Luminant

Illinois Power Generating Company
1500 Eastport Plaza Drive
Collinsville, IL 62234

June 12, 2024

Illinois Environmental Protection Agency
DWPC – Permits MC #15
Attn: Part 845 Coal Combustion Residual Rule Submittal
1021 N. Grand Avenue East
Springfield, IL 62794-9276

Re: Illinois Power Generating Company - Coffeen Power Plant GMF Gypsum Stack Pond (ID No. W1350150004-03)

Illinois Power Generating Company (IPGC) is hereby submitting this assessment of groundwater corrective measures for Coffeen Power Plant GMF Gypsum Stack Pond to satisfy the following provisions:

- 35 I.A.C. 845.660 (Assessment of Corrective Measures), and
- 35 I.A.C. 845.650(d) (Characterization of Nature and Extent)

Along with this letter, these plans will be posted to Luminant's publicly accessible internet site: www.luminant.com/ccr/illinois-ccr/.

If you have any questions regarding this submittal, please contact Phil Morris at 618-343-7799 or phil.morris@vistracorp.com.

Sincerely,

Dianna Tickner

Dianna Tickner, PE, PMP
Senior Director, Demolition and Decommission

Enclosure

Intended for
Illinois Power Generating Company

Date
June 12, 2024

Project No.
1940103584-002

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT

GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS
IEPA ID: W135015004-03

RAMBOLL Bright ideas. Sustainable change.

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT
COFFEEN POWER PLANT GMF GYPSUM STACK POND

Project name	**Coffeen Power Plant GMF Gypsum Stack Pond**
Project no.	**1940103584-002**
Recipient	**Illinois Power Generating Company**
Document type	**35 I.A.C. § 845 Corrective Measures Assessment**
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ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
AP1	Ash Pond No. 1
AP2	Ash Pond No. 2
ASD	alternative source demonstration
CAAA	Corrective Action Alternatives Analysis
CAP	Corrective Action Plan
CCR	coal combustion residuals
CMA	Corrective Measures Assessment
cm/s	centimeters per second
CPP	Coffeen Power Plant
CSM	conceptual site model
DA	deep aquifer
DCU	deep confining unit
EPRI	Electric Power Research Institute
E001	Event 1
GMF	Gypsum Management Facility
GMF GSP	GMF Gypsum Stack Pond
GMF RP	GMF Recycle Pond
GMP	Groundwater Monitoring Plan
GWPS	groundwater protection standard(s)
HCR	Hydrogeologic Site Characterization Report
HDPE	high-density polyethylene
ID	identification
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
ITRC	National Research Council, Interstate Technology & Regulatory Council
IX	ion exchange
LCU	lower confining unit
NID	National Inventory of Dams
No.	number
NPDES	National Pollutant Discharge Elimination System
NRT/OBG	Natural Resource Technology, an OBG Company
PMP	potential migration pathway
PRB	Permeable Reactive Barrier
Ramboll	Ramboll Americas Engineering Solutions, Inc.
SI	surface impoundment
Site	Coffeen Power Plant
UA	uppermost aquifer
UCU	upper confining unit
USEPA	United States Environmental Protection Agency
ZVI	zero-valent iron

1. INTRODUCTION

Ramboll Americas Engineering Solutions, Inc. (Ramboll) has developed this assessment of groundwater corrective measures on behalf of Illinois Power Generating Company (IPGC) to assist in the compliance with the requirements of Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845 Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments. This assessment applies specifically to the coal combustion residuals (CCR) unit referred to as the Gypsum Management Facility (GMF) Gypsum Stack Pond (GMF GSP) at the Coffeen Power Plant (CPP), also referred to as CCR Unit identification (ID) number (No.) 103, Illinois Environmental Protection Agency (IEPA) ID No. W1350150004-03, and National Inventory of Dams (NID) No. IL50579. This report addresses content requirements specific to 35 I.A.C. § 845.660 (Assessment of Corrective Measures) for exceedances of sulfate at the GMF GSP.

1.1 Source Control and Residual Plume Management

IPGC intends to initiate significant source and residual plume management efforts as part of the GMF GSP closure, as documented in the Final Closure Plan and Construction Permit Application that were submitted to IEPA in July of 2022 (Golder Associates USA, Inc., 2022). The proposed closure exceeds the minimum Closure Performance Standards listed in 35 I.A.C § 845.750. The closure will include removing free liquids in accordance with the performance standard in 35 I.A.C § 845 and maintaining that condition during the closure construction period. The closure will reduce the hydraulic head that can force leachate into subsurface soils and is the mechanism that can drive risk to groundwater (United States Environmental Protection Agency [USEPA], 2015a, p. 21342):

> *EPA's risk assessment shows that the highest risks are associated with CCR surface impoundments due to the hydraulic head imposed by impounded water. Dewatered CCR surface impoundments will no longer be subjected to hydraulic head so the risk of releases, including the risk that the unit will leach into the groundwater, would be no greater than those from CCR landfills.*

The GMF GSP will be closed using a hybrid closure-by-removal and consolidate-and-cap approach that was developed to reduce the waste footprint at closure. Approximately 295,500 cubic yards of CCR from the GMF GSP will be contained within the consolidated footprint in the northern portion of the surface impoundment (SI). Under this hybrid approach, approximately 63 percent of the current CCR footprint within the SI will be removed. The consolidated CCR will be covered with an alternate geomembrane final cover system having performance that exceeds the 35 I.A.C § 845.750I(2) minimum final cover requirements. The proposed source control is predicted to allow the groundwater protection standards (GWPS) to be achieved within approximately 7 years after the completion of closure (Ramboll, 2022). These source control activities will serve as the primary groundwater corrective measure at the GMF GSP. The potentially feasible corrective measures presented herein are intended to be supplementary to the primary groundwater corrective measure (*i.e.,* source control) and are intended to serve as management measures to address any residual plume(s) that remain after completion of source control.

Attachment A includes select figures from the Construction Permit Application that show the proposed final source control and primary corrective action, including the extents of CCR removal and consolidation.

1.2 Adaptive Site Management

Adaptive site management strategies will be employed as an integral part of ongoing corrective action at the GMF GSP. The adaptive site management approach will allow timely incorporation of new site information over the closure and post-closure life cycle of the GMF GSP to ensure the achievement of the GWPS. The adaptive site management approach is proposed to expedite progress toward meeting the GWPS while acknowledging uncertainties, such as the persistence of current groundwater flow directions and flux quantities and potential related changes in geochemical conditions. A structured decision-making process and explicitly planned iterations between the implemented corrective measures and monitoring results will ensure that remediation is occurring. System performance and the condition of the residual plume will be monitored as the corrective measure(s) selected through the 35 I.A.C. § 845.710 Corrective Action Plan (CAP) process are implemented to supplement the source control measures described above. If the groundwater concentrations do not decrease consistent with the modeling prediction, the adaptive site management approach will facilitate timely modifications or enhancements to the corrective measure(s), as needed in accordance with 35 I.A.C. § 845.680(b). This approach will be employed in response to new site information and/or the performance of the selected corrective measure(s).

The planned adaptive site management strategies are generally consistent with National Research Council, Interstate Technology & Regulatory Council (ITRC) and USEPA methodologies developed to address sites with long remediation times and high levels of uncertainty regarding the remedial actions necessary to achieve final and protective remediation goals (USEPA, 2022). The elements of the proposed adaptive site management strategy at the GMF GSP will be responsive to the changing conditions associated with pond closure and performance of the selected corrective measure(s) and will include the following:

1. Implementing the groundwater corrective measure(s) selected as part of the CAP for the current conditions at the GMF GSP. The selected corrective measures may include a combination of the technologies presented in this Corrective Measures Assessment (CMA).

2. Establishing both the absolute remedial objective and functional (interim) goals to monitor progress toward the remedial objective. Achieving the GWPS for 35 I.A.C. § 845.600 constituents at the downgradient waste boundary is the remedial objective for the GMF GSP. Specific functional goals will be developed as part of the CAP process. The functional goals will be measurable thresholds for future action and may include short-term or technology-specific objectives and triggers. Functional goals may vary for different locations, CCR constituents or other site-specific considerations (ITRC, 2017) and will serve as benchmarks for comparison to ongoing groundwater monitoring at the GMF GSP.

3. Ongoing groundwater monitoring at the GMF GSP will continue throughout the implementation of source control and residual plume management activities. Post-closure monitoring will continue for a period of at least 30 years, in accordance with

35 I.A.C. § 845.780(c). A comprehensive groundwater monitoring plan (GMP) will be developed as part of the CAP process in accordance with 35 I.A.C. § 845.670 and 35 I.A.C. § 845.220(c)(4). The GMP will include the functional goals and proposed action levels.

4. Groundwater monitoring information will be used to guide decisions regarding whether progress toward the remedial goal is advancing as expected and/or whether additional actions may be needed to achieve the remedial objective, in conjunction with IEPA, as required by 35 I.A.C. § 845.680(b).

2. SITE INFORMATION

The CPP is located in Montgomery County in central Illinois, approximately two miles south of the city of Coffeen and about eight miles southeast of the city of Hillsboro, Illinois. The GMF GSP is located between the two lobes of Coffeen Lake (identified as "Coffeen Lake" and "Unnamed Tributary" on **Figures 2-1** and **2-2**) to the west, east, and south, and is bordered by agricultural land to the north. **Figure 2-2** is a site map showing the location of Ash Pond No. 1 (AP1), Ash Pond No. 2 (AP2), the GMF GSP (35 I.A.C. § 845 regulated CCR Unit and subject of this CMA), the GMF Recycle Pond (GMF RP), and the Landfill. The GMF GSP will hereinafter be referred to as the Site.

The GMF GSP received blowdown from the air emission scrubbers and was put into operation in 2010. Construction of the GMF GSP was in accordance with Water Pollution Control Permit 2008-EA-4661 and features a composite 60-mil high density polyethylene (HDPE) liner with 3 feet of recompacted soil having a hydraulic conductivity of 1×10^{-7} centimeters per second (cm/s), with internal piping and drains to collect contact water. Construction of the unit included installation of a groundwater underdrain system to eliminate uplift pressures on the liner prior to placement of CCR. The GMF GSP underdrain was actively pumped during construction but is not currently operational. Receipt of waste to the GMF GSP ceased prior to April 11, 2021.

2.1 Conceptual Site Model

Significant site investigation has been completed at the CPP to characterize the geology, hydrogeology, and groundwater quality. Based on extensive investigation and monitoring, the GMF GSP has been well characterized and detailed in the Hydrogeologic Site Characterization Report (HCR; Ramboll, 2021), which was prepared to comply with the requirements specified in 35 I.A.C. § 845.620 and expands upon the Hydrogeologic Monitoring Plan (Natural Resource Technology/O'Brien & Gere Engineers, Inc. [NRT/OBG], 2017). The conceptual site model (CSM) is presented below.

In addition to the CCR present at the GMF GSP, there are five principal layers of unlithified material present above the bedrock, which are categorized into hydrostratigraphic units below (from surface downward) based on stratigraphic relationships and common 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 to clayey silts and gravelly clay below the surficial soil. Construction of the GMF GSP required the excavation and removal of this layer within the unit footprint and the UCU has been eroded east of the GMF GSP, near the Unnamed Tributary.
- **Uppermost Aquifer (UA):** The UA is the Hagarstown Member which is classified as primarily sandy to gravelly silts and clays with thin beds of sands. Similar to the Loess Unit and upper Hagarstown, the lower Hagarstown Member was excavated to facilitate construction of the GMF GSP and the lower Hagarstown is also absent in some locations near the Unnamed Tributary. Hydraulic conductivities near the GMF GSP ranged from 2.5×10^{-4} to 4.0×10^{-3} cm/s (geometric mean of 1.4×10^{-3} cm/s).
- **Lower Confining Unit (LCU):** Comprised of the Vandalia Member, Mulberry Grove Member, and Smithboro Member. These units include a sandy to silty till with thin, discontinuous sand

lenses, a discontinuous and limited extent sandy silt which has infilled prior erosional features, and silty to clayey diamicton, respectively. The Vandalia Member typically ranged in thickness from 11.7 feet in the northern portion of the CPP, to 31.0 feet between the GMF GSP and the GMF RP; the Mulberry Grove Member is represented by pockets (generally less than 2 feet thick); and the Smithboro Member ranges in thickness from 6.7 to 21.2 feet northwest of the landfill. This LCU has been identified as a potential migration pathway (PMP) because downward vertical gradients indicate that there is the potential for impacts to migrate through this unit. Hydraulic conductivities ranged from 1.2×10^{-4} to 4.5×10^{-3} cm/s (geometric mean of 7.2×10^{-4} cm/s).

- **Deep Aquifer (DA):** 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 CCP. Where present, the DA has been identified as a PMP due to presence of downward gradients in the overlying LCU and the relatively greater hydraulic conductivities measured in the DA. Hydraulic conductivity in the DA ranged from 1.3×10^{-4} to 1.7×10^{-3} cm/s (geometric mean of 4.4×10^{-4} cm/s).
- **Deep Confining Unit (DCU):** Comprised of the Banner Formation, generally consists of clays, silts, and sands. The Lierle Clay Member is the upper layer of the Banner Formation which was encountered at the Site. No monitoring wells are screened only within the DCU, and no field hydraulic conductivity tests were conducted for the DCU

Groundwater elevations at CPP, including within the UA, are primarily controlled by surface topography, geologic unit topography, and water levels within Coffeen Lake and the Unnamed Tributary. Groundwater flows east to southeast across the GMF GSP toward the Unnamed Tributary. Based on the elevations of the tributary and groundwater elevations measured east of the tributary, the tributary is a hydraulic barrier and prevents groundwater migration east of the Unnamed Tributary. Although elevations vary seasonally, the groundwater flow direction in the uppermost aquifer is consistent and likely controlled by the proximity and hydraulic connection to Coffeen Lake. (**Figure 2-3**). Phreatic surfaces or water elevations within the SIs are generally consistent and have not been observed to fluctuate with groundwater elevations indicating limited hydraulic connection with the SIs. Groundwater elevations and contours for the quarter 2 groundwater monitoring event (Event 1 [E001] are presented in **Figure 2-3**.

