEP		5			50529	06/05/21 14:19	KNC	EET KNX
		Instrument ID: DUO								
Step 6	SEP	Acid/Sulfide			5 g	250 mL	50452	06/04/21 08:00	JTB	EET KNX
Step 6	Analysis	6010B SEP		1			50529	06/05/21 16:12	KNC	EET KNX
		Instrument ID: DUO								
Step 7	Prep	Residual			1 g	50 mL	50497	06/07/21 08:00	JTB	EET KNX
Step 7	Analysis	6010B SEP		1			50662	06/09/21 13:28	KNC	EET KNX
		Instrument ID: DUO								
Step 7	Prep	Residual			1 g	50 mL	50497	06/07/21 08:00	JTB	EET KNX
Step 7	Analysis	6010B SEP		2			50662	06/09/21 14:49	KNC	EET KNX
		Instrument ID: DUO								

Lab Chronicle

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: Method Blank

Lab Sample ID: MB 140-50176/17-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	50176	05/27/21 08:00	JTB	EET KNX
Total/NA	Analysis	6010B		1			50709	06/10/21 11:30	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-50177/16-B ^4

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	50177	05/26/21 08:00	JTB	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	50219	05/27/21 08:00	KNC	EET KNX
Step 1	Analysis	6010B SEP		4			50418	06/02/21 11:27	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-50220/16-B ^3

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5 g	25 mL	50220	05/27/21 08:00	JTB	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	50254	05/28/21 08:00	KNC	EET KNX
Step 2	Analysis	6010B SEP		3			50418	06/02/21 13:18	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-50257/16-B

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5 g	25 mL	50257	05/28/21 08:00	JTB	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	50291	06/01/21 08:00	KNC	EET KNX
Step 3	Analysis	6010B SEP		1			50418	06/02/21 15:12	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-50292/16-B

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	50292	06/01/21 08:00	KNC	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	50364	06/02/21 08:00	KNC	EET KNX
Step 4	Analysis	6010B SEP		1			50529	06/05/21 10:52	KNC	EET KNX
Instrument ID: DUO										

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Lab Chronicle

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: Method Blank

Lab Sample ID: MB 140-50371/16-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	50371	06/02/21 08:00	KNC	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	50451	06/04/21 08:00	JTB	EET KNX
Step 5	Analysis	6010B SEP		5			50529	06/05/21 12:44	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-50452/16-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5 g	250 mL	50452	06/04/21 08:00	JTB	EET KNX
Step 6	Analysis	6010B SEP		1			50529	06/05/21 14:39	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Method Blank

Lab Sample ID: MB 140-50497/16-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1 g	50 mL	50497	06/07/21 08:00	JTB	EET KNX
Step 7	Analysis	6010B SEP		1			50662	06/09/21 11:46	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-50176/18-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	50176	05/27/21 08:00	JTB	EET KNX
Total/NA	Analysis	6010B		1			50709	06/10/21 11:35	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-50177/17-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	50177	05/26/21 08:00	JTB	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	50219	05/27/21 08:00	KNC	EET KNX
Step 1	Analysis	6010B SEP		5			50418	06/02/21 17:24	KNC	EET KNX
Instrument ID: DUO										

Lab Chronicle

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-50220/17-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5 g	25 mL	50220	05/27/21 08:00	JTB	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	50254	05/28/21 08:00	KNC	EET KNX
Step 2	Analysis	6010B SEP		5			50418	06/02/21 13:23	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-50257/17-B

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5 g	25 mL	50257	05/28/21 08:00	JTB	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	50291	06/01/21 08:00	KNC	EET KNX
Step 3	Analysis	6010B SEP		1			50418	06/02/21 15:17	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-50292/17-B

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	50292	06/01/21 08:00	KNC	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	50364	06/02/21 08:00	KNC	EET KNX
Step 4	Analysis	6010B SEP		1			50529	06/05/21 10:57	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-50371/17-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	50371	06/02/21 08:00	KNC	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	50451	06/04/21 08:00	JTB	EET KNX
Step 5	Analysis	6010B SEP		5			50529	06/05/21 12:49	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-50452/17-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5 g	250 mL	50452	06/04/21 08:00	JTB	EET KNX
Step 6	Analysis	6010B SEP		1			50529	06/05/21 14:43	KNC	EET KNX
Instrument ID: DUO										

Lab Chronicle

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: Lab Control Sample

Lab Sample ID: LCS 140-50497/17-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1 g	50 mL	50497	06/07/21 08:00	JTB	EET KNX
Step 7	Analysis	6010B SEP		1			50662	06/09/21 11:51	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-50176/19-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Total			1.000 g	50 mL	50176	05/27/21 08:00	JTB	EET KNX
Total/NA	Analysis	6010B		1			50709	06/10/21 11:40	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-50177/18-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 1	SEP	Exchangeable			5.000 g	25 mL	50177	05/26/21 08:00	JTB	EET KNX
Step 1	Prep	3010A			5 mL	50 mL	50219	05/27/21 08:00	KNC	EET KNX
Step 1	Analysis	6010B SEP		5			50418	06/02/21 11:37	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-50220/18-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 2	SEP	Carbonate			5 g	25 mL	50220	05/27/21 08:00	JTB	EET KNX
Step 2	Prep	3010A			5 mL	50 mL	50254	05/28/21 08:00	KNC	EET KNX
Step 2	Analysis	6010B SEP		5			50418	06/02/21 13:28	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-50257/18-B

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 3	SEP	Non-Crystalline			5 g	25 mL	50257	05/28/21 08:00	JTB	EET KNX
Step 3	Prep	3010A			5 mL	50 mL	50291	06/01/21 08:00	KNC	EET KNX
Step 3	Analysis	6010B SEP		1			50418	06/02/21 15:21	KNC	EET KNX
Instrument ID: DUO										

Lab Chronicle

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-50292/18-B

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 4	SEP	Metal Hydroxide			5.000 g	25 mL	50292	06/01/21 08:00	KNC	EET KNX
Step 4	Prep	3010A			5 mL	50 mL	50364	06/02/21 08:00	KNC	EET KNX
Step 4	Analysis	6010B SEP		1			50529	06/05/21 11:02	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-50371/18-B ^5

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 5	SEP	Organic-Bound			5.000 g	75 mL	50371	06/02/21 08:00	KNC	EET KNX
Step 5	Prep	3010A			5 mL	50 mL	50451	06/04/21 08:00	JTB	EET KNX
Step 5	Analysis	6010B SEP		5			50529	06/05/21 12:54	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-50452/18-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 6	SEP	Acid/Sulfide			5 g	250 mL	50452	06/04/21 08:00	JTB	EET KNX
Step 6	Analysis	6010B SEP		1			50529	06/05/21 14:48	KNC	EET KNX
Instrument ID: DUO										

Client Sample ID: Lab Control Sample Dup

Lab Sample ID: LCSD 140-50497/18-A

Date Collected: N/A

Matrix: Solid

Date Received: N/A

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Step 7	Prep	Residual			1 g	50 mL	50497	06/07/21 08:00	JTB	EET KNX
Step 7	Analysis	6010B SEP		1			50662	06/09/21 11:56	KNC	EET KNX
Instrument ID: DUO										

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Accreditation/Certification Summary

Client: Sirem, div of Geosyntec Consultants
 Project/Site: Coffeen MNA

Job ID: 140-23157-1

Laboratory: Eurofins Knoxville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
	AFCEE	N/A	
ANAB	Dept. of Defense ELAP	L2311	02-03-22
ANAB	Dept. of Energy	L2311.01	02-03-22
ANAB	ISO/IEC 17025	L2311	02-03-22
Arkansas DEQ	State	88-0688	06-16-21
California	State	2423	06-30-22
Colorado	State	TN00009	02-28-22
Connecticut	State	PH-0223	09-29-21
Florida	NELAP	E87177	06-30-21
Georgia (DW)	State	906	12-11-22
Hawaii	State	NA	12-11-21
Kansas	NELAP	E-10349	10-31-21
Kentucky (DW)	State	90101	12-31-21
Louisiana	NELAP	83979	06-30-21
Louisiana (DW)	State	LA019	12-31-21
Maryland	State	277	03-17-22
Michigan	State	9933	11-22-22
Nevada	State	TN00009	07-12-21
New Hampshire	NELAP	2999	01-17-22
New Jersey	NELAP	TN001	06-30-21
New York	NELAP	10781	03-31-22
North Carolina (DW)	State	21705	07-31-21
North Carolina (WW/SW)	State	64	12-31-21
Ohio VAP	State	CL0059	06-02-23
Oklahoma	State	9415	08-31-21
Oregon	NELAP	TNI0189	12-31-21
Pennsylvania	NELAP	68-00576	12-31-21
Tennessee	State	02014	08-21-22
Texas	NELAP	T104704380-22-17	08-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	525-22-279-18762	07-13-22
Utah	NELAP	TN00009	07-31-21
Virginia	NELAP	460176	09-14-21
Washington	State	C593	01-19-22
West Virginia (DW)	State	9955C	12-31-21
West Virginia DEP	State	345	03-03-22
Wisconsin	State	998044300	08-17-21

Method Summary

Client: Sirem, div of Geosyntec Consultants
Project/Site: Coffeen MNA

Job ID: 140-23157-1

Method	Method Description	Protocol	Laboratory
6010B	SEP Metals (ICP) - Total	SW846	EET KNX
6010B SEP	SEP Metals (ICP)	SW846	EET KNX
Moisture	Percent Moisture	EPA	EET KNX
3010A	Preparation, Total Metals	SW846	EET KNX
Acid/Sulfide	Sequential Extraction Procedure, Acid/Sulfide Fraction	TAL-KNOX	EET KNX
Carbonate	Sequential Extraction Procedure, Carbonate Fraction	TAL-KNOX	EET KNX
Exchangeable	Sequential Extraction Procedure, Exchangeable Fraction	TAL-KNOX	EET KNX
Metal Hydroxide	Sequential Extraction Procedure, Metal Hydroxide Fraction	TAL-KNOX	EET KNX
Non-Crystalline	Sequential Extraction Procedure, Non-crystalline Materials	TAL-KNOX	EET KNX
Organic-Bound	Sequential Extraction Procedure, Organic Bound Fraction	TAL-KNOX	EET KNX
Residual	Sequential Extraction Procedure, Residual Fraction	TAL-KNOX	EET KNX
Total	Preparation, Total Material	TAL-KNOX	EET KNX

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-KNOX = TestAmerica Laboratories, Knoxville, Facility Standard Operating Procedure.