2.2 Groundwater Quality

Groundwater monitoring in accordance with the proposed GMP and sampling methodologies provided in the construction permit application for the GMF GSP began in the second quarter of 2023. The 35 I.A.C § 845 groundwater monitoring system is displayed on **Figure 2-4** and consists of nine wells screened in the UA (two background and seven compliance), one compliance well screened in the DA, one temporary water level only well, and one temporary water level only surface water staff gage. The groundwater samples collected from the ten wells are used to monitor and evaluate groundwater quality and demonstrate compliance with the groundwater quality standards listed in 35 I.A.C. § 845.600(a). The proposed monitoring wells yield groundwater samples that represent the quality of downgradient groundwater at the CCR boundary (as required in 35 I.A.C. § 845.630(a)(2)).

The E001 groundwater monitoring event was completed on June 9, 2023. In accordance with 35 I.A.C. § 845.610(b)(3)(C), statistically derived values were compared with the GWPSs summarized in 35 I.A.C. § 845.600 to determine exceedances of the GWPS. The statistical determination identified the following GWPS exceedances at compliance groundwater monitoring wells (Ramboll, 2023):

- Sulfate in UA well G215

Pursuant to 35 I.A.C. § 845.650(e), the following were evaluated as potential alternative sources for each GWPS exceedance:

- Sources other than the CCR SI
- Error in sampling and analysis protocol
- Error in statistical analysis
- Natural variation in groundwater quality
- Change in the potentiometric surface and groundwater flow direction.

These evaluations were not conclusive in demonstrating an alternative source for the GWPS exceedance. Consequently, and in accordance with 35 I.A.C. § 845.660 the sulfate exceedance is addressed in this CMA.

3. CORRECTIVE MEASURES ASSESSMENT METHODOLOGY

This section describes the CMA methodology initiated in response to the identification of exceedances of the GWPSs for 35 I.A.C. § 845.600 constituents at the downgradient waste boundary of the GMF GSP during the E001 groundwater monitoring event (Ramboll, 2023). The CMA was initiated on January 14, 2024, within 90 days after the detection of exceedance(s) of GWPS. Under 35 I.A.C. § 845, owners and operators of existing CCR SIs must initiate the assessment of corrective measures in accordance with 35 I.A.C. § 845.660 if one or more constituents are detected, and confirmed by an immediate resample, to be in exceedance of a GWPS in 35 I.A.C. § 845.600, and the owner or operator has not demonstrated that: a source other than the CCR SI caused the exceedance, or; that the exceedance of the GWPS resulted from error in sampling, analysis, statistical evaluation, natural variation in groundwater quality or a change in the potentiometric surface and groundwater flow direction (*i.e.,* an alternative source demonstration [ASD]).

The CMA is the first step in developing a long-term CAP to address the GWPS exceedances at CCR SIs. The process provides a systematic, rational method for evaluating potential corrective measures by first identifying potentially viable technologies and assessing them using qualitative information to eliminate from consideration infeasible or otherwise unacceptable remedial technologies (*i.e.,* the 35 I.A.C. § 845.660 CMA). The remaining technologies will be evaluated individually, or assembled into combined alternatives, and further evaluated under the CAP process per 35 I.A.C. § 845.670.

This CMA identified applicable corrective measure technologies and evaluated them for viability, given the site-specific conditions and considerations at the GMF GSP, by addressing the following 35 I.A.C § 845.660 evaluation criteria:

- Performance, reliability, ease of implementation and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;
- Time required to begin and complete the CAP; and
- Institutional requirements, such as State or local permit requirements or other environmental or public health requirements that may substantially affect implementation of the CAP.

The evaluation included qualitative and/or semi-quantitative screening of the potential corrective measures (technologies) relative to their general performance, reliability, and ease of implementation characteristics and their potential impacts, timeframes, and institutional requirements to assess the viability of each technology to address the GWPS exceedances at the GMF GSP. This approach provided a reasoned set of corrective measures that could be used, either individually or in combination, to supplement the primary source control measures described in **Section 1.1**. This set of corrective measures will be further evaluated in the Corrective Action Alternatives Assessment (CAAA).

4. DESCRIPTION OF POTENTIAL CORRECTIVE MEASURE TECHNOLOGIES

The potential groundwater corrective measures summarized below are applicable to the GMF GSP and were included in the CMA development and analysis. Site-specific considerations provided in **Section 2** were used to evaluate potential groundwater corrective measures. Each of the corrective measures evaluated may be capable of satisfying the requirements and objectives, listed in **Section 3**, to varying degrees of effectiveness. The corrective measure review process was intended to yield a set of applicable corrective measures that could be used to supplement the primary corrective action, which will be the source control activities described in **Section 1.1** (hybrid consolidate-and-cap approach with a geomembrane final cover system). The source control is expected to reduce downgradient concentrations in the UA to less than the GWPS via naturally occurring physical and chemical processes within approximately 7 years. Ongoing monitoring will be an integral part of all corrective measures to verify and document the remedial process. The corrective measures ultimately advanced to the CAAA and selected in the CAP will be used to enhance the effectiveness of the source control and may be used independently or combined into specific remedial alternatives to leverage the advantages of multiple corrective measures to attain GWPSs.

Source control measures will be initiated for the GMF GSP, as described in **Section 1.1**; all of the evaluated additional corrective measure technologies are proposed to be supplemental and complementary to source control activities. The following potential corrective measures, commonly used to mitigate groundwater impacts, were considered as a part of the CMA process:

- Source Control with Groundwater Polishing;
- Source Control with Groundwater Extraction (groundwater pumping wells or collection trenches);
- Source Control with a Cutoff Wall; and
- Source Control with In-Situ Treatment (Permeable Reactive Barrier [PRB] or In-Situ Chemical Treatment).

4.1 Source Control with Groundwater Polishing

Both federal and state regulators have long recognized that natural geochemical processes can be an acceptable component of a remedial action when it can achieve remedial action objectives in a reasonable timeframe. In 1999, USEPA published a final policy directive (USEPA, 1999) for groundwater remediation and described the process as follows:

> *"The reliance on natural attenuation processes (within the context of a carefully controlled and monitored site cleanup approach) to achieve site-specific remediation objectives within a time frame that is reasonable compared to that offered by other more active methods. The 'natural attenuation processes' that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. These in-situ processes include biodegradation; dispersion; dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants."*

The USEPA has stated that source control is the most effective means of ensuring the timely attainment of remediation objectives (USEPA, 1999). Natural geochemical processes may be appropriate as a "finishing step" after effective source control implementation (*i.e.*, groundwater polishing), to reduce the residual mass remaining in the groundwater after closure, if there are no risks to receptors and/or the contaminant plume is not expanding. Thus, groundwater polishing would be used in conjunction with the significant planned source control effort at the site, which will consist of a hybrid consolidate-and-cap approach with a final cover system described in **Section 1.1**.

In 2015, USEPA addressed remediation of inorganic compounds in groundwater and noted that the use of natural geochemical processes to address inorganic contaminants: (1) is not intended to constitute a treatment process for inorganic contaminants; (2) when appropriately implemented, can help to restore an aquifer to beneficial uses by immobilizing contaminants onto aquifer solids and providing the primary means for attenuation of contaminants in groundwater; and (3) is not intended to be a "do nothing" response (USEPA, 2015b). Rather, documenting the applicability of natural geochemical processes for groundwater remediation should be thoroughly and adequately supported with site-specific characterization data and analysis (USEPA, 1999; USEPA, 2007; USEPA, 2015b).

Both physical and chemical processes can contribute to the reduction of the small amount of residual mass remaining after closure of the GMF GSP, and the toxicity, mobility, volume, or concentration of contaminants in groundwater. Physical processes applicable to CCR constituents in groundwater include dilution, dispersion, and flushing. Chemical processes applicable to CCR constituents in groundwater include precipitation and coprecipitation (*e.g.,* incorporation into sulfide minerals), sorption (*e.g.,* to iron, manganese, aluminum; to other metal oxides or oxyhydroxides; or to sulfide minerals or organic matter), and ion exchange (IX).

All inorganic compounds are subject to physical processes and under typical environmental conditions, physical mechanisms most often exert the dominant control on the CCR constituents of interest, such as sulfate and chloride, and lithium to a more variable degree. Chemical mechanisms are also likely to be active, though not often dominant, such as adsorption, IX, and organic complexation. In combination with source control, these natural controls can provide an effective means to polish residual loading and achieve the GWPS in a reasonable timeframe. Additional data collection and analysis may be required to support the USEPA's evaluation framework (USEPA, 2015b) and obtain regulatory approval.

4.2 Source Control with Groundwater Extraction

Groundwater extraction is one of the most widely used groundwater corrective technologies and has a long history of performance. This corrective measure includes installation of one or more groundwater pumping wells or trenches to control and extract impacted groundwater. Groundwater extraction captures and contains impacted groundwater and can limit plume expansion and/or off-site migration. Construction of a groundwater extraction system typically includes, but is not limited to, the following primary components:

- Designing and constructing a groundwater extraction system consisting of one or more extraction wells and operating at a rate to allow capture of CCR impacted groundwater within the UA.

- Management of extracted groundwater, which may include modification to the existing National Pollutant Discharge Elimination System (NPDES) permit.
- Ongoing inspection and maintenance of the groundwater extraction system.

Remediation of inorganics by groundwater extraction can be effective, but systems do not always perform as expected. A combination of factors, including geologic heterogeneities, difficulty in flushing low-permeability zones, and rates of contaminant desorption from aquifer solids can limit effectiveness. Groundwater extraction systems require ongoing operation and maintenance to address issues such as iron bacteria and well fouling and to ensure optimal performance. The extracted groundwater must be managed, either by ex-situ treatment or disposal.

Groundwater extraction may reduce the timeframe to achieve GWPS and limit the off-site migration of constituents that exceed the GWPS. Extraction could be accomplished using a groundwater pumping well system or an extraction trench.

4.3 Source Control with a Cutoff Wall

Since the late 1970s and early 1980s, vertical cutoff walls have been used to control and/or isolate impacted groundwater. Low-permeability cutoff walls can be used to prevent horizontal off-site migration of potentially impacted groundwater. Cutoff walls act as barriers to lateral transport of impacted groundwater and can isolate soils that have been impacted by CCR to prevent contact with unimpacted groundwater. Cutoff walls are often used in conjunction with an interior pumping system to establish an inward gradient within the cutoff wall. The gradient imparted by the pumping system maintains an inward flow through the wall, keeping it from acting as a groundwater dam and controlling potential end-around or breakout flow of contaminated groundwater. Constructing the cutoff wall such that it intersects a low-permeability material at its base, referred to as "keying", greatly increases its effectiveness.

A commonly used cutoff wall construction technology is the slurry trench method, which consists of excavating a trench and backfilling it with a soil-bentonite mixture, often created with the excavated soils, or, for deeper walls, a cement-bentonite mixture that is produced at an onsite batch plant. The trench is temporarily supported with bentonite slurry pumped into the trench during excavation (D'Appolonia & Ryan, 1979). Cutoff wall excavation uses conventional hydraulic excavators, hydraulic excavators equipped with specialized booms to extend their reach (*i.e.,* long-stick excavators), clamshells, or more specialized equipment such as hydromills or secant-pile drill rigs, depending upon trench depth, material excavated, and type of material that the wall is keyed into.

Cutoff walls are a widely accepted technology for containing impacted groundwater. Combining groundwater polishing with a limited cutoff wall and groundwater extraction in specific areas may provide advantages over independent use of these potential corrective technologies. Cutoff walls can be used in combination with groundwater extraction or as part of a PRB system (as the "funnel" in a funnel-and-gate system; **Section 4.4**).

4.4 Source Control with In-Situ Treatment

The use of in-situ treatment, either by injection or PRBs is a widely used technology for treating impacted groundwater. However, in-situ treatment techniques for sulfate are not well established, therefore performance is unknown.

Chemical treatment could consist of injection of reactive materials into the subsurface to treat contaminants at specific, targeted locations. Alternately, treatment could be accomplished via PRB, where reactive materials are placed in the subsurface at locations designed to direct the contaminant plume along a flow path through the reactive media. In either system, the contaminants are transformed or otherwise rendered into environmentally acceptable forms to attain remediation concentration goals downgradient of the barrier (Electric Power Research Institute [EPRI], 2006).

As groundwater passes through the PRB under natural gradients, dissolved constituents in the groundwater react with the media and are transformed or immobilized. A variety of media have been used or proposed for use in PRBs. Zero-valent iron (ZVI) has been shown to effectively immobilize some CCR constituents, including arsenic, chromium, cobalt, molybdenum, selenium, and sulfate. Use of a combination media consisting of ZVI and a boron-selective IX resin to treat boron has been documented in a pilot-scale test (EPRI, 2006).

System configurations include continuous PRBs, in which the reactive media extends across the entire path of the contaminant plume; and funnel-and-gate systems, where low-permeability barriers are installed to control groundwater flow through a permeable gate containing the reactive media. Continuous PRBs intersect the entire contaminant plume and do not materially impact the groundwater flow system. Design may or may not include keying the PRB into a low-permeability unit at depth. Funnel-and-gate systems utilize a system of barriers to groundwater flow (funnels) to direct the contaminant plume through the reactive gate. The barriers, typically some form of cutoff wall, are keyed into a low-permeability unit at depth to prevent short circuiting of the plume. Funnel-and-gate design must consider the residence time to allow chemical reactions to occur. Directing the contaminant plume through the reactive gate can significantly increase the flow velocity, thus reducing residence time.

Design of in-situ treatment systems requires rigorous site investigation to characterize the site hydrogeology and to delineate the contaminant plume. A thorough understanding of the geochemical and redox characteristics of the plume is critical to assess the feasibility of the process and select appropriate reactive media. Laboratory studies, including batch studies and column studies using samples of site groundwater, are needed to determine the effectiveness of the selected reactive media at the site (EPRI, 2006). The main considerations in selecting reactive media are as follows (Gavaskar et al., 1998; cited by EPRI, 2006):

- Reactivity – The media should be of adequate reactivity to immobilize a contaminant within the residence time of the design.
- Hydraulic performance – The media should provide adequate flow through the PRB, meaning a greater particle size than the surrounding aquifer materials. Alternatively, gravel beds have been placed in front of barriers to direct flow through the barrier.
- Stability – The media should remain reactive for an amount of time that makes its use economically advantageous over other technologies.
- Environmentally compatible by-products – Any by-products of media reaction should be environmentally acceptable. For example, iron released by ZVI corrosion should not occur at levels exceeding regulatory acceptance levels.
- Availability and price – The media should be easy to obtain in large quantities at a price that does not negate the economic feasibility of using a PRB.

5. ASSESSMENT OF CORRECTIVE MEASURE TECHNOLOGIES

This CMA was initiated to address exceedances of the 35 I.A.C. § 845.600 GWPS for sulfate at the downgradient waste boundary of the GMF GSP identified during the E001 groundwater monitoring event (**Section 2.2**).

5.1 Requirements

The potential groundwater corrective technologies described in the previous section were evaluated relative to the requirements presented in **Section 3** and reiterated below:

- Performance, reliability, ease of implementation and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination:
- Time required to begin and complete the CAP; and
- Institutional requirements, such as State or local permit requirement or other environmental or public health requirements that may substantially affect implementation of the CAP.

Table 5-1 presents the qualitative CMA evaluation of each corrective technology relative to these requirements, as well as their ability to address GWPS exceedances of sulfate. The following sections provide a summary of these evaluations and a discussion of the potential groundwater corrective measure technologies that may be viable, either independently or in combination, to address GWPS exceedances. This section also provides a summary of corrective measure technologies that have been retained and advanced for evaluation as part of the 35 I.A.C. § 845.670 CAAA process for selecting the final remedy for the GMF GSP.

5.2 Groundwater Corrective Technology Assessment

Source control, consisting of a hybrid closure-by-removal and consolidate-and-cap with a final cover system, will be the primary groundwater corrective measure for the GMF GSP. Closure is expected to be completed by November 2026 and each of the potential groundwater corrective measure technologies would supplement the positive impact of the closure activities. The following sections evaluate groundwater corrective measure technologies that, when combined with site closure, may be viable to address the sulfate GWPS exceedances. Technologies that are not viable for addressing the GWPS exceedances at the GMF GSP will be eliminated from further evaluation and viable technologies will be advanced for further evaluation as part of the CAAA process per 35 I.A.C. § 845.600.

5.2.1 Source Control with Groundwater Polishing

Source control corrective measures (**Section 1.1**) will reduce the mass loading to the groundwater system and the groundwater polishing process could decrease the timeframe for attainment of GWPS in the UA. Groundwater flow and fate and transport modeling incorporating only physical processes indicate that source control would meet GWPS within approximately 7 years post-closure at all locations. Physical processes are expected to perform well in the UA, as discussed below.

Groundwater polishing by natural geochemical processes is a widely accepted component of groundwater remediation and is routinely approved by the IEPA when paired with source control.

The performance of groundwater polishing as a groundwater corrective measure varies based on site-specific conditions and additional data collection may be needed to support the design and regulatory approval. Sandier portions of the UA suggest good performance by physical processes in addressing the sulfate exceedances at the GMF GSP. The chemical processes in the fine-grained UCU require further evaluation.

Naturally occurring geochemical processes are ongoing at the GMF GSP and will continue to affect groundwater constituent concentrations during and after GMF GSP closure. Ongoing monitoring of groundwater conditions is needed to better understand the mechanisms and efficacy of the groundwater polishing process and to confirm the effectiveness over time. Thus, additional groundwater sample collection and analyses would be required to characterize potential mechanisms, as discussed above, and to provide long term monitoring of the remedial progress. Enhancements to the groundwater monitoring system may be required to ensure that groundwater polishing is occurring as predicted by the groundwater modeling and consistent with the adaptive site management approach. The reliability of groundwater polishing as a groundwater corrective measure is high because operation and maintenance requirements are limited. However, the reliability can also vary based on site-specific hydrogeologic and geochemical conditions.

Following characterization and approval of the CAP, monitoring of the groundwater polishing processes and comparison to functional goals established to monitor progress toward the remedial objective could begin prior to, or concurrently with, site closure activities. Installing additional monitoring wells could begin as quickly as within a few months of CAP approval. The time required could be reduced if existing groundwater monitoring well systems could be utilized for monitoring.

No potential safety impacts or exposure to human health or environmental receptors are expected to result from the groundwater polishing processes. Timeframes to achieve GWPS are dependent on site-specific conditions, which require detailed technical analysis which are ongoing and will be evaluated in connection with the CAAA. Selecting groundwater polishing as a corrective measure for the GMF GSP will require approval of the closure and CAP permits by the IEPA.

Monitoring the groundwater polishing to track progress toward achievement of the GWPS, in conjunction with source control at the GMF GSP, would require long-term maintenance and monitoring of the groundwater monitoring system to confirm source control and verify the effectiveness in reducing groundwater concentrations to levels below the GWPS. System design could begin immediately after approval of the CAP permit. Additional investigations to characterize site conditions and installation of the final monitoring system could be performed concurrently with the source control (unit closure) activities, which are currently expected to be completed in 2026.

Groundwater polishing processes will continue before and after source control implementation and may be a viable corrective measure for the sulfate exceedance at the GMF GSP. Therefore, these processes are being advanced to the CAAA for further evaluation.

5.2.2 Source Control with Groundwater Extraction

Source control will reduce the mass loading to the groundwater system and implementing a groundwater extraction system may reduce the time required to attain the GWPS in the UA.

However, the heterogeneous and varied nature of the UA may not significantly improve attainment of the GWPS.

Groundwater extraction is a widely accepted corrective measure with a long track record of performance and reliability. It is routinely approved by the IEPA. For a corrective measure using groundwater extraction to effectively control off-site flow and/or to remove potentially contaminated groundwater, horizontal and vertical capture zone(s) must be created. However, the heterogeneous, varied nature of the UA may result in variable performance of pumping wells. Use of an extraction trench could potentially be used as an alternative to pumping wells, possibly in conjunction with cutoff walls (**Section 4.3**).

Implementation of a groundwater extraction system presents design challenges due to heterogeneous, varied nature of the UA. Extracted groundwater would require management, possibly including treatment, which may require specialized equipment and/or contractors.

There could be some impacts associated with constructing and operating a groundwater extraction system, including altering of the groundwater flow system and some limited exposure to extracted groundwater. Groundwater extraction may also induce settlement, which could cause structural impacts to adjacent structures. Additional data collection and analyses would be required to design an extraction system. Construction could be completed within 1 year following completion of a final design. Time of implementation is approximately 3 to 4 years after approval of the CAP permit, including characterization, design, permitting, and construction. Timeframes to achieve GWPS are dependent on site-specific conditions. However, an extraction system may not reduce the time to attain GWPS in the UA relative to the post-closure timeframe predicted by the groundwater model due to the low permeability nature of the UCU.

Implementing a groundwater extraction system at the GMF GSP would require IEPA approval of the CAP permit, and extracted groundwater could likely be discharged under the NPDES permit. If an extraction trench is used, additional permitting related to construction in wetlands and/or Waters of the United States may be required, if they are determined to be present at the site. Depending upon the location of the extraction system, an Illinois Department of Natural Resources (IDNR) dam safety modification permit may also be required to construct an extraction system.

Groundwater extraction could be viable corrective measure for the sulfate exceedances at the GMF GSP. Therefore, groundwater extraction is being advanced to the CAAA for further evaluation.

5.2.3 Source Control with Groundwater Cutoff Wall

Source control will reduce the mass loading to the groundwater system and implementing additional groundwater corrective measures may reduce the time required to attain the GWPS in the UA. Groundwater cutoff walls are a widely accepted corrective measure used to control and/or isolate impacted groundwater and are routinely approved by the IEPA. Cutoff walls have a long history of reliable performance as hydraulic barriers, provided they are properly designed and constructed. However, if not coupled with a groundwater extraction system, a cutoff wall will provide directional groundwater control only and may result in redistribution of contaminants and potentially GWPS exceedances at new locations.

Cutoff walls are designed to act as hydraulic barriers; as a result, cutoff walls inherently alter the existing groundwater flow system. Changes to the existing groundwater flow system may need to be controlled to maximize the effectiveness of the remedy by, for example, combining a cutoff wall with groundwater extraction to control build-up of hydraulic head upgradient and around the cutoff walls. The effectiveness of a cutoff wall as a hydraulic barrier also relies on the contrast between the hydraulic conductivity of the aquifer and the cutoff wall. The most effective barriers have hydraulic conductivity values that are several orders of magnitude lower than the geologic materials they are in contact with. A cutoff wall designed with hydraulic conductivity of 1×10^{-7} cm/s would several orders of magnitude lower than the sandier portions of UA, which has a mean hydraulic conductivity of 1.4×10^{-3} cm/s. A cutoff wall would be an effective containment method in the UA and could improve the performance of a UA extraction system.

Constructing a cutoff wall could alter the flow system, redirecting contaminants to areas where they are not currently present. Specialized construction contractor(s) may be required, depending upon construction methodology, which could delay implementation.

Additional data collection and analyses would be required to design a cutoff wall. Construction could be completed within 1 to 2 years. Time of implementation is approximately 4 to 5 years, including characterization, design, permitting, and construction. Construction could possibly be accelerated by combining with site closure activities. To attain GWPS, cutoff walls require a separate groundwater corrective measure to operate in concert with the cutoff wall(s). Cutoff walls are commonly coupled with groundwater polishing and/or groundwater extraction as groundwater corrective measures. The time to attain GWPS is dependent on the selected groundwater corrective measure or measures that are coupled with the cutoff walls. A cutoff wall would require IEPA approval of the CAP permit. Construction of a cutoff wall may also require an evaluation and/or permits related to wetlands if they are determined to be present in the area of the proposed remedy.

A cutoff wall alone would not be a viable corrective measure for the sulfate exceedance at the GMF GSP. Site conditions, including the relatively shallow and thin UA, do not suggest that a cutoff wall would provide a significant benefit to an extraction system or enhance the time required to meet GWPS. Therefore, the cutoff wall is not being advanced to the CAAA for further evaluation.

5.2.4 Source Control with In-Situ Treatment (Permeable Reactive Barrier [PRB] or In-Situ Chemical Treatment)

Source control will reduce the mass loading to the groundwater system and implementing additional groundwater corrective measures may reduce the time required to attain the GWPS in the UA. Use of in-situ treatment, either through targeted injection of reactive media or in PRB systems, to transform contaminants into environmentally acceptable forms to attain the GWPS was considered.

In-situ treatment using IX to address sulfate exceedances in groundwater is not an established or widely accepted groundwater corrective measure; therefore, its performance and reliability are unknown. Regulatory acceptance of this innovative approach to achieving the GWPS is uncertain.

In-situ treatment presents design and construction challenges due to the heterogeneous, discontinuous nature of the UA. Depending upon the location of the PRB system, construction may affect existing berms at the GMF GSP and periodic change-outs of IX resin media may be required.

No potential safety impacts or exposure to human health or environmental receptors are expected to result from a PRB.

Additional data collection and analyses would be required to design an in-situ treatment system and bench scale and/or pilot scale testing may be required to demonstrate performance and reliability. Time of implementation is approximately 4 to 6 years after approval of the CAP permit, including characterization, design, permitting, and construction. Timeframes to achieve GWPS are dependent on demonstrations of performance and reliability and on ultimate regulatory acceptance. It is not known whether in-situ treatment would reduce the time to attain GWPS in the UA relative to the post-closure timeframe predicted by the groundwater modeling.

Due to the uncertain performance, reliability and potential for regulatory acceptance, in-situ chemical treatment is not a viable corrective measure for the sulfate exceedance at the GMF GSP and is not being advanced to the CAAA for further evaluation.

5.3 Technologies Advanced to CAAA

Based on the evaluations presented above, the following potential corrective technologies are being advanced to the CAAA, individually or in combination, for more detailed evaluations:

- Source control with groundwater polishing; and
- Source control with groundwater extraction.

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TABLES

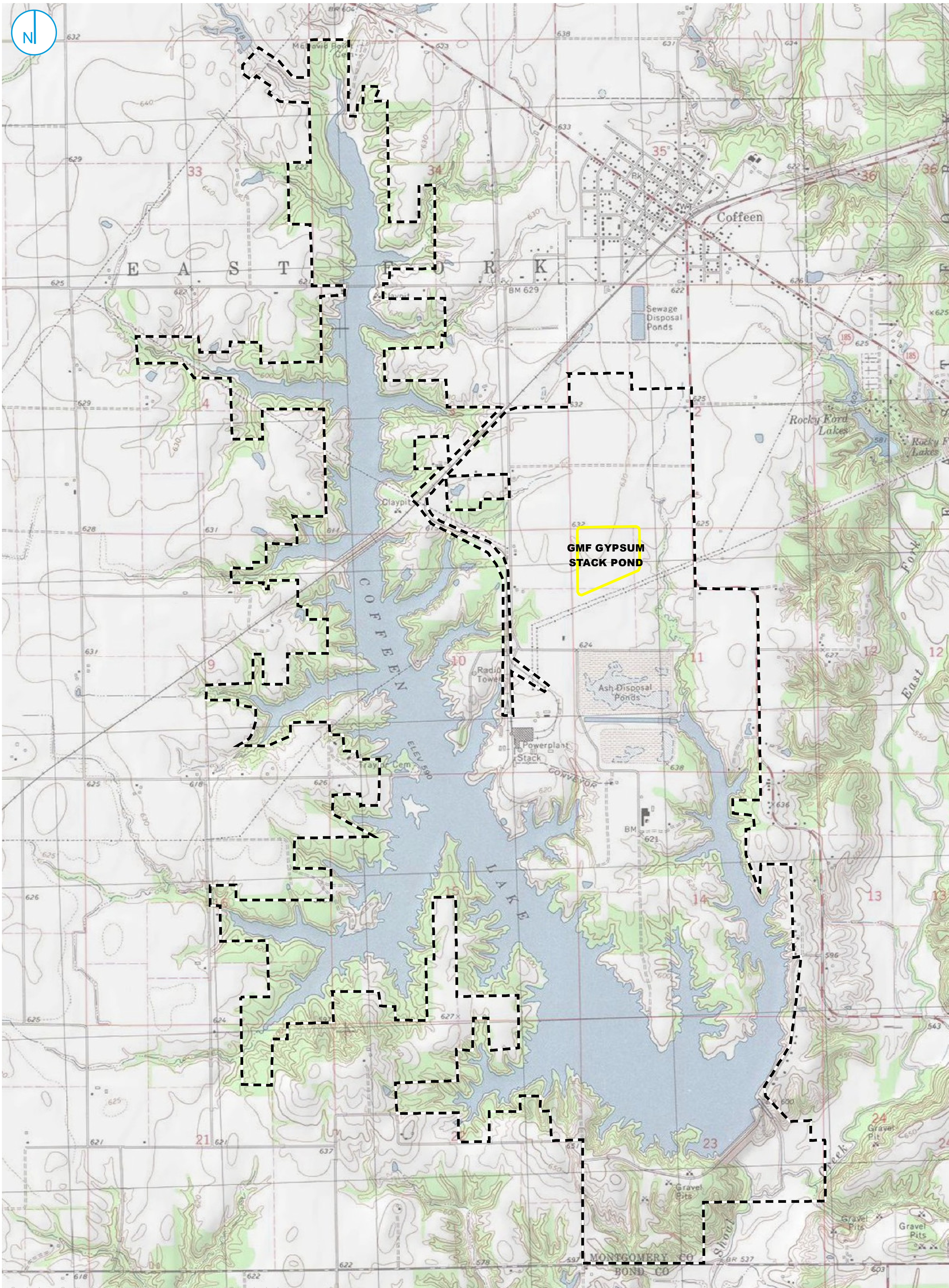
TABLE 5-1. CORRECTIVE MEASURES ASSESSMENT MATRIX
GMF GYPSUM STACK POND
COFEEN POWER PLANT
COFFEEN, ILLINOIS
June 12, 2024