Laboratory References:

EET KNX = Eurofins Knoxville, 5815 Middlebrook Pike, Knoxville, TN 37921, TEL (865)291-3000

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: Michael Healey	
SIREM Lab		Email: mhealey@siremlab.com	
130 Stone Road		Tel/Fax: 519-515-0852	
Guelph/ON/Canada/NTG 3Z2		Analysis Turnaround Time	
(519) 822-2265 Phone		<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS	
(519) 822-3151 FAX		TAT if different from Below _____	
Project Name: Coffeen MNA		<input checked="" type="checkbox"/> 2 weeks	
Site:		<input type="checkbox"/> 1 week	
P O # 800003210A		<input type="checkbox"/> 2 days	
		<input type="checkbox"/> 1 day	

Sample Identification	Sample Date	Sample Time	Sample Type (G=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	SP
G1001-(6-11)	5/17/2021	10:00	G	Soil	1		X	
401B-(16-20)	5/17/2021	10:15	G	Soil	1		X	
270A-(12-16)	5/17/2021	10:30	G	Soil	1		X	
<p>NO CUSTODY SEALS</p> <p>RESERVED AT 11:00/CT 12:00</p> <p>BY 5-19-21</p> <p>1 COOLING FREEZE # 73740530453 INTS PD</p>								



Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other

Possible Hazard Identification: Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Special Instructions/QC Requirements & Comments:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for _____ Months

Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Cooler Temp. (°C): Obs'd: _____	Therm ID No.: _____
Relinquished by: _____	Received by: <i>Rachel Hallman</i>	Date/Time: 5-19-21 10:15
Relinquished by: _____	Received by: _____	Date/Time: _____
Relinquished by: _____	Received in Laboratory by: _____	Date/Time: _____



EUROFINS/TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Are the shipping containers intact?	/			<input type="checkbox"/> Containers, Broken	4
2. Were ambient air containers received intact?		/		<input type="checkbox"/> Checked in lab	
3. The coolers/containers custody seal if present, is it intact?		/		<input type="checkbox"/> Yes <input type="checkbox"/> NA	10
4. Is the cooler temperature within limits? (> freezing temp. of water to 6°C, VOST: 10°C) Thermometer ID : <u>571</u> Correction factor: <u>+0.1°C</u>		/		<input checked="" type="checkbox"/> Cooler Out of Temp, Client Contacted, Proceed/Cancel <input type="checkbox"/> Cooler Out of Temp, Same Day Receipt	14
5. Were all of the sample containers received intact?	/			<input type="checkbox"/> Containers, Broken	
6. Were samples received in appropriate containers?	/			<input type="checkbox"/> Containers, Improper; Client Contacted; Proceed/Cancel	
7. Do sample container labels match COC? (IDs, Dates, Times)	/			<input type="checkbox"/> COC & Samples Do Not Match <input type="checkbox"/> COC Incorrect/Incomplete <input type="checkbox"/> COC Not Received	
8. Were all of the samples listed on the COC received?	/			<input type="checkbox"/> Sample Received, Not on COC <input type="checkbox"/> Sample on COC, Not Received	
9. Is the date/time of sample collection noted?	/			<input type="checkbox"/> COC; No Date/Time; Client Contacted	Labeling Verified by: _____ Date: _____
10. Was the sampler identified on the COC?	/			<input checked="" type="checkbox"/> Sampler Not Listed on COC	
11. Is the client and project name/# identified?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
12. Are tests/parameters listed for each sample?	/			<input type="checkbox"/> COC No tests on COC	pH test strip lot number: _____
13. Is the matrix of the samples noted?	/			<input type="checkbox"/> COC Incorrect/Incomplete	
14. Was COC relinquished? (Signed/Dated/Timed)	/			<input checked="" type="checkbox"/> COC Incorrect/Incomplete	Box 16A: pH Preservation Box 18A: Residual Chlorine
15. Were samples received within holding time?	/			<input type="checkbox"/> Holding Time - Receipt	Preservative: _____
16. Were samples received with correct chemical preservative (excluding Encore)?	/			<input type="checkbox"/> pH Adjusted, pH Included (See box 16A) <input type="checkbox"/> Incorrect Preservative	Lot Number: _____ Exp Date: _____ Analyst: _____
17. Were VOA samples received without headspace?	/			<input type="checkbox"/> Headspace (VOA only) <input type="checkbox"/> Residual Chlorine	Date: _____ Time: _____
18. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: _____	/				
19. For 1613B water samples is pH<9?	/			<input type="checkbox"/> If no, notify lab to adjust	
20. For rad samples was sample activity info. Provided?	/			<input type="checkbox"/> Project missing info	
Project #: _____				PM Instructions: _____	

Sample Receiving Associate: [Signature] Date: 5-19-21

QA026R32.doc, 062719



ATTACHMENT 8
X-Ray Diffraction Laboratory Analytical Report



Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for: Environmental Services

Project Number/ LIMS No. Custom XRD/MI4544-MAY21

Sample Receipt: May 27, 2021

Sample Analysis: May 31, 2021

Reporting Date: June 17, 2021

Instrument: BRUKER AXS D8 Advance Diffractometer

Test Conditions: Co radiation, 35 kV, 40 mA
Regular Scanning: Step: 0.02°, Step time: 1s, 2θ range: 3-80°

Interpretations : PDF2/PDF4 powder diffraction databases issued by the International Center for Diffraction Data (ICDD). DiffracPlus Eva and Topas software.

Detection Limit: 0.5-2%. Strongly dependent on crystallinity.

Contents:

- 1) Method Summary
- 2) Quantitative XRD Results
- 3) XRD Pattern(s)

Kim Gibbs, H.B.Sc., P.Geo.
Senior Mineralogist

Huyun Zhou, Ph.D., P.Geo.
Senior Mineralogist

ACCREDITATION: SGS Minerals Services Lakefield is accredited to the requirements of ISO/IEC 17025 for specific tests as listed on our scope of accreditation, including geochemical, mineralogical and trade mineral tests. To view a list of the accredited methods, please visit the following website and search SGS Canada - Minerals Services - Lakefield: <http://palcan.scc.ca/SpecsSearch/GLSearchForm.do>.



Method Summary

The Rietveld Method of Mineral Identification by XRD (ME-LR-MIN-MET-MN-D05) method used by SGS Minerals Services is accredited to the requirements of ISO/IEC 17025.

Mineral Identification and Interpretation:

Mineral identification and interpretation involves matching the diffraction pattern of an unknown material to patterns of single-phase reference materials. The reference patterns are compiled by the Joint Committee on Powder Diffraction Standards - International Center for Diffraction Data (JCPDS-ICDD) database and released on software as Powder Diffraction Files (PDF).

Interpretations do not reflect the presence of non-crystalline and/or amorphous compounds, except when internal standards have been added by request. Mineral proportions may be strongly influenced by crystallinity, crystal structure and preferred orientations. Mineral or compound identification and quantitative analysis results should be accompanied by supporting chemical assay data or other additional tests.

Quantitative Rietveld Analysis:

Quantitative Rietveld Analysis is performed by using Topas 4.2 (Bruker AXS), a graphics based profile analysis program built around a non-linear least squares fitting system, to determine the amount of different phases present in a multicomponent sample. Whole pattern analyses are predicated by the fact that the X-ray diffraction pattern is a total sum of both instrumental and specimen factors. Unlike other peak intensity-based methods, the Rietveld method uses a least squares approach to refine a theoretical line profile until it matches the obtained experimental patterns.

Rietveld refinement is completed with a set of minerals specifically identified for the sample. Zero values indicate that the mineral was included in the refinement calculations, but the calculated concentration was less than 0.05wt%. Minerals not identified by the analyst are not included in refinement calculations for specific samples and are indicated with a dash.

DISCLAIMER: This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

WARNING: The sample(s) to which the findings recorded herein (the "Findings") relate was(were) drawn and / or provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.

Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	G1001-(6-11)	401B-(16-20)	270A-(12-16)
	MAY4544-01	MAY4544-02	MAY4544-03
	(wt %)	(wt %)	(wt %)
Quartz	46.3	68.9	60.6
Muscovite	10.3	6.8	9.0
Biotite	2.4	2.1	2.4
Microcline	7.8	7.8	9.8
Albite	10.4	8.6	9.1
Calcite	4.2	-	-
Dolomite	11.3	-	0.6
Ankerite	1.5	0.1	0.5
Chlorite	1.5	-	1.4
Pyrite	0.1	-	0.2
Stilpnomelane	2.6	2.7	2.0
Diopside	0.8	1.4	1.3
Actinolite	0.9	1.4	3.3
TOTAL	100	100	100

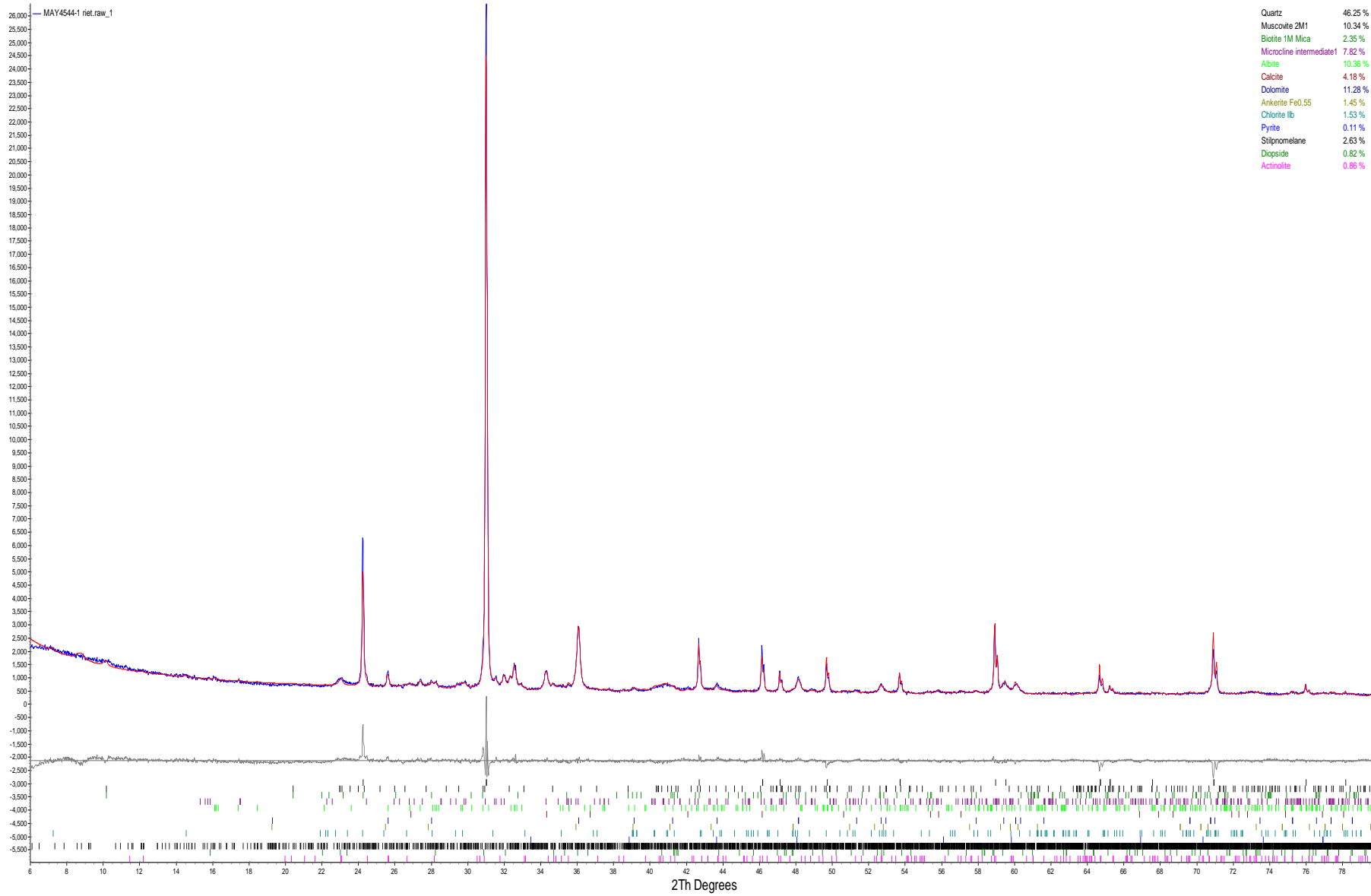
Zero values indicate that the mineral was included in the refinement, but the calculated concentration is below a measurable value.

Dashes indicate that the mineral was not identified by the analyst and not included in the refinement calculation for the sample.

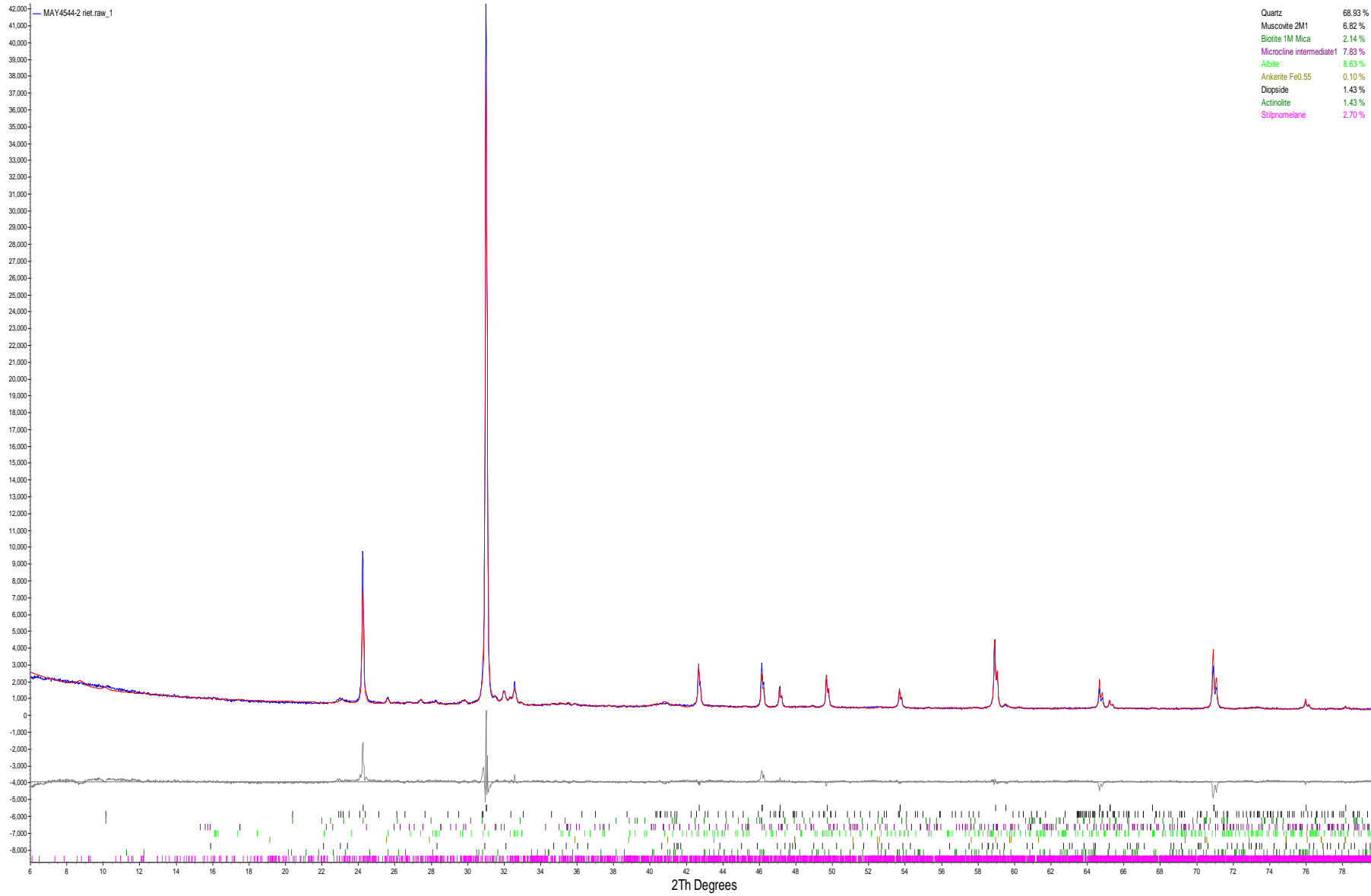
The weight percent quantities indicated have been normalized to a sum of 100%. The quantity of amorphous material has not been determined.

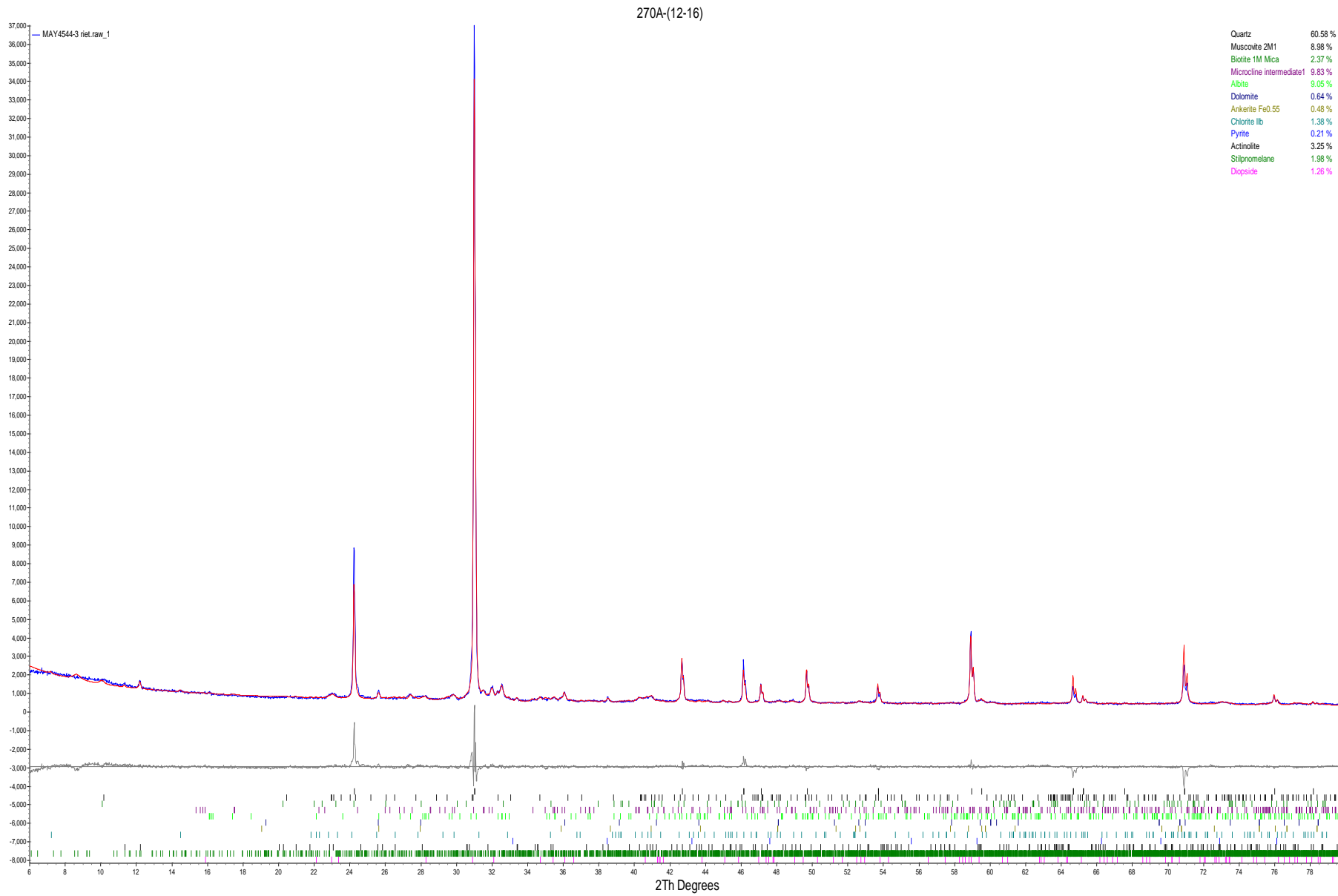
Mineral/Compound	Formula
Quartz	SiO ₂
Muscovite	KAl ₂ (AlSi ₃ O ₁₀)(OH) ₂
Biotite	K(Mg,Fe) ₃ (AlSi ₃ O ₁₀)(OH) ₂
Microcline	KAlSi ₃ O ₈
Albite	NaAlSi ₃ O ₈
Calcite	CaCO ₃
Dolomite	CaMg(CO ₃) ₂
Ankerite	CaFe(CO ₃) ₂
Chlorite	(Fe,(Mg,Mn) ₅ ,Al)(Si ₃ Al)O ₁₀ (OH) ₈
Pyrite	FeS ₂
Stilpnomelane	K(Fe ²⁺ ,Mg,Fe ³⁺) ₈ (Si,Al) ₁₂ (O,OH) ₂₇ ·n(H ₂ O)
Diopside	CaMgSi ₂ O ₆
Actinolite	Ca ₂ (Mg,Fe) ₅ Si ₈ O ₂₂ (OH) ₂

G1001-(6-11)



401B-(16-20)





ATTACHMENT 9
Total Metals Laboratory Analytical Report



SGS Canada Inc.

P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

Project : Coffeen MNA

09-June-2021

SiREM Laboratory

Attn : Michael Healey

130 Stone Road W
Guelph, ON
N1G 3Z2, Canada

Phone: 519-822-2265
Fax:519-822-3151

Date Rec. : 18 May 2021
LR Report: CA12646-MAY21
Reference: P.O# 800003210A

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: G1001-(6-11)	6: 401B-(16-20)	7: 270A-(12-16)
Sample Date & Time					17-May-21 10:00	17-May-21 10:15	17-May-21 10:30
Temp Upon Receipt [°C]	---	---	---	---	5.0	5.0	5.0
Sulphide1 [%]	03-Jun-21	15:12	03-Jun-21	16:31	0.05	< 0.04	< 0.04
TOC [%]	07-Jun-21	09:12	07-Jun-21	15:08	0.852	0.082	0.138
Ag [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	< 0.05	< 0.05	< 0.05
Al [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	8200	9700	9600
As [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	6.2	5.5	12
Ba [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	120	190	210
Be [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	0.45	0.35	0.48
B [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	6	4	5
Bi [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	0.23	0.25	0.18
Ca [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	42000	1900	5000
Cd [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	0.13	0.03	0.12
Co [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	8.8	6.1	10
Cr [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	15	14	16
Cu [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	11	7.8	12
Fe [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	16000	14000	22000
K [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	1100	770	1400
Li [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	9	7	11
Mg [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	18000	1600	4700
Mn [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	450	540	1200
Mo [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	1.5	0.4	0.8
Na [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	110	80	110
Ni [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	15	10	20
Pb [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	11	9.5	12
Sb [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	< 0.8	< 0.8	< 0.8
Se [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	< 0.7	< 0.7	< 0.7
Sn [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	0.6	< 0.5	< 0.5
Sr [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	35	9.1	10
Ti [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	170	65	230
Tl [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	0.16	0.12	0.16
U [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	0.82	0.39	0.46
V [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	19	14	22
W [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	0.07	0.04	0.13

Online LIMS

0002522990

SGS Canada Inc.