Remedy	Evaluation Factors						
	Performance	**Reliability**	**Ease of Implementation**	**Potential Impacts of Remedy (safety impacts, cross-media impacts, control of exposure to any residual contamination)**	**Time Required to Begin and Implement Remedy[1]**	**Time to Attain Groundwater Protection Standards**	**Institutional Requirements (state/local permit requirements, environmental/public health requirements that affect implementation of remedy)**
Source Control with Groundwater Polishing	Performs best paired with source control, which is expected to be completed prior to 2026. Site conditions are favorable for physical processes, while chemical processes may be limited under normal aquifer conditions.	Ongoing analysis will evaluate if the geochemical mechanisms have low reversibility, the aquifer has sufficient capacity, and the hydrogeology is favorable for dilution/dispersion.	Long-term monitoring would be required. Implementing would not require extensive specialized equipment or contractors	None identified.	Approximately 90 days after CAP permit approval.	Less than the 7 years post-closure predicted by the groundwater model.	IEPA approval of the closure and CAP permits is required.
Source Control with Groundwater Extraction	Widely accepted, routinely approved technology; variable performance anticipated due to the heterogeneous, varied nature of uppermost aquifer.	Reliable if properly designed, constructed and maintained. However, the heterogeneous, varied nature of uppermost aquifer may present reliability challenges for pumping wells. Other technologies, such as an extraction trench, could potentially be utilized.	Design challenges due to heterogenous, varied nature of uppermost aquifer. Specialized contractors are not expected to be needed for construction of the groundwater extraction system. The extraction system would require ongoing routine operation and maintenance activities and extracted groundwater would require management, possibly including treatment, which may also require specialized equipment/contractors and higher maintenance costs.	Alters groundwater flow system and there is the some limited potential for contact exposure to extracted groundwater. Groundwater extraction may induce settlement, which could cause structural impacts to adjacent structures.	Design, permitting and construction is expected to take 3 to 4 years after CAP permit approval.	Dependent on site-specific conditions not yet fully characterized. May be similar to the 7 years predicted by the groundwater model due to the low permeability Upper Confining Unit.	IEPA approval of the closure and CAP permits is required. Extracted groundwater could likely be discharged under the NPDES permit. IDNR dam safety modification permit might also be required, depending on location of wells or extraction trenches and settlement potential.
Source Control with Groundwater Cutoff Wall	Widely accepted and routinely approved technology with good performance if properly designed and constructed. If not combined with groundwater extraction, a cutoff wall will provide directional control only, thus redirecting flow to other areas where GWPS may be exceeded.	Reliable for groundwater directional control if properly designed and constructed.	Widely used, established technology. May require specialized contractors depending upon the construction/implementation method.	Alters groundwater flow system but does not provide any treatment. Can result in unintended consequences resulting from redirecting contaminants to areas where they are not currently present.	Design, permitting and construction is expected to take 4 to 5 years after CAP approval. Implementation could be accelerated by combining with closure construction activities.	Provides groundwater directional control only. Combination with other groundwater corrective measure(s), such as groundwater extraction or permeable reactive barrier, may not significantly improve attainment of the GWPS due to the low permeability Upper Confining Unit.	IEPA approval of the closure and CAP permits is required.
Source Control with In-Situ Treatment	In-situ treatment using IX resins not well established for sulfate, therefore performance is unknown.	Unknown reliability for sulfate.	Design challenges related to reactive material delivery due to heterogenous, discontinuous nature of uppermost aquifer. Could require periodic change-outs of resin media. May cause structural impacts to the existing berms, depending on the location of the PRB.	None identified.	May require bench scale and/or pilot scale testing as part of design. Design, permitting and construction is expected to take 4 to 6 years after CAP approval.	There is uncertainty regarding whether a in-situ treatment would reduce sulfate concentrations to achieve the GWPS. Dependent on conditions specific to the reactive media used and the site. Treatment technology is not well understood.	IEPA approval of the CAP permit is required. IEPA approval of this innovative and relatively unproved solution may be challenging. IDNR dam safety permitting may be required, depending on the location of the PRB relative to the existing embankments.

Notes:
[1] Time required to begin and implement remedy includes design, permitting, and construction.

CAP - Corrective Action Plan
GWPS - groundwater protection standard
IDNR - Illinois Department of Natural Resources
IEPA - Illinois Environmental Protection Agency
IX - Ion Exchange
NPDES - National Pollutant Discharge Elimination System
PRB - permeable reactive barrier

FIGURES



REGULATED UNIT (SUBJECT UNIT)

PROPERTY BOUNDARY

0 1,000 2,000 Feet

SITE LOCATION MAP

FIGURE 2-1

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

COAL MINE SHAFT
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
LIMITS OF FINAL COVER
PROPERTY BOUNDARY

0 275 550 Feet

SITE MAP

FIGURE 2-2

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

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

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)

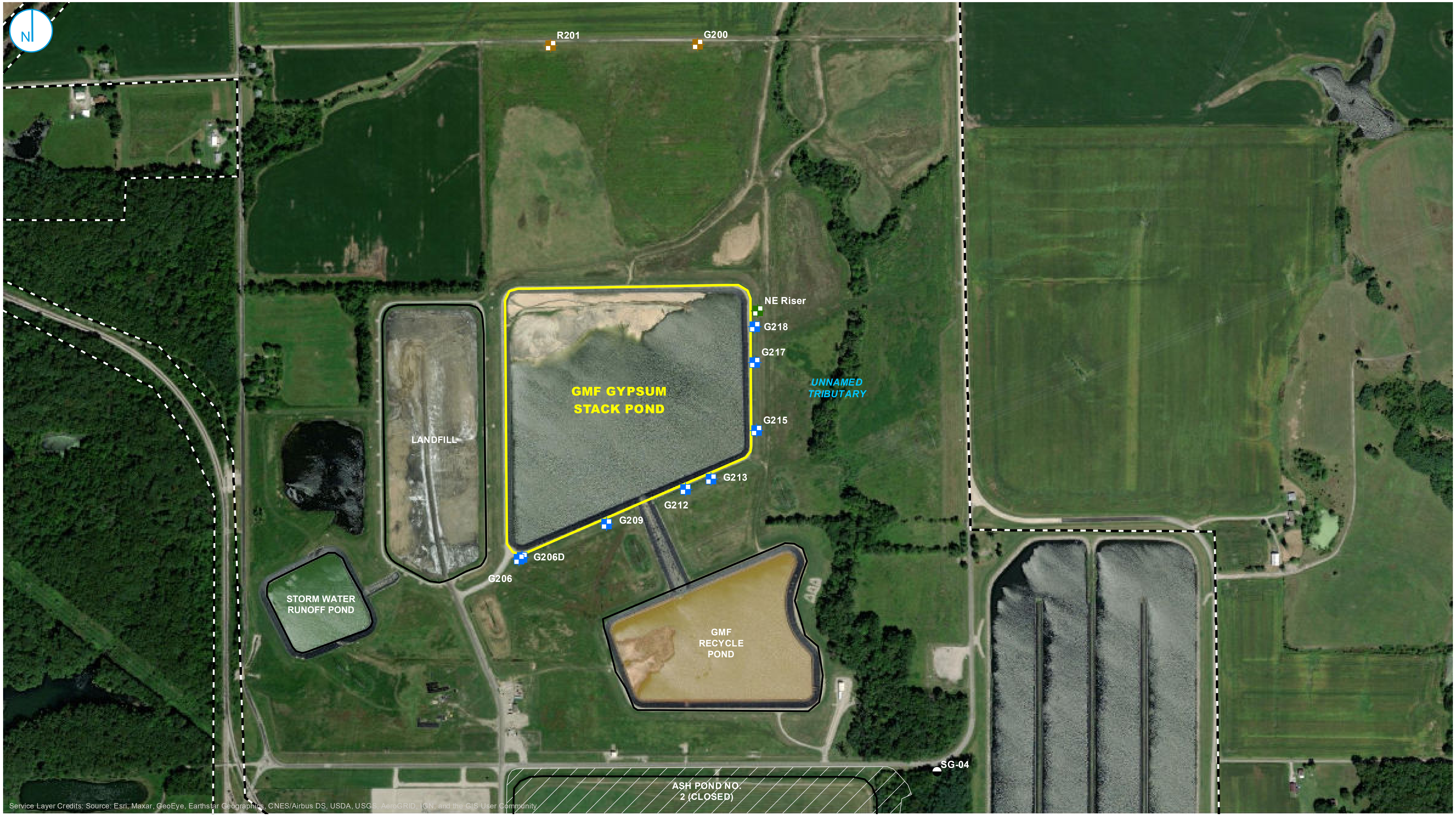
POTENTIOMETRIC SURFACE MAP
APRIL 30, 2023

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

FIGURE 2-3

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL



PROJECT: 169000XXXX | DATED: 10/12/2021 | DESIGNER: HOTCALD

Y:\Mapping\Projects\22\2285\MXD\845_Operating_Permit\Coffeen\GMF_GSP\GMP\Figure 2-1_Proposed Monitoring Well Network.mxd

BACKGROUND WELL
COMPLIANCE WELL
SOURCE SAMPLE LOCATION
STAFF GAGE
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
LIMITS OF FINAL COVER
PROPERTY BOUNDARY

0 250 500 Feet

MONITORING WELL LOCATION MAP

35 I.A.C. § 845 CORRECTIVE MEASURES ASSESSMENT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

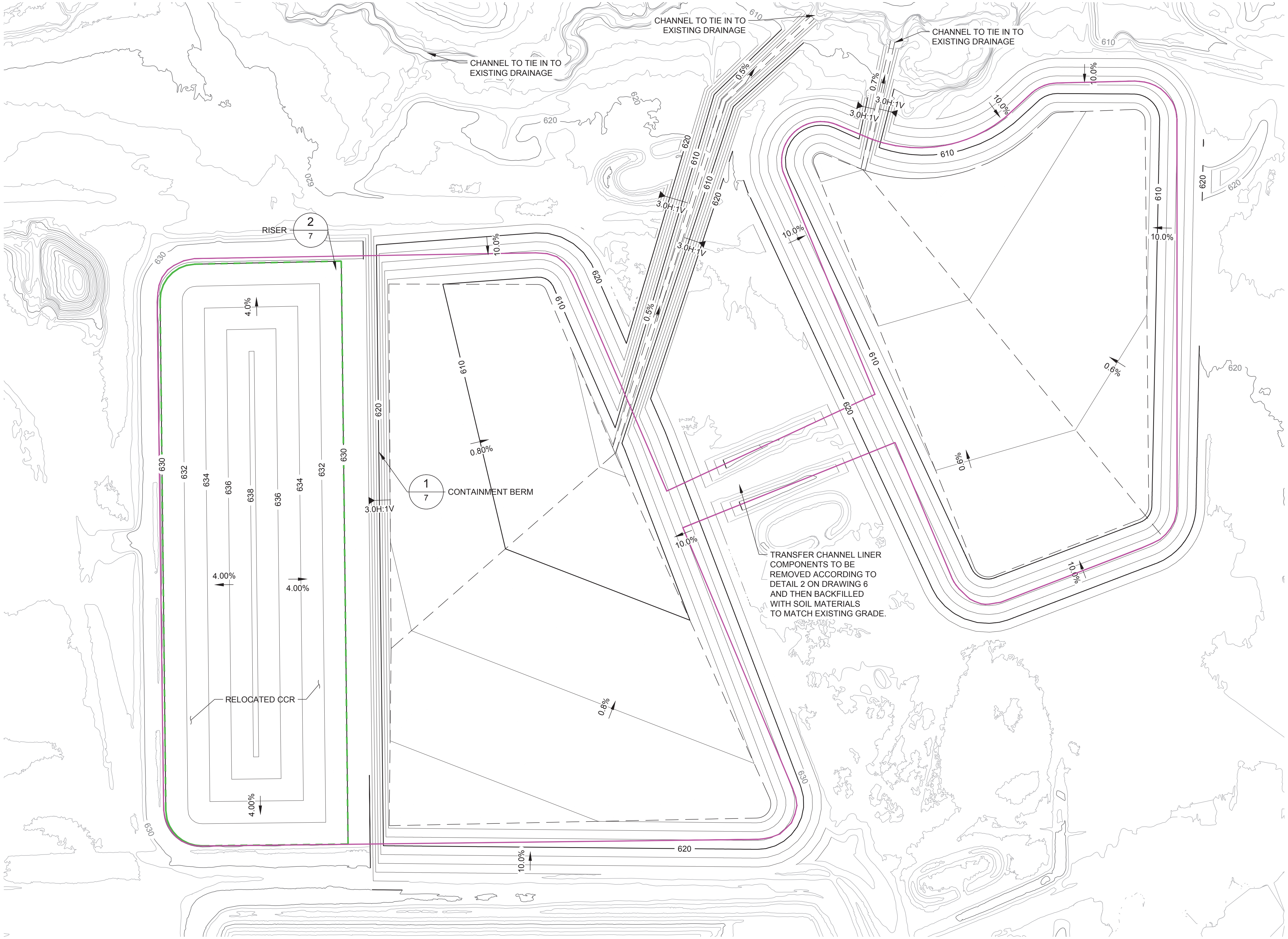
FIGURE 2-4

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

ATTACHMENTS

ATTACHMENT A
Selected Construction Permit Application Plans



LEGEND

600 — GMF CLOSURE IN PLACE GRADES (SEE NOTES 1, 2, AND 3)

600 — EXISTING GROUND CONTOURS (SEE NOTE 4)

LIMIT OF RELOCATED CCR WASTE

LIMITS OF LINER SYSTEM (SEE NOTE 5)

NOTE(S)