P.O. Box 4300 - 185 Concession St.
 Lakefield - Ontario - KOL 2H0
 Phone: 705-652-2000 FAX: 705-652-6365

Project : Coffeen MNA

LR Report : CA12646-MAY21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: G1001-(6-11)	6: 401B-(16-20)	7: 270A-(12-16)
Y [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	8.1	8.2	9.4
Zn [µg/g]	04-Jun-21	15:33	07-Jun-21	10:42	35	28	50

Catharine Arnold



Catharine Arnold, B.Sc., C.Chem
 Project Specialist,
 Environment, Health & Safety



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

217-782-1020

January 11, 2024

Dianna Tickner
Electric Energy, Inc.
1500 Eastport Plaza drive
Collinsville, Illinois 62234

Re: Coffeen Power Plant Ash Pond No. 2; W1350150004-02
Alternative Source Demonstration Submittal

Dear Ms. Tickner:

The purpose of this correspondence is to notify you that the Illinois Environmental Protection Agency (Illinois EPA) does not concur with the Coffeen Ash Pond No.2 Alternative Source Demonstration (ASD) for cobalt dated December 15, 2023. The Illinois EPA does not concur due to the following data gaps:

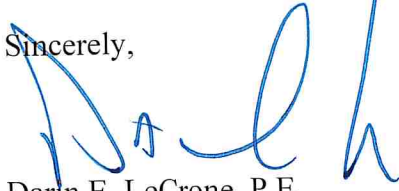
1. Source characterization of the CCR at Ash Pond No.2 include total solids sampling in accordance with SW846.
 - a. 35 IAC 845.650(e) states “the owner or operator of a CCRSI may...submit a demonstration to the Agency that a source other than the CCRSI caused the contamination and the CCRSI did not contribute to the contamination... Either type of ASD must include a report that contains the factual or evidentiary basis for any conclusions...”
 - i. The Illinois EPA cannot concur with ASDs that do not include source characterization of the CCR with adequate sampling and analysis of the CCR which must characterize the CCR horizontally and vertically within the CCRSI.
2. Research on porewater characterization of CCR does not come from an independent peer reviewed publication.
 - a. In accordance with Section 8 of the Illinois Groundwater Protection Act (415 ILCS 55), the Illinois EPA accepts government publications, textbook publications, independent peer-reviewed scientific and engineering publications and other nationally accepted guidelines as acceptable approaches to characterization of CCR.

2125 S. First Street, Champaign, IL 61820 (217) 278-5800
1101 Eastport Plaza Dr., Suite 100, Collinsville, IL 62234 (618) 346-5120
9511 Harrison Street, Des Plaines, IL 60016 (847) 294-4000
595 S. State Street, Elgin, IL 60123 (847) 608-3131

2309 W. Main Street, Suite 116, Marion, IL 62959 (618) 993-7200
412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

If you have any questions, please contact: **Heather Mullenax** Illinois EPA, Bureau of Water, WPC #15, P.O. Box 19276, Springfield, Illinois 62794-9276. If you have any questions concerning the investigation described above, please call 217-782-1020.

Sincerely,



Darin E. LeCrone, P.E.
Manager, Permit Section
Division of Water Pollution Control
Illinois Environmental Protection Agency

cc: Heather Mullenax
Lauren Hunt
Keegan MacDonna
Records Files 06M



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

217-782-1020

January 11, 2024

Dianna Tickner
Electric Energy, Inc.
1500 Eastport Plaza drive
Collinsville, Illinois 62234

Re: Coffeen Power Plant Ash Pond No. 2; W1350150004-02
Alternative Source Demonstration Submittal

Dear Ms. Tickner:

The purpose of this correspondence is to notify you that the Illinois Environmental Protection Agency (Illinois EPA) does not concur with the Coffeen Ash Pond No.2 Alternative Source Demonstration (ASD) for sulfate and total dissolved solids (TDS) dated December 15, 2023. The Illinois EPA does not concur due to the following data gaps:

1. Characterization to include sample and analysis in accordance with 35 IAC 845.640 must be provided with the ASD.
 - a. 35 IAC 845.640(a) requires evidence of field collection methods, field and laboratory reports, and quality control and quality assurance.
 - b. 35 IAC 845.650(e) requires evidence of the alternative source, see item 1(a)(i) above. SW846 chapter 1, incorporated by reference in 35 IAC 845, states that regulatory decisions must be made with environmental data.
2. Updated geologic cross sections must be provided and must include data surrounding the hydrogeologic divide and the exceedance well G407 in accordance with 845.620(b)(9).

If you have any questions, please contact: **Heather Mullenax** Illinois EPA, Bureau of Water, WPC #15, P.O. Box 19276, Springfield, Illinois 62794-9276. If you have any questions concerning the investigation described above, please call 217-782-1020.

Sincerely,

Darin E. LeCrone, P.E.
Manager, Permit Section
Division of Water Pollution Control
Illinois Environmental Protection Agency

2125 S. First Street, Champaign, IL 61820 (217) 278-5800
1101 Eastport Plaza Dr., Suite 100, Collinsville, IL 62234 (618) 346-5120
9511 Harrison Street, Des Plaines, IL 60016 (847) 294-4000
595 S. State Street, Elgin, IL 60123 (847) 608-3131

2309 W. Main Street, Suite 116, Marion, IL 62959 (618) 993-7200
412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

cc: Heather Mullenax
Lauren Hunt
Keegan MacDonna
Records Files 06M

**ATTACHMENT C
CORRECTIVE MEASURES ASSESSMENT EXTENSION
REQUEST AND IEPA APPROVAL LETTER**



Illinois Power Generating Company
134 CIPS Lane
Coffeen, IL 62017

January 15, 2024

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 No.: W1350150004-02), Corrective Measures Assessment Schedule Extension Demonstration

Dear Mr. LeCrone:

In accordance with 35 I.A.C. § 845.660(a)(2), Illinois Power Generating Company (IPGC) is submitting a schedule extension demonstration for completing the Corrective Measures Assessment (CMA) for the Ash Pond No. 2 (IEPA ID No.: W1350150004-02) at the Coffeen Power Plant, as enclosed.

Sincerely,

A handwritten signature in blue ink that reads "Dianna Tickner".

Dianna Tickner, P.E., PMP
Senior Director, Decommissioning & Demolition

Enclosures

INTRODUCTION AND BACKGROUND

Exceedances of the groundwater protection standards (GWPS) listed in Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845.600 have been detected at Ash Pond Number (No.) 2 (AP2) (Illinois Environmental Protection Agency [IEPA] Identification [ID] No.: W1350150004-02) at the Coffeen Power Plant (CPP). The exceedances are documented in the Quarter 2, 2023 groundwater monitoring report that was prepared by Ramboll Americas Engineering Solutions, Inc. (Ramboll) and submitted to IEPA on October 16, 2023 [1].

In accordance with 35 I.A.C. § 845.660, Illinois Power Generating Company (IPGC) initiated a Corrective Measures Assessment (CMA) on January 14, 2024, which was within 90 days of the exceedance detection. Upon reviewing site-specific conditions, circumstances, and information gathered to-date, IPGC has determined, in accordance with 35 I.A.C. § 845.660(a)(2), that an additional 60 days will be required to complete the CMA. This extension of the CMA deadline would result in the CMA for the AP2 being submitted to IEPA on or before June 12, 2024.

DEMONSTRATION

As discussed below, there are four site-specific conditions or circumstances at AP2 that justify the need for a 60-day extension of the default CMA deadline.

Circumstance 1: Additional Sampling and Laboratory Analysis

The reliability of monitored natural attenuation (MNA) to attain groundwater protection standards (GWPS) is currently under evaluation for AP2. IPGC is in the process of performing additional groundwater sampling and performing laboratory testing of MNA-relevant parameters. The results of this sampling and analytical testing will be utilized to evaluate the reliability, including the potential for reversibility, of MNA relative to other types of corrective measures.

Circumstance 2: Consideration of CMA Development for Other Coal Combustion Residuals (CCR) Surface Impoundments (SIs) at the CPP

A total of four CCR SIs are present at the CPP. Exceedances of the GWPS were identified at the same time for all four of the SIs [1], [2], [3], [4]. This will require CMAs to be initiated for all four SIs by the same date and submitted to IEPA by the same date. The other SIs at the CPP include:

- Ash Pond No. 1 (AP1), IEPA ID No. W0578010004-01;
- Gypsum Management Facility Gypsum Stack Pond (GMF GSP), IEPA ID No. W1350150004-03; and
- GMF Recycle Pond (GMF RP), IEPA ID No. W0578010004-04.

Additional time will be required to prepare four CMAs simultaneously under the same initiation and submittal schedules. Furthermore, the SIs are in close proximity to each other (*e.g.*, within 300 to 500 feet), resulting in additional time being required to evaluate corrective action alternatives that can be implemented for each SI while avoiding negative impacts to corrective action that may be implemented for the other SIs present at the CPP.

Circumstance 3: Potential Conflicts with Completed AP2 Closure and Other Proposed SI Closures

The evaluation of the performance and reliability of corrective measures for AP2 will be complicated by physical challenges and constraints around effectively implementing corrective measures at the site. These include, but are not limited to:

- AP2 was closed-in-place in 2020 [5] in accordance with a closure plan [6] that was approved by IEPA in 2018 [7]. Closure-in-place included utilizing an alternative final cover system with a low-permeability

geomembrane barrier layer, protective cover soil, a vegetative soil layer, and well-established vegetation [6].

- The closure also includes other engineered features and structures such as a stormwater management system and erosion protection [6].
- Closures for AP1, the GMF GSP, and the GMF RP [8], [9], [10] are expected to be completed at the same time, resulting in three closure construction projects occurring simultaneously at the CPP.
 - Closure in place of AP1 will require moving and consolidating approximately 450,000 cubic yards (CY) of CCR and soil over a period of 1.5 to 2 years and constructing a final cover system [8].
 - Closure in place of the GMF GSP will require moving and consolidating approximately 130,000 CY of CCR and soil over a period of 2 to 3 years and constructing a final cover system [9].
 - Closure by removal of the GMF RP will require removing approximately 46 million gallons of water, dewatering the CCR, and excavating approximately 51,000 CY of CCR and soil for placement in the onsite Coffeen Landfill over a period of 1 to 1.5 years [10].

These factors will require additional effort to evaluate the physical location and dimensions of any proposed corrective action which limits impacts to the completed AP2 closure and final cover system, while also minimizing impacts to three proposed closure construction projects that will occur simultaneously at CPP in the future.

Circumstance 4: Future Solar Development

The ease of implementation and time required to begin and complete corrective action at AP2 may be affected by potential future solar development at the site. IPGC is in the planning stages for potential future development of a solar facility over the future closed-in-place AP2 which could provide renewable, low-carbon energy to Illinois while repurposing AP2 into productive land use. Additional time is required to evaluate potential conflicts between the future solar development that is being considered and potential corrective measures.

REFERENCES

- [1] Ramboll Americas Engineering Solutions, Inc., "35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances, Quarter 2, 2023, Ash Pond No 2, Coffeen Power Plant," October 16, 2023.
- [2] Ramboll Americas Engineering Solutions, Inc., "35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances, Quarter 2, 2023, Ash Pond No 1, Coffeen Power Plant," October 16, 2023.
- [3] Ramboll Americas Engineering Solutions, Inc., "35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances, Quarter 2, 2023, GMF Gypsum Stack Pond, Coffeen Power Plant," October 16, 2023.
- [4] Ramboll Americas Engineering Solutions, Inc., "35 I.A.C. § 845.610(B)(3)(D) Groundwater Monitoring Data and Detected Exceedances, Quarter 2, 2023, GMF Recycle Pond, Coffeen Power Plant," October 16, 2023.
- [5] Luminant, "Coffeen Power Station; Ash Pond No. 2, Notification of Completion of Closure," December 17, 2020.
- [6] AECOM, "Closure and Post-Closure Care Plan for the Coffeen Ash Pond No. 2 at Illinois Power Generating Company, Coffeen Power Station," January 2017.
- [7] Illinois Environmental Protection Agency, "Letter from William Buscher to Rick Diericx, Re: Coffeen Power Station W135015004 Montgomery County, Illinois," January 30, 2018.
- [8] WSP Golder, "Part 845 Construction Permit Application for Ash Pond No. 1, Coffeen Power Plant," July 28, 2022.
- [9] WSP Golder, "Part 845 Construction Permit Application for the Gypsum Management Facility Gypsum Stack Pond, Coffeen Power Plant," July 28, 2022.

Corrective Measures Assessment Schedule Extension Request; 35 I.A.C. § 845.660(a)(2)
Illinois Power Generating Company - IPGC; Coffeen Power Plant
Ash Pond No. 2; IEPA ID No.: W1350150004-02

[10] WSP Golder, "Part 845 Construction Permit Application for the Gypsum Management Facility Recycle Pond, Coffeen Power Plant," July 28, 2022.

Corrective Measure: Assessment Schedule Extension Request; 35 I.A.C. § 845.660(a)(2)
Illinois Power Generating Company - IPGC; Coffeen Power Plant
Ash Pond No. 2; IEPA ID No.: W1350150004-02

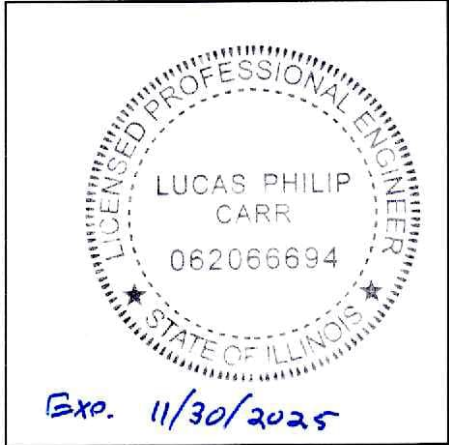
CERTIFICATION STATEMENT

CCR Unit: Illinois Power Generating Company - IPGC; Coffeen Power Plant, Ash Pond No. 2
IEPA ID No.: W1350150004-02

I, Lucas P. Carr, being a Registered Professional Engineer in good standing with the state of Illinois, do hereby certify, to the best of my knowledge, information, and belief that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR unit, that the 60-day extension demonstration for the Corrective Measures Assessment has been prepared in accordance with 35 I.A.C. § 845.600(a)(2) and is accurate.

Lucas P. Carr
Lucas P. Carr, P.E.
Senior Managing Consultant

1/15/2024
Date





ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR

JOHN J. KIM, DIRECTOR

217-782-1020

January 17, 2024

Dianna Tickner
Electric Energy, Inc.
1500 Eastport Plaza Drive
Collinsville, Illinois 62234

Re: Coffeen Power Plant Ash Pond No.1, Ash Pond No. 2, GMF Gypsum Stack Pond, and
GMF Recycle Pond; W1350150004-01, W1350150004-02, W1350150004-03,
W1350150004-04
Corrective Measures Assessment Schedule Extension Request

Dear Mrs. Tickner:

The purpose of this correspondence is to notify you that the Illinois Environmental Protection Agency (Illinois EPA) approves of the extension requests submitted on January 15, 2024, for completing the Corrective Measures Assessment (CMA).

If you have any questions, please contact: **Heather Mullenax** Illinois EPA, Bureau of Water, Groundwater Section DPWS #13, P.O. Box 19276, Springfield, Illinois 62794-9276. If you have any questions concerning the investigation described above, please call 217-782-1020.

Sincerely,

Darin E. LeCrone, P.E.
Manager, Permit Section
Division of Water Pollution Control
Illinois Environmental Protection Agency

Cc: Heather Mullenax
Keegan MacDonna
Phil Morris
Records Files 06M - W1350150004

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412 SW Washington Street, Suite D, Peoria, IL 61602 (309) 671-3022
4302 N. Main Street, Rockford, IL 61103 (815) 987-7760

ATTACHMENT D COMPARISON OF STATISTICAL RESULTS TO BACKGROUND

- **ATTACHMENT C FROM THE QUARTER 2, 2023
GROUNDWATER MONITORING DATA AND DETECTED
EXCEEDANCES REPORT (RAMBOLL, 2023a)**
- **ATTACHMENT C FROM THE QUARTER 3, 2023
GROUNDWATER MONITORING DATA AND DETECTED
EXCEEDANCES REPORT (RAMBOLL, 2024a)**

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 2, 2023
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G1001	LCU	E001	Antimony, total	mg/L	02/15/23 - 06/07/23	2	100	Most recent sample	0.003	0.003
G1001	LCU	E001	Arsenic, total	mg/L	02/15/23 - 06/07/23	2	50	Most recent sample	0.001	0.00660
G1001	LCU	E001	Barium, total	mg/L	02/15/23 - 06/07/23	2	0	Most recent sample	0.071	0.140
G1001	LCU	E001	Beryllium, total	mg/L	02/15/23 - 06/07/23	2	50	Most recent sample	0.001	0.001
G1001	LCU	E001	Boron, total	mg/L	05/12/21 - 06/07/23	3	0	Most recent sample	0.95	0.0290
G1001	LCU	E001	Cadmium, total	mg/L	02/15/23 - 06/07/23	2	100	Most recent sample	0.001	0.001
G1001	LCU	E001	Chloride, total	mg/L	05/12/21 - 06/07/23	3	0	Most recent sample	15	75.0
G1001	LCU	E001	Chromium, total	mg/L	02/15/23 - 06/07/23	2	50	Most recent sample	0.004	0.0190
G1001	LCU	E001	Cobalt, total	mg/L	05/12/21 - 06/07/23	3	67	Most recent sample	0.002	0.00590
G1001	LCU	E001	Fluoride, total	mg/L	02/15/23 - 06/07/23	2	100	Most recent sample	0.25	0.513
G1001	LCU	E001	Lead, total	mg/L	02/15/23 - 06/07/23	2	50	Most recent sample	0.001	0.0120
G1001	LCU	E001	Lithium, total	mg/L	05/12/21 - 06/07/23	3	33	Most recent sample	0.02	0.0190
G1001	LCU	E001	Mercury, total	mg/L	02/15/23 - 06/07/23	2	100	Most recent sample	0.0002	0.0002
G1001	LCU	E001	Molybdenum, total	mg/L	02/15/23 - 06/07/23	2	0	Most recent sample	0.0079	0.00450
G1001	LCU	E001	pH (field)	SU	02/15/23 - 06/07/23	2	0	Most recent sample	7.0/7.0	6.6/7.5
G1001	LCU	E001	Radium 226 + Radium 228, total	pCi/L	02/15/23 - 06/07/23	2	0	Most recent sample	0.917	1.89
G1001	LCU	E001	Selenium, total	mg/L	02/15/23 - 06/07/23	2	50	Most recent sample	0.001	0.00480
G1001	LCU	E001	Sulfate, total	mg/L	05/12/21 - 06/07/23	3	0	Most recent sample	180	370
G1001	LCU	E001	Thallium, total	mg/L	02/15/23 - 06/07/23	2	100	Most recent sample	0.001	0.001
G1001	LCU	E001	Total Dissolved Solids	mg/L	02/15/23 - 06/07/23	2	0	Most recent sample	830	840
G401	UA	E001	Antimony, total	mg/L	11/21/15 - 06/07/23	22	100	All ND - Last	0.003	0.003
G401	UA	E001	Arsenic, total	mg/L	11/21/15 - 06/07/23	25	52	CB around T-S line	-0.019	0.00660
G401	UA	E001	Barium, total	mg/L	11/21/15 - 06/07/23	25	0	CB around T-S line	-0.191	0.140
G401	UA	E001	Beryllium, total	mg/L	11/21/15 - 06/07/23	24	79	CI around median	0.001	0.001
G401	UA	E001	Boron, total	mg/L	11/21/15 - 06/07/23	26	0	CI around median	3.5	0.0290
G401	UA	E001	Cadmium, total	mg/L	11/21/15 - 06/07/23	25	64	CI around median	0.001	0.001
G401	UA	E001	Chloride, total	mg/L	11/21/15 - 06/07/23	26	4	CI around geomean	3.02	75.0