1. THE CLOSURE-IN-PLACE CONCEPT FOR THE GYPSUM MANAGEMENT FACILITY (GMF) GYPSUM STACK POND (GSP) INVOLVES REMOVAL OF PONDED WATER, CONSTRUCTION OF A STRUCTURAL BERM (WITH COMPOSITE LINER ON THE UPSTREAM SLOPE), REMOVAL AND RELOCATION OF GYPSUM AND 1 FT (MAX.) OF CLAY LINER SOUTH OF THE BERM TO WITHIN THE CONSOLIDATED FOOTPRINT, PLACEMENT OF SOIL COVER ON GSP FLOOR SOUTH OF THE BERM FOR DRAINAGE, REMOVAL OF PERIMETER EMBANKMENT SOUTH OF RELOCATED WASTE, AND FINAL COVER CONSTRUCTION. EXISTING LINER COMPONENTS TO BE REMOVED SOUTH OF THE BERM ARE SPECIFIED IN DETAIL 1 ON DRAWING 7.
2. THE GMF RECYCLE POND CLOSURE WILL BE BY REMOVAL.
3. GMF GSP CLOSURE IN PLACE GRADES INCLUDE RELOCATED CCR WASTE, WASTE CONTAINMENT BERM, SOIL FILL FOR DRAINAGE ON GSP FLOOR, AND EXCAVATION GRADING FOR REMOVAL OF GSP PERIMETER EMBANKMENT SOUTH OF THE CONTAINMENT BERM. GMF RECYCLE POND GRADES ARE SOIL FILL FOR DRAINAGE ON RECYCLE POND FLOOR AND EXCAVATION GRADING FOR REMOVAL OF RECYCLE POND PERIMETER EMBANKMENT.
4. EXISTING CONTOURS ARE A COMPOSITE OF AN AERIAL SURVEY COMPLETED BY DRAGONFLY AEROSOLUTIONS DATED 12/3/2020, TOPOGRAPHIC/BATHYMETRIC SURVEYS COMPLETED BY INGENAE DATED 12/3/2020 & 12/4/2020.
5. LIMITS OF THE LINER SYSTEM ARE APPROXIMATE BASED ON GYPSUM MANAGEMENT FACILITY (GMF) GYPSUM STACK POND (GSP) AND RECYCLE POND (RP) BASE GRADES DEVELOPED FROM CONSTRUCTION RECORD DRAWINGS DATED 1/5/2011.

0 120 240
1" = 120' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
A	2022-07-28	ISSUED FOR PERMIT APPLICATION	DVS	AGD	MWD	MNH

SEAL

CLIENT
ILLINOIS POWER RESOURCES GENERATING, LLC
COFFEEN POWER PLANT

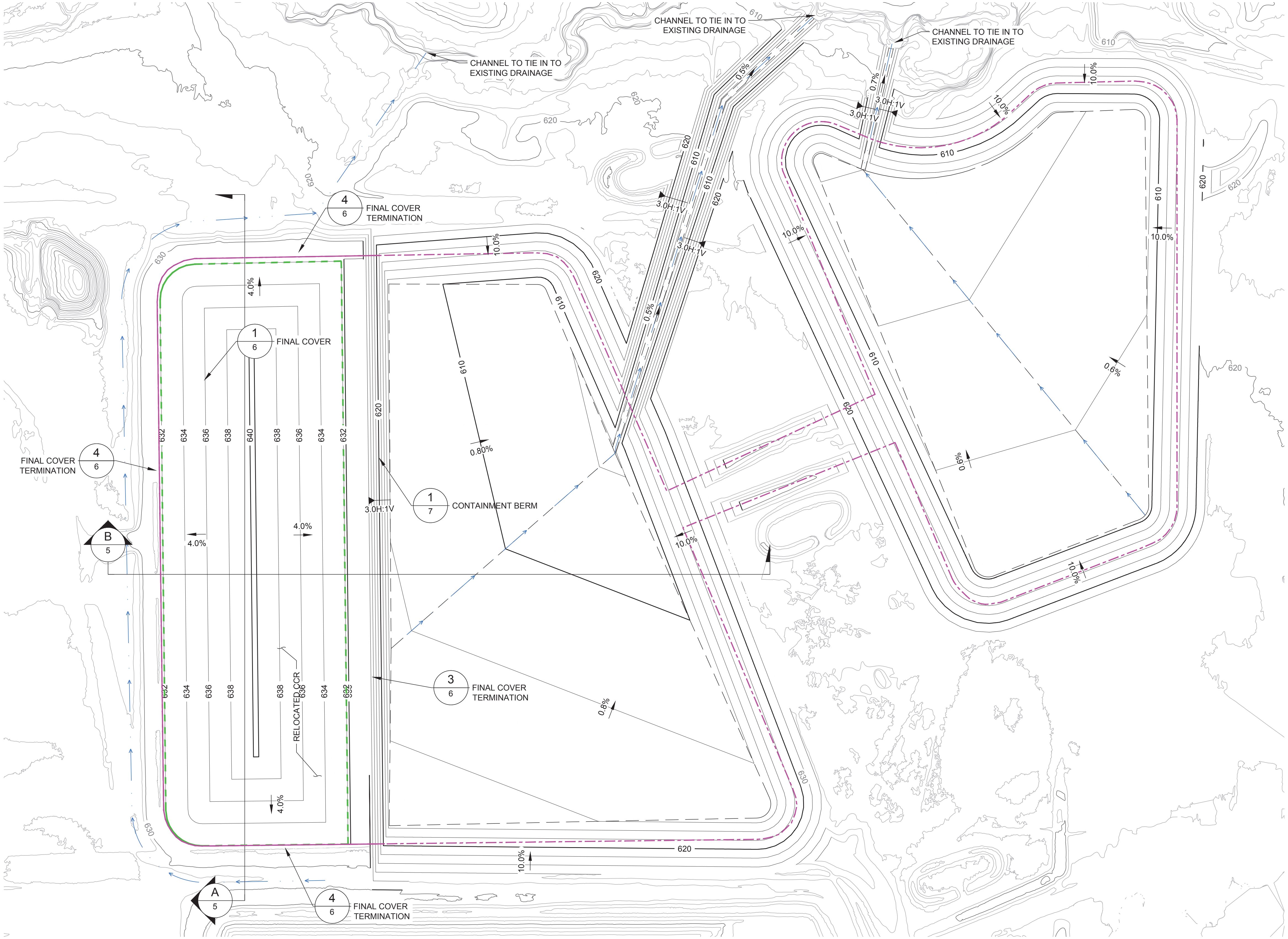
CONSULTANT
WSP GOLDER
701 EMERSON ROAD, SUITE 250
CREVE COEUR, MO 63141
UNITED STATES
(313) 984 8800

PROJECT
GYPSUM MANAGEMENT FACILITY
CONSTRUCTION PERMIT APPLICATION

TITLE
GYPSUM REGRADING AND CONTAINMENT PLAN

PROJECT NO. 21465046 | REV. A | DRAWING 3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D



LEGEND

600 (solid)	GMF CLOSURE IN PLACE GRADES (SEE NOTES 1 AND 2)
600 (grey)	EXISTING GROUND CONTOURS (SEE NOTE 4)
green dashed	LIMIT OF RELOCATED CCR WASTE
arrow	PROPOSED STORM WATER FLOW PATH
magenta solid	EXISTING LINER TO REMAIN IN PLACE (SEE NOTE 5)
magenta dash-dot	EXISTING LINER TO BE REMOVED (SEE NOTE 5)

NOTE(S)

1. THE CLOSURE-IN-PLACE CONCEPT FOR THE GYPSUM MANAGEMENT FACILITY (GMF) GYPSUM STACK POND (GSP) INVOLVES REMOVAL OF PONDED WATER, CONSTRUCTION OF A STRUCTURAL BERM (WITH COMPOSITE LINER ON THE UPSTREAM SLOPE), REMOVAL AND RELOCATION OF GYPSUM AND 1 FT (MAX.) OF CLAY LINER SOUTH OF THE BERM TO WITHIN THE CONSOLIDATED FOOTPRINT, PLACEMENT OF SOIL COVER ON GSP FLOOR SOUTH OF THE BERM FOR DRAINAGE, REMOVAL OF PERIMETER EMBANKMENT SOUTH OF RELOCATED WASTE, AND FINAL COVER CONSTRUCTION. EXISTING LINER COMPONENTS TO BE REMOVED SOUTH OF THE BERM ARE SPECIFIED IN DETAIL 1 ON DRAWING 7.
2. THE GMF RECYCLE POND CLOSURE WILL BE BY REMOVAL.
3. GMF GSP CLOSURE IN PLACE GRADES INCLUDE RELOCATED CCR WASTE, WASTE CONTAINMENT BERM, SOIL FILL FOR DRAINAGE ON GSP FLOOR, AND EXCAVATION GRADING FOR REMOVAL OF GSP PERIMETER EMBANKMENT SOUTH OF THE CONTAINMENT BERM. GMF RECYCLE POND GRADES ARE SOIL FILL FOR DRAINAGE ON RECYCLE POND FLOOR AND EXCAVATION GRADING FOR REMOVAL OF RECYCLE POND PERIMETER EMBANKMENT.
4. EXISTING CONTOURS ARE A COMPOSITE OF AN AERIAL SURVEY COMPLETED BY DRAGONFLY AEROSOLUTIONS DATED 12/3/2020, TOPOGRAPHIC/BATHYMETRIC SURVEYS COMPLETED BY INGENAE DATED 12/3/2020 & 12/4/2020.
5. THE PROPOSED STORMWATER DRAINAGE CONCEPT IS TO SHED WATER INTO EXISTING DRAINAGE CHANNEL EAST OF THE FACILITY. STORMWATER COLLECTED WITHIN THE GMF GSP AND RECYCLE POND WILL BE DIRECTED INTO AN OPEN CHANNEL THAT BREACHES CONSTRUCTED BERMS TO CONNECT TO THE EXISTING DRAINAGE.
6. LIMITS OF THE LINER SYSTEM ARE APPROXIMATE BASED ON GYPSUM MANAGEMENT FACILITY (GMF) BASE GRADES DEVELOPED FROM CONSTRUCTION RECORD DRAWINGS DATED 1/5/2011.

0 120 240
1" = 120' FEET

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
A	2022-07-28	ISSUED FOR PERMIT APPLICATION	DVS	AGD	MWD	MNH

SEAL
LICENSED PROFESSIONAL ENGINEER
MARK N. HADDOCK
062-058223
7/28/22
STATE OF ILLINOIS

CLIENT
ILLINOIS POWER RESOURCES GENERATING, LLC
COFFEEN POWER PLANT

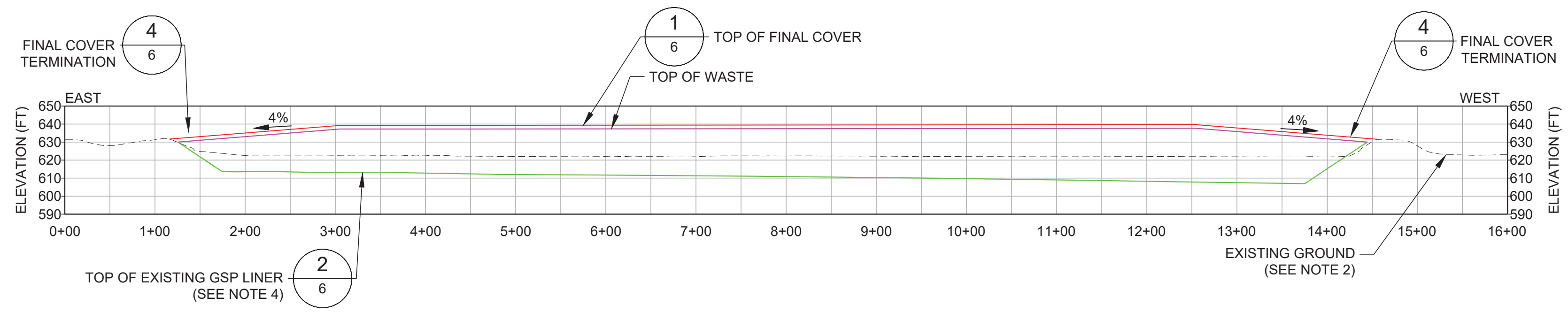
CONSULTANT
WSP GOLDER
701 EMERSON ROAD, SUITE 250
CREVE COEUR, MO 63141
UNITED STATES
(313) 984 8800

PROJECT
GYPSUM MANAGEMENT FACILITY
CONSTRUCTION PERMIT APPLICATION

TITLE
FINAL COVER AND STORMWATER PLAN

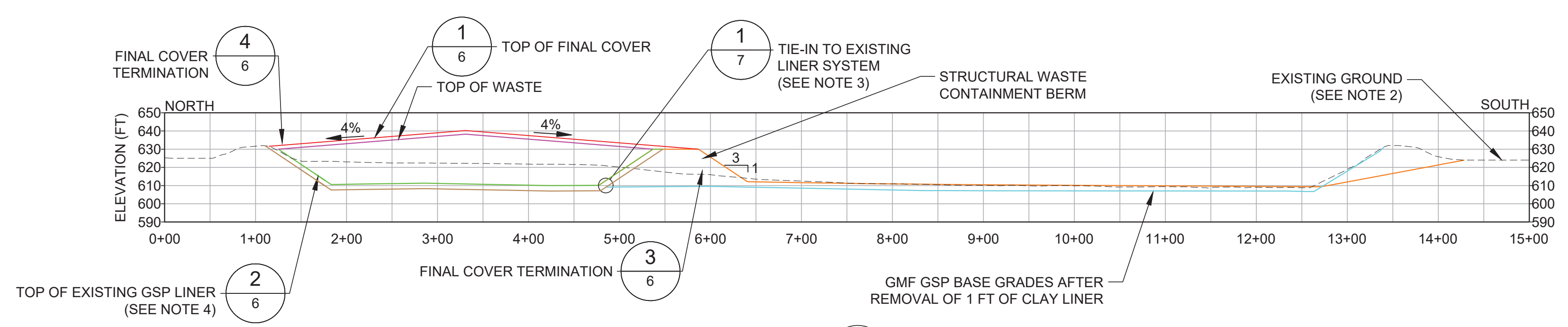
PROJECT NO.	REV.	DRAWING
21465046	A	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D



SCALE NOT TO SCALE
VERTICAL SCALE X2
A / 5 SECTION A

0 100 200
1" = 100' FEET



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1" = 100' FEET

NOTE(S)

1. THE CLOSURE-IN-PLACE CONCEPT FOR THE GYPSUM MANAGEMENT FACILITY (GMF) GYPSUM STACK POND (GSP) INVOLVES REMOVAL OF PONDED WATER, CONSTRUCTION OF A STRUCTURAL BERM (WITH COMPOSITE LINER ON THE UPSTREAM SLOPE), REMOVAL AND RELOCATION OF GYPSUM AND 1 FT (MAX.) OF CLAY LINER SOUTH OF THE BERM TO WITHIN THE CONSOLIDATED FOOTPRINT, PLACEMENT OF SOIL COVER ON GSP FLOOR SOUTH OF THE BERM FOR DRAINAGE, REMOVAL OF PERIMETER EMBANKMENT SOUTH OF RELOCATED WASTE, AND FINAL COVER CONSTRUCTION.
2. EXISTING CONTOURS ARE A COMPOSITE OF AN AERIAL SURVEY COMPLETED BY DRAGONFLY AEROSOLUTIONS DATED 12/3/2020, TOPOGRAPHIC/BATHYMETRIC SURVEYS COMPLETED BY INGENAE DATED 12/3/2020 & 12/4/2020.
3. THE GSP EXISTING LINER SYSTEM WILL BE EXTENDED UP THE UPSTREAM SLOPE OF THE BERM.
4. GMF GSP TOP OF EXISTING LINER GRADES WERE DEVELOPED FROM CONSTRUCTION RECORD DRAWINGS DATED 1/5/2011.