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 2, 2023
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G401	UA	E001	Chromium, total	mg/L	11/21/15 - 06/07/23	25	64	CI around median	0.004	0.0190
G401	UA	E001	Cobalt, total	mg/L	11/21/15 - 06/07/23	25	0	CB around linear reg	0.0629	0.00590
G401	UA	E001	Fluoride, total	mg/L	11/21/15 - 06/07/23	26	96	CI around median	0.25	0.513
G401	UA	E001	Lead, total	mg/L	11/21/15 - 06/07/23	24	62	CB around T-S line	-0.027	0.0120
G401	UA	E001	Lithium, total	mg/L	11/21/15 - 06/07/23	27	4	CB around T-S line	-0.0148	0.0190
G401	UA	E001	Mercury, total	mg/L	11/21/15 - 06/07/23	24	79	CI around median	0.0002	0.0002
G401	UA	E001	Molybdenum, total	mg/L	11/21/15 - 06/07/23	25	68	CI around median	0.001	0.00450
G401	UA	E001	pH (field)	SU	11/21/15 - 06/07/23	28	0	CI around mean	5.9/6.1	6.6/7.5
G401	UA	E001	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 06/07/23	25	0	CI around median	0.694	1.89
G401	UA	E001	Selenium, total	mg/L	11/21/15 - 06/07/23	25	60	CB around T-S line	-0.00172	0.00480
G401	UA	E001	Sulfate, total	mg/L	11/21/15 - 06/07/23	26	0	CI around median	2,000	370
G401	UA	E001	Thallium, total	mg/L	11/21/15 - 06/07/23	22	100	All ND - Last	0.001	0.001
G401	UA	E001	Total Dissolved Solids	mg/L	11/21/15 - 06/07/23	26	0	CI around median	2,800	840
G402	UA	E001	Antimony, total	mg/L	11/21/15 - 06/06/23	22	100	All ND - Last	0.003	0.003
G402	UA	E001	Arsenic, total	mg/L	11/21/15 - 06/06/23	25	0	CB around linear reg	-0.00557	0.00660
G402	UA	E001	Barium, total	mg/L	11/21/15 - 06/06/23	25	0	CB around linear reg	-0.00357	0.140
G402	UA	E001	Beryllium, total	mg/L	11/21/15 - 06/06/23	24	100	All ND - Last	0.001	0.001
G402	UA	E001	Boron, total	mg/L	11/21/15 - 06/06/23	26	0	CB around linear reg	4.43	0.0290
G402	UA	E001	Cadmium, total	mg/L	11/21/15 - 06/06/23	25	96	Most recent sample	0.001	0.001
G402	UA	E001	Chloride, total	mg/L	11/21/15 - 06/06/23	26	15	CI around mean	1.58	75.0
G402	UA	E001	Chromium, total	mg/L	11/21/15 - 06/06/23	25	48	CB around linear reg	-0.00421	0.0190
G402	UA	E001	Cobalt, total	mg/L	11/21/15 - 06/06/23	25	24	CB around linear reg	-0.00293	0.00590
G402	UA	E001	Fluoride, total	mg/L	11/21/15 - 06/06/23	26	15	CI around mean	0.295	0.513
G402	UA	E001	Lead, total	mg/L	11/21/15 - 06/06/23	24	29	CB around linear reg	-0.00445	0.0120
G402	UA	E001	Lithium, total	mg/L	11/21/15 - 06/06/23	25	4	CB around linear reg	0.0103	0.0190
G402	UA	E001	Mercury, total	mg/L	11/21/15 - 06/06/23	24	100	All ND - Last	0.0002	0.0002
G402	UA	E001	Molybdenum, total	mg/L	11/21/15 - 06/06/23	25	0	CB around linear reg	0.000959	0.00450

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 2, 2023
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G402	UA	E001	pH (field)	SU	11/21/15 - 06/06/23	26	0	CI around mean	6.7/6.8	6.6/7.5
G402	UA	E001	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 06/06/23	25	0	CI around median	0.522	1.89
G402	UA	E001	Selenium, total	mg/L	11/21/15 - 06/06/23	25	76	CB around T-S line	0.000296	0.00480
G402	UA	E001	Sulfate, total	mg/L	11/21/15 - 06/06/23	26	0	CB around T-S line	442	370
G402	UA	E001	Thallium, total	mg/L	11/21/15 - 06/06/23	22	100	All ND - Last	0.001	0.001
G402	UA	E001	Total Dissolved Solids	mg/L	11/21/15 - 06/06/23	26	0	CB around linear reg	1,310	840
G403	UA	E001	Antimony, total	mg/L	11/23/15 - 06/07/23	22	100	All ND - Last	0.003	0.003
G403	UA	E001	Arsenic, total	mg/L	11/23/15 - 06/07/23	25	56	CB around T-S line	0.000103	0.00660
G403	UA	E001	Barium, total	mg/L	11/23/15 - 06/07/23	25	0	CB around T-S line	0.0758	0.140
G403	UA	E001	Beryllium, total	mg/L	11/23/15 - 06/07/23	24	100	All ND - Last	0.001	0.001
G403	UA	E001	Boron, total	mg/L	11/23/15 - 06/07/23	26	19	CI around geomean	0.0154	0.0290
G403	UA	E001	Cadmium, total	mg/L	11/23/15 - 06/07/23	25	100	All ND - Last	0.001	0.001
G403	UA	E001	Chloride, total	mg/L	11/23/15 - 06/07/23	26	0	CB around linear reg	4.15	75.0
G403	UA	E001	Chromium, total	mg/L	11/23/15 - 06/07/23	25	92	CI around median	0.004	0.0190
G403	UA	E001	Cobalt, total	mg/L	11/23/15 - 06/07/23	25	60	CI around median	0.002	0.00590
G403	UA	E001	Fluoride, total	mg/L	11/23/15 - 06/07/23	26	12	CB around T-S line	0.187	0.513
G403	UA	E001	Lead, total	mg/L	11/23/15 - 06/07/23	24	88	CI around median	0.001	0.0120
G403	UA	E001	Lithium, total	mg/L	11/23/15 - 06/07/23	25	100	All ND - Last	0.02	0.0190
G403	UA	E001	Mercury, total	mg/L	11/23/15 - 06/07/23	24	100	All ND - Last	0.0002	0.0002
G403	UA	E001	Molybdenum, total	mg/L	11/23/15 - 06/07/23	25	72	CB around T-S line	0.000926	0.00450
G403	UA	E001	pH (field)	SU	11/23/15 - 06/07/23	26	0	CI around mean	6.8/7.0	6.6/7.5
G403	UA	E001	Radium 226 + Radium 228, total	pCi/L	11/23/15 - 06/07/23	25	0	CI around mean	0.583	1.89
G403	UA	E001	Selenium, total	mg/L	11/23/15 - 06/07/23	25	96	CI around median	0.001	0.00480
G403	UA	E001	Sulfate, total	mg/L	11/23/15 - 06/07/23	26	0	CB around T-S line	49.1	370
G403	UA	E001	Thallium, total	mg/L	11/23/15 - 06/07/23	22	100	All ND - Last	0.001	0.001
G403	UA	E001	Total Dissolved Solids	mg/L	11/23/15 - 06/07/23	26	0	CB around linear reg	376	840
G404	UA	E001	Antimony, total	mg/L	11/21/15 - 06/07/23	22	100	All ND - Last	0.003	0.003

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 2, 2023
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G404	UA	E001	Arsenic, total	mg/L	11/21/15 - 06/07/23	25	88	CI around median	0.001	0.00660
G404	UA	E001	Barium, total	mg/L	11/21/15 - 06/07/23	25	0	CB around linear reg	0.0188	0.140
G404	UA	E001	Beryllium, total	mg/L	11/21/15 - 06/07/23	24	100	All ND - Last	0.001	0.001
G404	UA	E001	Boron, total	mg/L	11/21/15 - 06/07/23	26	0	CB around linear reg	5.52	0.0290
G404	UA	E001	Cadmium, total	mg/L	11/21/15 - 06/07/23	25	100	All ND - Last	0.001	0.001
G404	UA	E001	Chloride, total	mg/L	11/21/15 - 06/07/23	26	0	CB around linear reg	133	75.0
G404	UA	E001	Chromium, total	mg/L	11/21/15 - 06/07/23	25	100	All ND - Last	0.004	0.0190
G404	UA	E001	Cobalt, total	mg/L	11/21/15 - 06/07/23	25	96	CI around median	0.002	0.00590
G404	UA	E001	Fluoride, total	mg/L	11/21/15 - 06/07/23	26	82	CI around median	0.25	0.513
G404	UA	E001	Lead, total	mg/L	11/21/15 - 06/07/23	24	96	CI around median	0.001	0.0120
G404	UA	E001	Lithium, total	mg/L	11/21/15 - 06/07/23	25	88	CB around T-S line	0.0166	0.0190
G404	UA	E001	Mercury, total	mg/L	11/21/15 - 06/07/23	24	100	All ND - Last	0.0002	0.0002
G404	UA	E001	Molybdenum, total	mg/L	11/21/15 - 06/07/23	25	100	All ND - Last	0.001	0.00450
G404	UA	E001	pH (field)	SU	11/21/15 - 06/07/23	26	0	CB around linear reg	6.4/6.8	6.6/7.5
G404	UA	E001	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 06/07/23	25	0	CI around mean	0.605	1.89
G404	UA	E001	Selenium, total	mg/L	11/21/15 - 06/07/23	25	100	All ND - Last	0.001	0.00480
G404	UA	E001	Sulfate, total	mg/L	11/21/15 - 06/07/23	26	0	CB around linear reg	422	370
G404	UA	E001	Thallium, total	mg/L	11/21/15 - 06/07/23	22	100	All ND - Last	0.001	0.001
G404	UA	E001	Total Dissolved Solids	mg/L	11/21/15 - 06/07/23	26	0	CB around linear reg	1,250	840
G405	UA	E001	Antimony, total	mg/L	11/21/15 - 06/06/23	22	100	All ND - Last	0.003	0.003
G405	UA	E001	Arsenic, total	mg/L	11/21/15 - 06/06/23	25	35	CB around T-S line	-0.00241	0.00660
G405	UA	E001	Barium, total	mg/L	11/21/15 - 06/06/23	25	0	CB around linear reg	0.00689	0.140
G405	UA	E001	Beryllium, total	mg/L	11/21/15 - 06/06/23	24	100	All ND - Last	0.001	0.001
G405	UA	E001	Boron, total	mg/L	11/21/15 - 06/06/23	26	0	CI around mean	9.19	0.0290
G405	UA	E001	Cadmium, total	mg/L	11/21/15 - 06/06/23	25	96	CI around median	0.001	0.001
G405	UA	E001	Chloride, total	mg/L	11/21/15 - 06/06/23	26	0	CB around T-S line	-2.09	75.0
G405	UA	E001	Chromium, total	mg/L	11/21/15 - 06/06/23	25	88	CI around median	0.004	0.0190

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 2, 2023
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COFFEEN POWER PLANT
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Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G405	UA	E001	Cobalt, total	mg/L	11/21/15 - 06/06/23	25	73	CB around T-S line	0.00129	0.00590
G405	UA	E001	Fluoride, total	mg/L	11/21/15 - 06/06/23	26	11	CB around linear reg	0.208	0.513
G405	UA	E001	Lead, total	mg/L	11/21/15 - 06/06/23	24	48	CB around T-S line	-0.00135	0.0120
G405	UA	E001	Lithium, total	mg/L	11/21/15 - 06/06/23	25	96	CB around T-S line	0.01	0.0190
G405	UA	E001	Mercury, total	mg/L	11/21/15 - 06/06/23	24	100	All ND - Last	0.0002	0.0002
G405	UA	E001	Molybdenum, total	mg/L	11/21/15 - 06/06/23	25	38	CI around median	0.001	0.00450
G405	UA	E001	pH (field)	SU	11/21/15 - 06/06/23	26	0	CI around mean	6.8/7.0	6.6/7.5
G405	UA	E001	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 06/06/23	25	0	CI around median	0.541	1.89
G405	UA	E001	Selenium, total	mg/L	11/21/15 - 06/06/23	25	88	CI around median	0.001	0.00480
G405	UA	E001	Sulfate, total	mg/L	11/21/15 - 06/06/23	26	0	CB around linear reg	412	370
G405	UA	E001	Thallium, total	mg/L	11/21/15 - 06/06/23	22	100	All ND - Last	0.001	0.001
G405	UA	E001	Total Dissolved Solids	mg/L	11/21/15 - 06/06/23	26	0	CI around mean	1,530	840
G406	UA	E001	Antimony, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.003	0.003
G406	UA	E001	Arsenic, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.001	0.00660
G406	UA	E001	Barium, total	mg/L	10/14/20 - 05/31/23	11	0	CI around median	0.012	0.140
G406	UA	E001	Beryllium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.001
G406	UA	E001	Boron, total	mg/L	10/14/20 - 05/31/23	11	0	CI around median	1.4	0.0290
G406	UA	E001	Cadmium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.001
G406	UA	E001	Chloride, total	mg/L	10/14/20 - 05/31/23	11	18	CI around mean	2.94	75.0
G406	UA	E001	Chromium, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.004	0.0190
G406	UA	E001	Cobalt, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.002	0.00590
G406	UA	E001	Fluoride, total	mg/L	10/14/20 - 05/31/23	11	18	CI around geomean	0.269	0.513
G406	UA	E001	Lead, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.001	0.0120
G406	UA	E001	Lithium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.02	0.0190
G406	UA	E001	Mercury, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.0002	0.0002
G406	UA	E001	Molybdenum, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.001	0.00450
G406	UA	E001	pH (field)	SU	10/14/20 - 05/31/23	11	0	CI around mean	6.5/6.7	6.6/7.5