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
A	2022-07-28	ISSUED FOR PERMIT APPLICATION	DVS	AGD	MWD	MNH

SEAL
LICENSED PROFESSIONAL ENGINEER
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062-058223
7/28/22
STATE OF ILLINOIS

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COFFEEN POWER PLANT

CONSULTANT
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CREVE COEUR, MO 63141
UNITED STATES
(313) 984 8800

PROJECT
GYPSUM MANAGEMENT FACILITY
CONSTRUCTION PERMIT APPLICATION

TITLE
CROSS SECTIONS

PROJECT NO. 21465046
REV. A
DRAWING 5

Intended for
Illinois Power Generating Company
134 CIPS Lane
Coffeen, IL 62017
Montgomery County

Date
June 12, 2024

Project No.
1940103584-002

NATURE AND EXTENT REPORT

COFFEEN POWER PLANT, GMF GYPSUM STACK POND, IEPA ID NO. W1350150004-03

RAMBOLL Bright ideas. Sustainable change.

NATURE AND EXTENT REPORT
COFFEEN POWER PLANT, GMF GYPSUM STACK POND,
IEPA ID NO. W1350150004-03

Project name	**Coffeen Power Plant GMF Gypsum Stack Pond**
Project no.	**1940103584-002**
Recipient	**Illinois Power Generating Company**
Document type	**Nature and Extent Report**
Revision	**Final**
Date	**June 12, 2024**
Prepared by	**Alison O'Connor, PhD and Nathaniel Keller**
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CONTENTS

TABLES (ATTACHED)

FIGURES (ATTACHED)

APPENDICES

ACRONYMS AND ABBREVIATIONS

35 I.A.C.	Title 35 of the Illinois Administrative Code
40 C.F.R.	Title 40 of the Code of Federal Regulations
AP1	Ash Pond No. 1
AP2	Ash Pond No. 2
bgs	below ground surface
CAP	Corrective Action Plan
CCR	coal combustion residuals
cm/s	centimeters per second
CPP	Coffeen Power Plant
CSM	conceptual site model
DA	deep aquifer
E001	Event 1
E002	Event 2
E003	Event 3
ft/ft	feet per foot
GCSM	geochemical conceptual site model
GMF	Gypsum Management Facility
GSP	Gypsum Stack Pond
GWPS	groundwater protection standard
HCR	Hydrogeologic Site Characterization Report
HDPE	high-density polyethylene
IEPA	Illinois Environmental Protection Agency
IPGC	Illinois Power Generating Company
LCL	lower confidence limit
LCU	lower confining unit
LF	Landfill
mg/L	milligrams per liter
NAVD88	North American Vertical Datum of 1988
No.	number
PMP	potential migration pathway
Ramboll	Ramboll Americas Engineering Solutions, Inc.
RP	Recycle Pond
SI	surface impoundment
UA	uppermost aquifer
UCU	upper confining unit
USGS	United States Geological Survey
WPCP	Water Pollution Control Permit

EXECUTIVE SUMMARY

Groundwater samples collected at the Coffeen Power Plant (CPP) Gypsum Management Facility (GMF) Gypsum Stack Pond (GSP) during June 2023 for the Quarter 2, 2023 compliance sampling event (Event 1 [E001]) were evaluated for exceedances of the groundwater protection standards (GWPS) described in Title 35 of the Illinois Administrative Code (35 I.A.C.) § 845.600. A statistical exceedance was identified in the following hydrostratigraphic unit and well:

- Detected Uppermost aquifer (UA) Exceedance: Sulfate at G215

As a result of the identified E001 exceedance, a Corrective Measures Assessment was initiated on January 14, 2024 in accordance with 35 I.A.C. § 845.660 and submitted on June 12, 2024 [1]. The subsequent compliance sampling events for the Quarter 3 and Quarter 4, 2023 sampling events (Event 2 [E002] and Event 3 [E003]) were completed in August and November 2023 and groundwater samples were evaluated for exceedances of the GWPS as described in 35 I.A.C. § 845.600. Exceedances identified during the E002 and E003 events were consistent with those listed above.

Pursuant to 35 I.A.C. § 845.650(e), potential alternative sources for the GWPS exceedance were evaluated, but were not conclusive in demonstrating an alternative source for the GWPS exceedance.

As required by 35 I.A.C. § 845.650(d)(1), this report characterizes the nature and extent of sulfate and relevant site conditions to determine how they may affect the corrective measures ultimately selected for the GMF GSP and documents the additional measures taken in accordance with 35 I.A.C. § 845.650(d).

Statistical exceedances of sulfate greater than the GWPS were encountered only within the UA at G215. The lateral extent of sulfate exceedances are defined to the north by monitoring wells G217 and G218, to the southwest by monitoring wells G213 and G212, and to the west by the north-south trending groundwater divide. Wells G219 and G220 were installed downgradient of the GMF GSP in March 2024 and the downgradient delineation of sulfate exceedances is ongoing. Vertically, the extent of sulfate greater than the GWPS is limited by the presence of low permeability tills.

Conditions within UA groundwater are predicted to favor amorphous iron oxide stability at most locations, which indicates that a portion of the sulfate concentrations in the groundwater system may be attenuated via surface complexation reactions. However, batch attenuation testing results indicate that chemical attenuation of sulfate downgradient of the GMF GSP could be minimal [2].

1. INTRODUCTION

35 I.A.C. § 845.650(d)(1) requires the owner or operator of a coal combustion residuals (CCR) surface impoundment (SI) to characterize the nature and extent of a release and relevant site conditions that may affect the remedy ultimately selected for a CCR SI if any constituent regulated under 35 I.A.C. § 845 is found to exceed the GWPS. This report documents the nature and extent of constituents with detected statistical exceedances of the GWPS that are attributable to the CPP GMF GSP.

The groundwater data and analysis in this report includes results from historical sampling (initiated in 2015) through E003, which was completed on November 17, 2023. Results of the E001, E002, and E003 events were submitted and placed in the facility's operating record by October 16, 2023; January 28, 2024; and March 10, 2024, respectively, as required by 35 I.A.C. § 845.800(d)(15), within 60 days of receiving final laboratory analytical data [2, 3, 4]. The statistical determination presented in the report identified the following exceedance of the GWPS at a compliance groundwater well in the following hydrostratigraphic unit:

- Detected UA Exceedance – Sulfate at G215

Pursuant to 35 I.A.C. § 845.650(e), the following were evaluated as potential alternative sources for the GWPS exceedance:

- Sources other than the CCR SI
- Error in sampling and analysis protocol
- Error in statistical analysis
- Natural variation in groundwater quality
- Change in the potentiometric surface and groundwater flow direction.

These evaluations were not conclusive in demonstrating an alternative source for the GWPS exceedance. This Nature and Extent Report discusses in detail the extent of the sulfate exceedances as well as a geochemical conceptual site model (GCSM) describing the nature of these exceedances.

2. UNIT BACKGROUND

2.1 Site Location and Description

The CPP is located in Montgomery County in central Illinois, approximately two miles south of the City of Coffeen and about eight miles southeast of the City of Hillsboro (**Figure 2-1**). The CPP was a coal-fired power plant with five CCR units present: GMF GSP (35 I.A.C. § 845 regulated CCR Unit and subject of this report), Ash Pond Number (No.) 1 (AP1), Ash Pond No. 2 (AP2), GMF Recycle Pond (RP), and Landfill (LF). The GMF GSP is located in Section 11, Township 7 North and Range 3 West. The GMF GSP is located northeast of the CPP and situated in a predominantly agricultural area (**Figure 2-2**). The GMF GSP is located between two lobes of Coffeen Lake (the western lobe is identified as "Coffeen Lake" and the upper reaches of the eastern lobe are fed by a stream labeled as "Unnamed Tributary" on **Figures 2-1** and **2-2**), which surround the SI to the west, east, and south. The GMF GSP is bordered by other CCR units and agricultural land to the north. The GMF RP is located south and immediately adjacent to the GMF GSP; therefore, the geology and hydrogeology are similar and results from the 35 I.A.C. § 845 investigations from both units are included and discussed in this report, and in the Nature and Extent report prepared for the GMF RP. The combined area including the GMF GSP and GMF RP will hereinafter be referred to as the site and data from both units will be utilized in portions of **Sections 2.3** and **2.5**.

2.2 Description of CCR Unit

The CPP was a coal-fired electrical generating plant that began operation in 1964. The plant initially burned bituminous coal from Illinois and CCR from the coal fired units was disposed of in AP1. AP2 was utilized for CCR disposal beginning in the early 1970's and AP1 was reconstructed in 1978. Both of these units were used until the mid-1980's, beginning in 2010 CCR material was placed in the LF and GMF Units.

- **GMF GSP:** The 37-acre GMF GSP received blowdown from the air emission scrubbers and was put into operation in 2010. Construction of the GMF GSP was in accordance with Water Pollution Control Permit (WPCP) 2008-EA-4661 and features a composite 60-mil high-density polyethylene (HDPE) liner with 3 feet of recompacted soil with a hydraulic conductivity of 1×10^{-7} centimeters per second (cm/s) with internal piping and drains to collect contact water. Construction of the unit required excavation to an elevation of approximately 603 feet[1] and installation of a groundwater underdrain system to eliminate inward pressure on the liner prior to placement of CCR. The GMF GSP underdrain was actively pumped during construction but is no longer used. Illinois Power Generating Company (IPGC) ceased placement of waste in the GMF GSP prior to April 11, 2021. Review of historical aerial imagery of the GMF GSP (observations summarized in **Figure 2-3**) illustrate the extent of CCR deposition through time as well as potential CCR variability (based on observed differences in color). The proposed porewater (*i.e.*, CCR source water) location could not be safely accessed during the 2021 investigation. Instead, characterization of the CCR material included collection of two grab samples of materials from the northwest corner of the GMF GSP that were safely accessible in 2021 and analysis of total metals to meet the requirements of 35 I.A.C. § 845 (**Figure 2-4**) (Hydrogeologic Site Characterization Report [HCR] [5]). The unit contains gypsum scrubber waste and the base of CCR at the GMF GSP is shown in **Figure 2-5**.

[1] All elevations in this report are referenced to North American Vertical Datum of 1988 (NAVD88) unless otherwise noted.

Water that may come into contact with CCR within the footprint of the GMF GSP becomes CCR source water. CCR source water samples are collected from a riser pipe connected to a process water recovery sump located in the northeast corner of the GMF GSP (NE Riser). Results from the source water samples are used to provide information for groundwater transport modeling[2]. Although the GMF GSP is a lined unit, the presence of sulfate exceedances in groundwater just outside of the east-southeast portion of the unit suggests that leakage from the GMF GSP may be causing elevated sulfate concentrations in this area. The CCR and the liner adjacent to this area, and in the entire southern portion of the GMF GSP, will be removed during closure which will provide source control in the future.

GMF RP: The 17-acre GMF RP received blowdown from the air emission scrubbers and was put into operation in 2010. Construction of the GMF RP was in accordance with WPCP 2008-EA-4661 and features a composite 60-mil HDPE liner with 3 feet of recompacted soil with a hydraulic conductivity of 1 x 10^{-7} cm/s with internal piping and drains to collect contact water. Construction of the unit required excavation to an elevation of approximately 601 feet and installation of a groundwater underdrain system to eliminate inward pressure on the liner prior to placement of CCR. The GMF RP underdrain is a passive, gravity drained system. IPGC ceased placement of waste to the GMF RP prior to April 11, 2021.

AP1: This SI (also known as the Bottom Ash/ Recycle Pond) is a reclaimed ash pond that was reconstructed utilizing the existing earthen berms with reinforcement, as provided by the WPCP 1978-EA-389 issued by the Illinois Environmental Protection Agency (IEPA) on May 26, 1978. AP1 (existing unlined SI) covers an area of approximately 23 acres, has berms up to 41 feet above the surrounding land surface, and a volume of 300 acre-feet. It primarily received bottom ash and low volume wastes from floor drains in the main power block building. Several years ago, air heater wash and boiler chemical cleaning wastes were directed to AP1, but this practice was discontinued. The bottom ash was periodically removed for beneficial uses by a third-party contractor. Sluicing of waste to AP1 ceased prior to November 4, 2019.

AP2: AP2 is a closed (IEPA-approved) SI with a surface area of approximately 60 acres and berms 47 feet higher than the surrounding land surface. AP2 was originally removed from service and capped in the mid 1980’s. A clay and soil cap was placed on the surface of the pond with contouring and drainage provided to direct storm water to four engineered revetment down drain structures. Prior to capping, this pond was identified as Outfall 004 in the facility National Pollutant Discharge Elimination System operating permit, IL0000108. Additional closure activities include the construction of a geomembrane cover system that began in July 2019 and was completed on November 17, 2020. Construction was completed in accordance with the Closure and Post Closure Care Plan approved by the IEPA on January 30, 2018 [6].