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 2, 2023
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COFFEEN POWER PLANT
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COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G406	UA	E001	Radium 226 + Radium 228, total	pCi/L	10/14/20 - 05/31/23	11	0	CI around mean	0.184	1.89
G406	UA	E001	Selenium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.00480
G406	UA	E001	Sulfate, total	mg/L	10/14/20 - 05/31/23	11	0	CI around median	450	370
G406	UA	E001	Thallium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.001
G406	UA	E001	Total Dissolved Solids	mg/L	10/14/20 - 05/31/23	11	0	CI around mean	992	840
G407	UA	E001	Antimony, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.003	0.003
G407	UA	E001	Arsenic, total	mg/L	10/14/20 - 05/31/23	11	82	CI around median	0.001	0.00660
G407	UA	E001	Barium, total	mg/L	10/14/20 - 05/31/23	11	0	CI around median	0.012	0.140
G407	UA	E001	Beryllium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.001
G407	UA	E001	Boron, total	mg/L	10/14/20 - 05/31/23	11	0	CI around mean	0.0718	0.0290
G407	UA	E001	Cadmium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.001
G407	UA	E001	Chloride, total	mg/L	10/14/20 - 05/31/23	11	0	CI around mean	11.4	75.0
G407	UA	E001	Chromium, total	mg/L	10/14/20 - 05/31/23	11	82	CI around median	0.004	0.0190
G407	UA	E001	Cobalt, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.002	0.00590
G407	UA	E001	Fluoride, total	mg/L	10/14/20 - 05/31/23	11	27	CI around geomean	0.254	0.513
G407	UA	E001	Lead, total	mg/L	10/14/20 - 05/31/23	11	91	CI around median	0.001	0.0120
G407	UA	E001	Lithium, total	mg/L	10/14/20 - 05/31/23	11	0	CI around mean	0.0388	0.0190
G407	UA	E001	Mercury, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.0002	0.0002
G407	UA	E001	Molybdenum, total	mg/L	10/14/20 - 05/31/23	11	9	CI around median	0.0012	0.00450
G407	UA	E001	pH (field)	SU	10/14/20 - 05/31/23	11	0	CI around mean	6.5/6.7	6.6/7.5
G407	UA	E001	Radium 226 + Radium 228, total	pCi/L	10/14/20 - 05/31/23	11	0	CI around mean	0.103	1.89
G407	UA	E001	Selenium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.00480
G407	UA	E001	Sulfate, total	mg/L	10/14/20 - 05/31/23	11	0	CI around median	440	370
G407	UA	E001	Thallium, total	mg/L	10/14/20 - 05/31/23	11	100	All ND - Last	0.001	0.001
G407	UA	E001	Total Dissolved Solids	mg/L	10/14/20 - 05/31/23	11	0	CI around mean	1,920	840

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Notes:

Lower Confidence Limit (LCL) or Upper Confidence Limit (UCL) exceeded the statistical background value

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 of the background determination

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 3, 2023
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Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G401	UA	E002	Antimony, total	mg/L	11/21/15 - 08/11/23	23	100	All ND - Last	0.001	0.003
G401	UA	E002	Arsenic, total	mg/L	11/21/15 - 08/11/23	26	54	CB around T-S line	-0.0164	0.00660
G401	UA	E002	Barium, total	mg/L	11/21/15 - 08/11/23	26	0	CB around T-S line	-0.155	0.140
G401	UA	E002	Beryllium, total	mg/L	11/21/15 - 08/11/23	25	80	CI around median	0.001	0.001
G401	UA	E002	Boron, total	mg/L	11/21/15 - 08/11/23	27	0	CI around median	3.5	0.0290
G401	UA	E002	Cadmium, total	mg/L	11/21/15 - 08/11/23	26	65	CB around T-S line	-0.0016	0.001
G401	UA	E002	Chloride, total	mg/L	11/21/15 - 08/11/23	27	7	CI around geomean	2.96	75.0
G401	UA	E002	Chromium, total	mg/L	11/21/15 - 08/11/23	26	65	CB around T-S line	-0.0295	0.0190
G401	UA	E002	Cobalt, total	mg/L	11/21/15 - 08/11/23	26	0	CB around linear reg	0.0656	0.00590
G401	UA	E002	Fluoride, total	mg/L	11/21/15 - 08/11/23	27	93	CI around median	0.25	0.513
G401	UA	E002	Lead, total	mg/L	11/21/15 - 08/11/23	25	64	CB around T-S line	-0.0302	0.0120
G401	UA	E002	Lithium, total	mg/L	11/21/15 - 08/11/23	28	4	CB around T-S line	-0.00812	0.0190
G401	UA	E002	Mercury, total	mg/L	11/21/15 - 08/11/23	25	80	CI around median	0.0002	0.0002
G401	UA	E002	Molybdenum, total	mg/L	11/21/15 - 08/11/23	26	69	CI around median	0.001	0.00450
G401	UA	E002	pH (field)	SU	11/21/15 - 08/11/23	29	0	CI around mean	5.9/6.1	6.6/7.5
G401	UA	E002	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 08/11/23	26	0	CI around median	0.694	1.89
G401	UA	E002	Selenium, total	mg/L	11/21/15 - 08/11/23	26	62	CB around T-S line	-0.00152	0.00480
G401	UA	E002	Sulfate, total	mg/L	11/21/15 - 08/11/23	27	0	CI around median	2,000	370
G401	UA	E002	Thallium, total	mg/L	11/21/15 - 08/11/23	23	100	All ND - Last	0.002	0.001
G401	UA	E002	Total Dissolved Solids	mg/L	11/21/15 - 08/11/23	27	0	CI around median	2,800	840
G402	UA	E002	Antimony, total	mg/L	11/21/15 - 08/11/23	23	100	All ND - Last	0.001	0.003
G402	UA	E002	Arsenic, total	mg/L	11/21/15 - 08/11/23	26	0	CB around linear reg	-0.00512	0.00660
G402	UA	E002	Barium, total	mg/L	11/21/15 - 08/11/23	26	0	CB around linear reg	-0.00217	0.140
G402	UA	E002	Beryllium, total	mg/L	11/21/15 - 08/11/23	25	100	All ND - Last	0.001	0.001
G402	UA	E002	Boron, total	mg/L	11/21/15 - 08/11/23	27	0	CB around linear reg	4.5	0.0290
G402	UA	E002	Cadmium, total	mg/L	11/21/15 - 08/11/23	26	96	Most recent sample	0.001	0.001
G402	UA	E002	Chloride, total	mg/L	11/21/15 - 08/11/23	27	18	CI around mean	1.58	75.0

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Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G402	UA	E002	Chromium, total	mg/L	11/21/15 - 08/11/23	26	46	CB around linear reg	-0.00394	0.0190
G402	UA	E002	Cobalt, total	mg/L	11/21/15 - 08/11/23	26	23	CB around linear reg	-0.00277	0.00590
G402	UA	E002	Fluoride, total	mg/L	11/21/15 - 08/11/23	27	15	CI around median	0.295	0.513
G402	UA	E002	Lead, total	mg/L	11/21/15 - 08/11/23	25	28	CB around linear reg	-0.00413	0.0120
G402	UA	E002	Lithium, total	mg/L	11/21/15 - 08/11/23	26	4	CB around linear reg	0.0108	0.0190
G402	UA	E002	Mercury, total	mg/L	11/21/15 - 08/11/23	25	100	All ND - Last	0.0002	0.0002
G402	UA	E002	Molybdenum, total	mg/L	11/21/15 - 08/11/23	26	0	CB around linear reg	0.00103	0.00450
G402	UA	E002	pH (field)	SU	11/21/15 - 08/11/23	27	0	CB around linear reg	6.8/7.1	6.6/7.5
G402	UA	E002	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 08/11/23	26	0	CI around median	0.547	1.89
G402	UA	E002	Selenium, total	mg/L	11/21/15 - 08/11/23	26	77	CB around T-S line	0.000439	0.00480
G402	UA	E002	Sulfate, total	mg/L	11/21/15 - 08/11/23	27	0	CB around T-S line	427	370
G402	UA	E002	Thallium, total	mg/L	11/21/15 - 08/11/23	23	100	All ND - Last	0.002	0.001
G402	UA	E002	Total Dissolved Solids	mg/L	11/21/15 - 08/11/23	27	0	CB around linear reg	1,300	840
G403	UA	E002	Antimony, total	mg/L	11/23/15 - 08/11/23	23	100	All ND - Last	0.001	0.003
G403	UA	E002	Arsenic, total	mg/L	11/23/15 - 08/11/23	26	58	CB around T-S line	0.000177	0.00660
G403	UA	E002	Barium, total	mg/L	11/23/15 - 08/11/23	26	0	CB around T-S line	0.0779	0.140
G403	UA	E002	Beryllium, total	mg/L	11/23/15 - 08/11/23	25	100	All ND - Last	0.001	0.001
G403	UA	E002	Boron, total	mg/L	11/23/15 - 08/11/23	27	18	CI around geomean	0.0157	0.0290
G403	UA	E002	Cadmium, total	mg/L	11/23/15 - 08/11/23	26	100	All ND - Last	0.001	0.001
G403	UA	E002	Chloride, total	mg/L	11/23/15 - 08/11/23	27	0	CB around linear reg	4.22	75.0
G403	UA	E002	Chromium, total	mg/L	11/23/15 - 08/11/23	26	92	CB around T-S line	0.00358	0.0190
G403	UA	E002	Cobalt, total	mg/L	11/23/15 - 08/11/23	26	58	CI around median	0.002	0.00590
G403	UA	E002	Fluoride, total	mg/L	11/23/15 - 08/11/23	27	11	CB around T-S line	0.188	0.513
G403	UA	E002	Lead, total	mg/L	11/23/15 - 08/11/23	25	88	CI around median	0.001	0.0120
G403	UA	E002	Lithium, total	mg/L	11/23/15 - 08/11/23	26	96	CB around T-S line	0.01	0.0190
G403	UA	E002	Mercury, total	mg/L	11/23/15 - 08/11/23	25	100	All ND - Last	0.0002	0.0002
G403	UA	E002	Molybdenum, total	mg/L	11/23/15 - 08/11/23	26	73	CI around median	0.001	0.00450

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 3, 2023
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COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G403	UA	E002	pH (field)	SU	11/23/15 - 08/11/23	27	0	CI around mean	6.8/7.0	6.6/7.5
G403	UA	E002	Radium 226 + Radium 228, total	pCi/L	11/23/15 - 08/11/23	26	0	CI around mean	0.598	1.89
G403	UA	E002	Selenium, total	mg/L	11/23/15 - 08/11/23	26	96	CI around median	0.001	0.00480
G403	UA	E002	Sulfate, total	mg/L	11/23/15 - 08/11/23	27	0	CB around T-S line	51.1	370
G403	UA	E002	Thallium, total	mg/L	11/23/15 - 08/11/23	23	100	All ND - Last	0.002	0.001
G403	UA	E002	Total Dissolved Solids	mg/L	11/23/15 - 08/11/23	27	0	CB around linear reg	380	840
G404	UA	E002	Antimony, total	mg/L	11/21/15 - 08/14/23	23	96	CI around median	0.003	0.003
G404	UA	E002	Arsenic, total	mg/L	11/21/15 - 08/14/23	26	85	CI around median	0.001	0.00660
G404	UA	E002	Barium, total	mg/L	11/21/15 - 08/14/23	26	0	CB around linear reg	0.02	0.140
G404	UA	E002	Beryllium, total	mg/L	11/21/15 - 08/14/23	25	100	All ND - Last	0.001	0.001
G404	UA	E002	Boron, total	mg/L	11/21/15 - 08/14/23	27	0	CB around linear reg	6.35	0.0290
G404	UA	E002	Cadmium, total	mg/L	11/21/15 - 08/14/23	26	100	All ND - Last	0.001	0.001
G404	UA	E002	Chloride, total	mg/L	11/21/15 - 08/14/23	27	0	CB around linear reg	121	75.0
G404	UA	E002	Chromium, total	mg/L	11/21/15 - 08/14/23	26	96	CI around median	0.004	0.0190
G404	UA	E002	Cobalt, total	mg/L	11/21/15 - 08/14/23	26	93	CI around median	0.002	0.00590
G404	UA	E002	Fluoride, total	mg/L	11/21/15 - 08/14/23	27	79	CI around median	0.25	0.513
G404	UA	E002	Lead, total	mg/L	11/21/15 - 08/14/23	25	96	CI around median	0.001	0.0120
G404	UA	E002	Lithium, total	mg/L	11/21/15 - 08/14/23	26	85	CB around T-S line	0.01	0.0190
G404	UA	E002	Mercury, total	mg/L	11/21/15 - 08/14/23	25	100	All ND - Last	0.0002	0.0002
G404	UA	E002	Molybdenum, total	mg/L	11/21/15 - 08/14/23	26	100	All ND - Last	0.0015	0.00450
G404	UA	E002	pH (field)	SU	11/21/15 - 08/14/23	27	0	CB around linear reg	6.5/6.8	6.6/7.5
G404	UA	E002	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 08/14/23	26	0	CI around mean	0.625	1.89
G404	UA	E002	Selenium, total	mg/L	11/21/15 - 08/14/23	26	100	All ND - Last	0.001	0.00480
G404	UA	E002	Sulfate, total	mg/L	11/21/15 - 08/14/23	27	0	CB around linear reg	452	370
G404	UA	E002	Thallium, total	mg/L	11/21/15 - 08/14/23	23	100	All ND - Last	0.002	0.001
G404	UA	E002	Total Dissolved Solids	mg/L	11/21/15 - 08/14/23	27	0	CB around linear reg	1,300	840
G405	UA	E002	Antimony, total	mg/L	11/21/15 - 08/11/23	23	96	CI around median	0.003	0.003

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 3, 2023
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G405	UA	E002	Arsenic, total	mg/L	11/21/15 - 08/11/23	26	33	CB around T-S line	-0.00274	0.00660
G405	UA	E002	Barium, total	mg/L	11/21/15 - 08/11/23	26	0	CB around linear reg	0.0071	0.140
G405	UA	E002	Beryllium, total	mg/L	11/21/15 - 08/11/23	25	100	All ND - Last	0.001	0.001
G405	UA	E002	Boron, total	mg/L	11/21/15 - 08/11/23	27	0	CI around mean	9.25	0.0290
G405	UA	E002	Cadmium, total	mg/L	11/21/15 - 08/11/23	26	96	CI around median	0.001	0.001
G405	UA	E002	Chloride, total	mg/L	11/21/15 - 08/11/23	27	0	CB around T-S line	-3.13	75.0
G405	UA	E002	Chromium, total	mg/L	11/21/15 - 08/11/23	26	89	CI around median	0.004	0.0190
G405	UA	E002	Cobalt, total	mg/L	11/21/15 - 08/11/23	26	70	CB around T-S line	0.00114	0.00590
G405	UA	E002	Fluoride, total	mg/L	11/21/15 - 08/11/23	27	11	CB around linear reg	0.22	0.513
G405	UA	E002	Lead, total	mg/L	11/21/15 - 08/11/23	25	50	CB around T-S line	-0.000982	0.0120
G405	UA	E002	Lithium, total	mg/L	11/21/15 - 08/11/23	26	92	CB around T-S line	0.01	0.0190
G405	UA	E002	Mercury, total	mg/L	11/21/15 - 08/11/23	25	100	All ND - Last	0.0002	0.0002
G405	UA	E002	Molybdenum, total	mg/L	11/21/15 - 08/11/23	26	41	CI around median	0.001	0.00450
G405	UA	E002	pH (field)	SU	11/21/15 - 08/11/23	27	0	CI around mean	6.8/7.0	6.6/7.5
G405	UA	E002	Radium 226 + Radium 228, total	pCi/L	11/21/15 - 08/11/23	26	0	CI around median	0.598	1.89
G405	UA	E002	Selenium, total	mg/L	11/21/15 - 08/11/23	26	89	CI around median	0.001	0.00480
G405	UA	E002	Sulfate, total	mg/L	11/21/15 - 08/11/23	27	0	CB around linear reg	436	370
G405	UA	E002	Thallium, total	mg/L	11/21/15 - 08/11/23	23	100	All ND - Last	0.002	0.001
G405	UA	E002	Total Dissolved Solids	mg/L	11/21/15 - 08/11/23	27	0	CI around mean	1,540	840
G406	UA	E002	Antimony, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.001	0.003
G406	UA	E002	Arsenic, total	mg/L	10/14/20 - 08/11/23	12	92	CI around median	0.001	0.00660
G406	UA	E002	Barium, total	mg/L	10/14/20 - 08/11/23	12	0	CI around median	0.012	0.140
G406	UA	E002	Beryllium, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.001	0.001
G406	UA	E002	Boron, total	mg/L	10/14/20 - 08/11/23	12	0	CI around median	1.4	0.0290
G406	UA	E002	Cadmium, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.001	0.001
G406	UA	E002	Chloride, total	mg/L	10/14/20 - 08/11/23	12	17	CI around mean	3.05	75.0
G406	UA	E002	Chromium, total	mg/L	10/14/20 - 08/11/23	12	92	CI around median	0.004	0.0190

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 3, 2023
845 QUARTERLY REPORT
COFFEEN POWER PLANT
ASH POND NO. 2
COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G406	UA	E002	Cobalt, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.001	0.00590
G406	UA	E002	Fluoride, total	mg/L	10/14/20 - 08/11/23	12	17	CI around geomean	0.268	0.513
G406	UA	E002	Lead, total	mg/L	10/14/20 - 08/11/23	12	92	CI around median	0.001	0.0120
G406	UA	E002	Lithium, total	mg/L	10/14/20 - 08/11/23	12	92	CI around median	0.02	0.0190
G406	UA	E002	Mercury, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.0002	0.0002
G406	UA	E002	Molybdenum, total	mg/L	10/14/20 - 08/11/23	12	92	CI around median	0.001	0.00450
G406	UA	E002	pH (field)	SU	10/14/20 - 08/11/23	12	0	CI around mean	6.5/6.7	6.6/7.5
G406	UA	E002	Radium 226 + Radium 228, total	pCi/L	10/14/20 - 08/11/23	12	0	CI around mean	0.226	1.89
G406	UA	E002	Selenium, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.001	0.00480
G406	UA	E002	Sulfate, total	mg/L	10/14/20 - 08/11/23	12	0	CI around median	450	370
G406	UA	E002	Thallium, total	mg/L	10/14/20 - 08/11/23	12	100	All ND - Last	0.002	0.001
G406	UA	E002	Total Dissolved Solids	mg/L	10/14/20 - 08/11/23	12	0	CI around mean	1,000	840
G407	UA	E002	Antimony, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.001	0.003
G407	UA	E002	Arsenic, total	mg/L	10/14/20 - 08/10/23	12	83	CI around median	0.001	0.00660
G407	UA	E002	Barium, total	mg/L	10/14/20 - 08/10/23	12	0	CI around median	0.012	0.140
G407	UA	E002	Beryllium, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.001	0.001
G407	UA	E002	Boron, total	mg/L	10/14/20 - 08/10/23	12	0	CI around mean	0.07	0.0290
G407	UA	E002	Cadmium, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.001	0.001
G407	UA	E002	Chloride, total	mg/L	10/14/20 - 08/10/23	12	0	CI around mean	11.3	75.0
G407	UA	E002	Chromium, total	mg/L	10/14/20 - 08/10/23	12	83	CI around median	0.004	0.0190
G407	UA	E002	Cobalt, total	mg/L	10/14/20 - 08/10/23	12	92	CI around median	0.002	0.00590
G407	UA	E002	Fluoride, total	mg/L	10/14/20 - 08/10/23	12	25	CI around geomean	0.259	0.513
G407	UA	E002	Lead, total	mg/L	10/14/20 - 08/10/23	12	92	CI around median	0.001	0.0120
G407	UA	E002	Lithium, total	mg/L	10/14/20 - 08/10/23	12	0	CI around mean	0.0389	0.0190
G407	UA	E002	Mercury, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.0002	0.0002
G407	UA	E002	Molybdenum, total	mg/L	10/14/20 - 08/10/23	12	17	CI around median	0.0012	0.00450
G407	UA	E002	pH (field)	SU	10/14/20 - 08/10/23	12	0	CI around mean	6.6/6.8	6.6/7.5

ATTACHMENT C.
COMPARISON OF STATISTICAL RESULTS TO BACKGROUND - QUARTER 3, 2023

845 QUARTERLY REPORT
 COFFEEN POWER PLANT
 ASH POND NO. 2
 COFFEEN, IL

Well ID	HSU	Event	Parameter	Units	Date Range	Sample Count	Percent ND	Statistical Calculation	Statistical Result	Background
G407	UA	E002	Radium 226 + Radium 228, total	pCi/L	10/14/20 - 08/10/23	12	0	CI around mean	0.162	1.89
G407	UA	E002	Selenium, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.001	0.00480
G407	UA	E002	Sulfate, total	mg/L	10/14/20 - 08/10/23	12	0	CI around median	440	370
G407	UA	E002	Thallium, total	mg/L	10/14/20 - 08/10/23	12	100	All ND - Last	0.002	0.001
G407	UA	E002	Total Dissolved Solids	mg/L	10/14/20 - 08/10/23	12	0	CI around mean	1,910	840

Notes:

Lower Confidence Limit (LCL) or Upper Confidence Limit (UCL) exceeded the statistical background value

HSU = hydrostratigraphic 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 of the background determination