LF: Fly ash was managed in a permitted composite lined landfill constructed in 2010. The LF has an active groundwater underdrain system that is currently being operated. Additionally, the ash landfill leachate collection system is restricted by rule to no more than one foot of leachate on

[2] Per Federal Register 80 (21302), which promulgated the final 40 C.F.R. § 257 rule, porewater concentrations should be used to characterize potential leaching from impoundments. As discussed further in USEPA's risk assessment of CCR surface impoundments (USEPA 2014), porewater is "collected from the interstitial water between waste particles in surface impoundments as it occurs in the field," and concentrations within the porewater are "the most representative data available for impoundments because these data are field-measured concentrations of leachate." Therefore, CCR source water collected from the NE riser which obtains water that accumulates at the base of CCR within the unit, represents the CCR source term.

the composite liner. An IEPA groundwater monitoring program is in effect for the GMF (under Bureau of Water) and Ash Landfill (under Bureau of Land).

2.3 Geology and Hydrogeology

Significant site investigation has been completed at the CPP to characterize the geology, hydrogeology, and groundwater quality. Based on extensive investigation and monitoring, the GMF GSP has been well characterized and detailed in the HCR [5].

2.3.1 Hydrostratigraphic Units

In addition to the CCR, five hydrostratigraphic units have been identified at the CPP based on stratigraphic relationships and common hydrogeologic characteristics, and are summarized as follows:

- **Upper Confining Unit (UCU)**: Consists of the Loess Unit and the upper clayey portion of the Hagarstown Member which has generally lower vertical permeability and generally greater than 60 percent fines. This Unit was encountered across most of the CPP, with the exception of the eastern edges of the SIs near the Unnamed Tributary where the unit was eroded following deposition, or locations where it has been excavated for construction.
- **Uppermost Aquifer (UA):** This unit consists primarily of sand and sandy silts and clays at the base of the Hagarstown Member and, in some locations, the uppermost weathered sandy clay portion of the Vandalia Member. This unit is absent in several locations due to weathering and in others due to excavation during construction of the CCR Unit. The hydraulic characteristics of the Hagarstown Member are variable due to the different material compositions, but generally indicate the unit has a moderate hydraulic conductivity.
- **Lower Confining Unit (LCU):** This unit is composed of the sandy clay till of the Vandalia Member, the silt of the Mulberry Grove Formation, and the compacted clay till of the Smithboro Member. The unit underlies the UA and was encountered in all boring locations on the CPP. Results from laboratory tests completed for vertical hydraulic conductivity indicate the Vandalia Member has a very low vertical hydraulic conductivity.
- **Deep Aquifer (DA)**: This unit consists primarily of sandy silt and sands of the Yarmouth Soil, which are thin (less than 5 feet) and discontinuous across the CPP.
- **Deep Confining Unit (DCU)**: This unit underlies the DA and is composed of the Banner Formation, of which the thick Lierle Clay is the first encountered unit. No boring penetrated the full thickness of this formation.

2.3.2 Uppermost Aquifer

The UA has been identified as the base of the Hagarstown Member and, in some locations, the uppermost weathered sandy clay portion of the Vandalia Member. This unit is continuous across the site, but hydraulic characteristics are variable as a result of the unit composition. The UA is absent in several locations due to weathering and in other locations due to excavation during construction of the CCR Unit. The UA exhibits a moderate hydraulic conductivity and is the most likely unit to indicate potential impacts from the GMF GSP. Based on the geologic information, the top of UA occurs at an elevation of 609 to 611 feet near the GMF GSP (**Figure 2-6**) and was removed below the footprint of the unit (**Figure 2-7**). The base of the UA and the material on which the GMF GSP liner was placed is the top of the LCU, which contains the low permeability Vandalia Member, Mulberry Grove Member, and Smithboro Till.

2.3.3 Potential Migration Pathways

Potential migration pathways (PMPs) were interpreted using the lithologic composition and hydrogeologic properties (hydraulic conductivity, hydraulic position with respect to the unit) of the screened materials. In addition to the physical properties, the analytical results from the baseline groundwater monitoring performed in wells screened in the confining units and DA were used to identify PMPs. The UA is the first occurrence of groundwater and therefore the PMPs identified are in geologic units located below the UA. Monitoring well G206D is considered a DA PMP monitoring location and monitors the potential for migration of impacts from the GMF GSP through the UA and LCU.

2.3.4 Regional Bedrock Geology

Bedrock has not been investigated at the site due to the depth to bedrock and presence of two low permeability confining units underlying the UA and above the bedrock, and the intermittent coal beds found within the bedrock. There are no known monitoring wells or production wells screened within the bedrock at CPP. Bedrock has not been encountered at any borings on-site. A literature review was completed to supplement the site geology.

Detailed descriptions of the Pennsylvanian strata of Illinois were published by Willman et al. [7] and Kolata [8]. The Bond Formation includes all strata from the base of the Shoal Creek Limestone Member or the LaSalle Limestone Member to the top of the Millersville Limestone Member or the Livingstone Limestone Member. It is overlain by the Mattoon Formation and underlain by the Modesto Formation. It varies from less than 150 feet thick in eastern Illinois to over 300 feet thick in southeastern Illinois, averaging about 250 feet. The Bond Formation is characterized by a high percentage of limestone and calcareous clays and shales. The Bond and Modesto Formations of the McLeansboro Group also contain multiple thin (typically less than 2 feet) intermittent coal beds. The upper formation of the Kewanee Group is the Carbondale Formation which contains multiple coal beds, including the Herrin (No. 6) Coal, of varying thicknesses (up to 7 feet) [9]. It is bound by thick limestone members (up to 50 feet), the thickest and purest limestones in the Pennsylvanian System of Illinois. Gray shales constitute the greatest part of the formation, although thick channel sandstones are developed locally.

Two mines were operated historically in the vicinity of the site. The Hillsboro Mine located east/southeast of the GMF GSP was operated by the Truax-Traer Coal Company from 1964-1970 and by the Consolidation Coal Company from 1971 through 1983. The mine targeted the Herrin Coal at a depth of 500 to 510 feet below ground surface (bgs), and geological reports included roof problems and slight floor heaving. The Clover Leaf No. 4 Mine located north of the GMF GSP was operated by the Clover Leaf Coal Mining company and the Coffeen Coal Mining Company from 1906 through 1924. The mine targeted the Herrin Coal at a depth of 510 to 544 feet bgs. Geologic reports indicate a massive black shale roof, and unmined areas which could be related to water-bearing sandstones above the roof [10].

2.3.5 Water Table Elevation and Groundwater Flow Direction

The NE Riser was utilized during the 2021 investigation to collect source water samples from the GMF GSP. A transducer was installed near the NE Riser during the 2021 investigation to monitor pond water levels in the GMF GSP. Phreatic surface elevations in the GMF GSP showed minimal variation, with elevations from approximately 625 to 627 feet (**Table 2-1**). As indicated in **Section 2.3.2**, the UA was removed below the footprint of the GMF GSP (**Figure 2-7**) and the

IEPA-approved GMF GSP composite liner system exceeds the design criteria for a composite liner for new CCR landfills established by Title 40 of the Code of Federal Regulations (40 C.F.R.) § 257.70(b). The material on which the GMF GSP liner was placed is the top of the LCU, which is comprised of the low permeability Vandalia Member, Mulberry Grove Member, and Smithboro Till.

Overall groundwater flow within the UA is divided towards the two lobes of Coffeen Lake. The groundwater divide runs approximately through the center of the CPP, with groundwater east of the divide flowing east to southeast towards the Unnamed Tributary or the eastern lobe of Coffeen Lake and groundwater west of the divide flowing west to southwest towards the western lobe of Coffeen Lake. Groundwater flows east to southeast across the GMF GSP (**Figure 2-8** and **Table 2-1**) toward the Unnamed Tributary. Based on the elevations of the Tributary and groundwater elevations measured east of the tributary (**Appendix A** and **Table 2-1**), the Unnamed Tributary may be a local groundwater receiving body and prevent or reduce groundwater migration east of the Unnamed Tributary. During 2023, groundwater elevations in the UA in the vicinity of the GMF GSP ranged from approximately 613 to 624 feet (**Figure 2-8** and **Table 2-1**). Although elevations vary seasonally, the groundwater flow direction in the UA is consistent and likely controlled by the proximity and hydraulic connection to both the eastern and western lobes of Coffeen Lake.

LCU (PMP) groundwater elevations are slightly lower than those in the UA and exhibit similar variability in seasonal groundwater elevation as the UA. Groundwater elevation within the LCU ranged from about 590 to 623 feet in 2023 (**Figure 2-8** and **Appendix A**). No monitoring wells in the GMF GSP monitoring system are screened in the LCU; however, monitoring well MW11D is screened across the LCU and is the nearest LCU well to the GMF GSP. Monitoring well MW11D had groundwater elevations ranging from about 616 to 622 feet during 2023.

DA (PMP) groundwater elevations are generally lower than those in the UA and LCU (PMP) and ranged from approximately 576 to 625 feet in 2023 (**Figure 2-8** and **Appendix A**). Monitoring well G206D, MW03D, and MW12D are the DA wells nearest to the GMF GSP and typically had groundwater elevations ranging from about 596 to 613 feet during 2023. A groundwater contour map was generated for the DA for the E002 event and groundwater flow within the DA generally follows subsurface topography for the unit (**Figure 2-9**).

No monitoring wells were installed in the UCU during 2021 investigation activities and no wells have historically been installed across solely the UCU because it is not present or is unsaturated where present at the CPP. Groundwater elevations within the DCU and bedrock unit are unknown because no wells are screened within these low hydraulic conductivity units.

2.3.5.1 Vertical Hydraulic Gradients

Vertical hydraulic gradients were calculated using available groundwater elevation data from February 2017 to November 2023 at nested well locations within the UA, LCU (upper and lower), and DA. Vertical hydraulic gradients for the GMF GSP are presented in **Table 2-2** and well locations are shown on **Figure 2-8**. Vertical hydraulic gradients for other nested well locations at the CPP, discussed below, are presented in **Appendix B**. The results of the vertical hydraulic gradient calculations between hydrostratigraphic units are summarized below:

- UA to Upper LCU (Vandalia Member):
  - Vertical gradients at well nest G405/T408, located north of AP2, vary between upward and downward with an average (downward) vertical gradient of 0.02 feet per foot (ft/ft).

  - Vertical gradients at well nest G406/T409, located south of AP2/northwest of AP1, vary between upward and downward with an average (upward) vertical gradient of -0.06 ft/ft. Since 2021, the vertical gradient observed at this well nest has been consistently upward, with the exception of August 2022.
- UA to Lower LCU (Smithboro Member)
  - Well nest G307/G307D, located south of AP1, has consistently downward vertical gradients with an average vertical gradient of 0.13 ft/ft.
  - In well nest G311/G311D, gradients are consistently strongly downward, with an average vertical gradient of 0.71 ft/ft.
- Upper LCU (Vandalia Member) to Lower LCU (Smithboro Member)
  - Well nest T408/G45D, located north of AP2, has consistently downward vertical gradients with an average vertical gradient of 0.98 ft/ft. Beginning in 2020, vertical gradients observed at this well nest have become less strongly downward.
  - Vertical gradients at well nest G406/T409, located south of AP2/northwest of AP1, are consistently downward, with the exception of August 2022, with an average vertical gradient of 0.64 ft/ft. Beginning in 2020, vertical gradients observed at this well nest have become less strongly downward.
- UA to DA
  - Well nest G206/G206D, located near the southwest corner of the GMF GSP, has consistently downward gradients, with an average vertical gradient of 0.72 ft/ft. Vertical gradients observed at this well nest have generally decreased in downward strength since observation began in 2021.
  - Well nest G275/G275D, located near the southeast corner of the GMF RP, has consistently downward gradients, with an average vertical gradient of 0.71 ft/ft. Vertical gradients observed at this well nest have generally decreased in downward strength since observation began in 2021.
- LCU to DA
  - Vertical gradients at well nest G314/G314D, located east of AP1, are consistently downward, with an average vertical gradient of 0.69 ft/ft. Beginning in 2022, vertical gradients observed at this well nest have become progressively less strongly downward and the vertical gradient was observed to be upward (-0.01 ft/ft) during December 2023.

Vertical hydraulic gradients indicate there is consistently downward migration of groundwater in most areas of the CPP, with the exception being northwest of AP1, where consistent upward gradients were measured between the UA and upper LCU. However, overall there has been a decrease in magnitude of downward gradients since approximately 2020, which is likely a result of plant shutdown and placement of a geomembrane on AP2.

2.3.5.2 Impact of Surface Water Bodies on Groundwater Flow

Surface water elevations were measured from various locations along the Unnamed Tributary from March 2021 to December 2023 (**Figure 2-8**). Elevations SG-04 (near CIPS Trail and determined to be destroyed in October 2023) ranged from 591.94 to 593.38 feet. Surface water elevations near the former discharge flume located between AP1 and AP2 were measured at

SG02 and ranged from 598.34 to 598.75 feet. Surface water elevations from Coffeen Lake at SG-03 (near the outfall east of AP1) ranged from 585.09 to 589.97 feet.

Groundwater contour maps prepared from elevation data measured in monitoring wells indicate groundwater elevations are variable, but flow directions are generally consistent in the UA.

Groundwater near the GMF GSP may periodically flow into the Unnamed Tributary to the east, which flows south into the eastern lobe of Coffeen Lake. The Unnamed Tributary is a local groundwater receiving body that may prevent or reduce groundwater migration east of the Unnamed Tributary.

Construction of the LF, GMF GSP, and GMF RP required removal of the Hagarstown Member, in effect removing the aquifer beneath the footprint of these units [11]. It is uncertain whether these constructed units significantly limit lateral groundwater flow, either by creating no flow zones or by capturing groundwater via their dewatering [12].

2.3.6 Hydraulic Conductivities

2.3.6.1 Field Hydraulic Conductivities

Field hydraulic conductivity tests were performed by Hanson in 2021 as part of characterization efforts to complete 35 I.A.C. § 845 requirements. Individual field hydraulic conductivity test results conducted at the GMF GSP are summarized in **Table 2-3** [5], historical results are included in **Appendix C** [12], and tested well locations are included on **Figure 2-8**.The results of the tests are summarized as follows:

- **UA:** Hydraulic conductivities near the GMF GSP ranged from 2.5×10^{-4} to 4.0×10^{-3} cm/s. Tests had a geometric mean of 1.4×10^{-3} cm/s. This is generally consistent with, although higher than, tests conducted prior to 2017 as part of CCR Rule characterization efforts that indicated hydraulic conductivities varied from 1.7×10^{-5} to 2.1×10^{-3} cm/s with a geometric mean of 2.9×10^{-4} cm/s.
- **LCU:** Hydraulic conductivities across the CPP ranged from 1.2×10^{-4} and 4.5×10^{-3} cm/s. Tests had a geometric mean of 7.2×10^{-4} cm/s. No monitoring wells near the GMF GSP are screened within the LCU. Monitoring wells with the highest hydraulic conductivities were located near the GMF RP and wells with the lowest hydraulic conductivities were located near AP1. Prior to 2017, field hydraulic conductivity tests completed in the LCU for monitoring well and temporary piezometers (G45D, G46D, T408, and T409) indicate horizontal conductivities from 4.0×10^{-8} and 3.4×10^{-5}. The elevated hydraulic conductivity values (10^{-4} to 10^{-3} cm/s) in wells near the GMF RP relative to other areas of the CPP are likely not representative of the primary LCU lithology, but instead reflect the isolated and discontinuous sandy lenses in which the wells are screened.
- **DA:** Geometric mean hydraulic conductivity at DA well G314D, near AP1, was 8.7×10^{-5} cm/s and was slightly lower than tests completed in the northern portion of the CPP in 2009 that resulted in hydraulic conductivity values ranging from 1.3×10^{-4} to 1.7×10^{-3} cm/s, with a geometric mean of 4.4×10^{-4} cm/s. Field hydraulic conductivity testing was not performed on DA monitoring well G206D, located near the GMF GSP.
- No monitoring wells are screened only within the DCU, and no field hydraulic conductivity tests have been conducted for the DCU.

2.3.6.2 Laboratory Hydraulic Conductivities

Falling head permeability tests (ASTM D5084 Method F) were performed in the laboratory on samples collected during the 2021 investigations [5] and historically [12]. The 2021 results are summarized in **Table 2-4** and historical results are provided in **Appendix C**; all results are discussed below.

- **CCR:** One geotechnical sample of CCR (gypsum) was collected as a grab sample from the northwest corner of the GMF GSP and the vertical hydraulic conductivity is 8.9×10^{-4} cm/s.
- **UCU:**
  - The 2021 sitewide geometric mean of vertical hydraulic conductivities of three samples collected from the UCU is 2.5×10^{-8} cm/s, which is consistent with historically reported values. Vertical hydraulic conductivity of a sample collected from SB289 (**Figure 2-7**) near the GMF GSP is 1.1×10^{-8} cm/s.
  - Geotechnical tests conducted prior to 2017 indicated UCU vertical hydraulic conductivity values ranging from 1.3×10^{-8} to 5.0×10^{-7} cm/s, with a geometric mean of 1.0×10^{-7} cm/s.
- **UA:** One geotechnical sample of UA material was collected from G275D, near the GMF RP, with a vertical hydraulic conductivity of 1.6×10^{-4} cm/s. No UA samples collected near the GMF GSP were analyzed for vertical hydraulic conductivity.
- **LCU:**
  - The 2021 sitewide geometric mean of vertical hydraulic conductivities of three samples collected from the LCU is 1.8×10^{-7} cm/s. Vertical hydraulic conductivities from 2021 are consistent with those observed historically. No LCU samples collected near the GMF GSP were analyzed for vertical hydraulic conductivity.
  - Intermittently present within the LCU is the Mulberry Grove Member. Historical vertical hydraulic conductivities of the Mulberry Grove Member were measured as 1.6×10^{-6} and 1.9×10^{-6} cm/s.
  - Historical laboratory tests reported LCU vertical hydraulic conductivity values ranging from 6.8×10^{-9} to 4.5×10^{-6} cm/s, with a geometric mean of 3.0×10^{-8} cm/s.
- **DA:** No laboratory vertical hydraulic conductivity tests were completed during 2021 on DA materials.
- **DCU:** No laboratory vertical hydraulic conductivity tests were completed during 2021 on DCU materials. Historical vertical hydraulic conductivity tests were performed on samples collected north and west of the GMF GSP. Vertical hydraulic conductivities of 6.8×10^{-9} and 4.5×10^{-6} cm/s were reported.
- **Bedrock**: No bedrock samples were analyzed for vertical hydraulic conductivity.

2.4 Groundwater Monitoring

The monitoring system for the GMF GSP is shown on **Figure 2-2** and consists of two background monitoring wells (G200 and R201), eight compliance monitoring wells (G206, G206D G209, G212, G213, G215, G217, and G218), one temporary water level only surface water staff gage (SG-04, which was destroyed in October 2023), and one water level only location (NE Riser) primarily used to monitor water levels within the SI and can be used to characterize source water within the SI [13] . The monitoring wells are screened within the UA (G200, G206, G209, G212, G213, G215, G217, G218, and R201) and DA (G206D) along the perimeter of the GMF GSP. Source samples are collected from the NE Riser on the northeast corner of the GMF GSP (**Figure 2-2**).

2.5 Hydrogeologic Conceptual Site Model

The HCR [5] and information provided above forms the foundation of the GMF GSP hydrogeological setting. The GMF GSP and GMF RP overlie a potential recharge area for the underlying transmissive geologic media, which are composed of unlithified deposits. Recharge migrates downward into and through the UCU into the UA.

Groundwater flow in the UA at the CPP is divided towards the two lobes of Coffeen Lake. The loess of the UCU and sands of the UA are hydraulically connected. Groundwater flow in the silts and clays of the UCU and LCU is expected to be primarily vertical. The majority of horizontal groundwater migration is expected to be within the lower Hagarstown member (*i.e.*, UA). The geologic conceptual model for the site used for the groundwater modeling [14] consists of the following layers:

- Hagarstown Loess Unit (*i.e.*, UCU) – Loess Unit and the upper clayey portion of the Hagarstown Member.
- Hagarstown Member (*i.e.*, UA) – sand and sandy silts and clays at the base of the Hagarstown Member and, in some locations, the uppermost weathered sandy clay portion of the Vandalia Member.
- Vandalia Member/Mulberry Grove Member (*i.e.*, LCU) – unweathered sandy clay till and discontinuous silts.
- Smithboro Till (*i.e.*, LCU) – compacted clay till of the Smithboro Member.
- The Yarmouth Soil (*i.e.*, DA) and Lierle Clay (*i.e.*, DCU) were not included in the model, for consistency with the original model [15].

The United States Geological Survey (USGS) National Map places the CPP within the East Fork Shoal Creek watershed subbasin (Hydrologic Unit Code 071402030303). The CPP conceptual site model (CSM) extent is bounded by a hydrological catchment (watershed) divide to the east based on watershed data from USGS. Along the north, south, and east, the model boundary was placed along known waterbodies as much as possible. As such, it is assumed groundwater inflow from adjacent watersheds is negligible through both the UA and LCU. The Coffeen Lake water levels are managed at an average elevation of 591.0 feet. Coffeen Lake and Unnamed Tributary are the receiving surface water bodies in the area encompassed by the CSM.

Precipitation infiltrates and recharges the groundwater table throughout the site and upgradient of the site. Groundwater in the UCU migrates downward into the sandy material of the lower Hagarstown Formation or weathered Vandalia Till, which is considered the UA. Water that percolates downward from layers overlying the UA is most likely to travel laterally from the site within the UA due to the relatively high permeability (as compared to the underlying LCU) and horizontal gradients present within the UA as described above. During construction of the LF, GMF GSP, and the GMF RP, the Loess Unit and portions of the Hagarstown Member (including the UA) were excavated, therefore CCR within the lined GMF GSP does not overlie the UA, but rather the LCU, which is separated from the base of CCR in the GMF GSP by a composite liner system that exceeds the design criteria for a composite liner for new CCR landfills established by 40 C.F.R. § 257.70(b). Groundwater and surface water elevations indicate groundwater flows towards Coffeen Lake, which is a local receiving body for the UA. Further downward migration is also limited by the relatively thick and low permeability LCU.

Based on the geology and hydrogeology, monitoring wells at the GMF GSP can be separated into three distinct groupings that exhibit similar geologic and hydraulic characteristics. Compliance monitoring well groupings are summarized as follows:

- South UA wells: shallow wells (generally 17 to 25 feet bgs) screened in moderate permeability materials (generally about 10^{-4} cm/s) including G206, G209, G212, and G213,
- East UA wells: shallow wells (generally 17 to 25 feet bgs) screened in moderate permeability materials (generally about 10^{-3} cm/s) including G215, G217, and G218.
- DA wells: deep well (approximately 60 feet bgs) screened in low to moderate permeability materials (generally about 10^{-5} cm/s) located southwest of the GMF GSP (G206D).

3. OCCURRENCE AND DISTRIBUTION OF GROUNDWATER EXCEEDANCES (EXTENT)

Results from groundwater samples collected from the GMF GSP during E001, E002, and E003 were received on August 17, 2023; November 29, 2023; and January 10, 2024, respectively. In accordance with 35 I.A.C. § 845.610(b)(3)(C), comparison of statistically derived values with the GWPSs described in 35 I.A.C. § 845.600 to determine statistical exceedances of the GWPS was completed [2, 3, 4]. Exceedances for which an Alternative Source Demonstration was not completed include the following parameter and well in the UA:

- Sulfate at G215 (**Figure 3-1**)

The extents of exceedances discussed below were defined using existing monitoring wells, including wells present on-site (**Table 3-1**) that may not be included in the 35 I.A.C. § 845 monitoring program.

3.1 Additional Investigation to Define Nature and Extent

Following initial sampling in 2021, potential statistical exceedances of the GWPS were identified for the parameters and locations identified above [2, 3, 4]. Horizontal delineation of sulfate exceedances at G215 is ongoing. Additional investigation was completed in 2024 and a total of two borings were advanced and converted to monitoring wells downgradient of G215 (**Figure 3-2**). Solids samples were collected and analyzed for the following:

- 6010B for 7-step sequential extraction (aluminum, arsenic, beryllium, calcium, chromium, cobalt, iron, lead, lithium, manganese, molybdenum, and selenium);
- Bulk Mineralogy by Reitveld x-ray diffraction Analysis;
- Sulfur contents;
- Total organic carbon; and,
- Cation Exchange Capacity Analysis.

Findings from the installation and sampling of these additional wells will be incorporated into the final Corrective Action Plan (CAP) Permit application, which will be submitted in 2025.

3.2 Extent in the Uppermost Aquifer

Groundwater samples are evaluated quarterly and statistical exceedances are identified following comparison of lower confidence limits (LCLs) to the GWPSs described in 35 I.A.C. § 845.600. The LCLs vary as the dataset is updated to include additional quarterly events (**Table 3-2**). The discussion below includes ranges of concentrations measured in wells with statistical exceedances, because there is no single value for LCLs.

3.2.1 Sulfate

Statistical exceedances of sulfate n the UA are located only in monitoring well G215, west of the GMF GSP. Concentrations of sulfate in G215, which has had GWPS (400 milligrams per liter [mg/L]) exceedances, range from 100 to 560 mg/L (**Table 3-3**). Sulfate statistical exceedances at G215 are defined laterally within the UA by monitoring well G213 to the southwest and G217 to the north (**Figure 3-1)**. The lateral extent downgradient and east of G215 is being further evaluated as discussed above in **Section 3.1**.

Downward migration of sulfate in the UA is inhibited by the underlying Vandalia Till, Mulberry Grove Member, and Smithboro Till which are, on average, greater than 15 feet thick at the site. Vertical hydraulic conductivity tests completed on samples of the LCU, beneath the UA, indicate hydraulic conductivities from 5.5×10^{-8} to 3.7×10^{-7} cm/s. This is very low relative to the horizontal hydraulic conductivity measured within the UA (geometric mean of 1.4×10^{-3} cm/s). The significant contrast in permeability (greater than two orders of magnitude) indicates groundwater will preferentially migrate horizontally toward the Unnamed Tributary and the elevated sulfate concentrations will not extend into the underlying hydrostratigraphic units. The extent of sulfate GWPS exceedances are additionally vertically defined by DA monitoring well G206D (**Figure 3-3**).

4. GEOCHEMICAL CONCEPTUAL SITE MODEL (NATURE)

A GCSM was developed to describe the conditions of the groundwater in the vicinity of CPP GMF GSP and is summarized here (full analysis presented in **Appendix D**). The GCSM describes the geochemical processes that contribute to the mobilization, distribution, and attenuation of chemicals in the environment. Only parameters that have exceeded the GWPS in GMF GSP groundwater and will be addressed in the CAP are included in the GCSM. As discussed in previous sections, the statistical exceedances observed at GMF GSP include sulfate.

CCR porewater is water "collected from the interstitial water between waste particles in surface impoundments as it occurs in the field" [16] and represents the material potentially leached from impoundments. CCR materials are the primary source of constituent loading to CCR porewater (*i.e.*, CCR source water). Over an extended period (*e.g.*, months to years), CCR porewater (*i.e.*, water contained within the interstitial pore spaces of CCR that can be sampled by low-flow groundwater sampling methods) reaches equilibrium with the CCR materials. Locations to install porewater wells within the GMF GSP could not be accessed safely and therefore source water, from the NE Riser, was collected to characterize the CCR. The NE riser is connected to a process recovery sump which is located at the base of the unit. As water percolates through the CCR, the resulting CCR contact water can be sampled from the base of the unit above the liner. Source water from the NE riser is representative of the mobile phase constituents capable of migrating into underlying materials and potentially downgradient in groundwater. The GMF GSP CCR source water is therefore the primary indicator of constituents *available* to groundwater and is considered as the primary source term for environmental investigation and fate and transport modeling.

Conditions within UA groundwater are predicted to favor amorphous iron oxide stability at most locations, which indicates that a portion of the sulfate in the groundwater system may be attenuated via surface complexation reactions. However, crystalline iron oxides were not identified in mineralogical analysis. In addition, batch attenuation testing with solids from the site could not determine a partitioning coefficient for sulfate. These results indicate that chemical attenuation of sulfate downgradient of the GMF GSP could be minimal.

5. COMBINED GEOCHEMICAL AND HYDROGEOLOGIC CONCEPTUAL SITE MODELS

5.1 Sulfate Conceptual Site Model

The CSM describing current conditions at the GMF GSP combining the hydrogeologic and geochemical CSMs for sulfate is as follows. Water contained in the GMF GSP is hydraulically separated from the underlying unlithified glacial deposits by a 60-mil HDPE liner that was installed during construction of the GMF GSP in 2010. In addition, the UA was removed from beneath the footprint of the GMF GSP during its construction. Sulfate concentrations in wells immediately east of the UA have increased slowly since approximately 2018, with the sulfate concentration collected from G215 first greater than 400 mg/L in 2021. Concentrations of sulfate in G215 since then have remained above 400 mg/L, while concentrations at UA wells G217 and G218 to the north have continued to increase slowly. Although the GMF GSP is a lined unit, the presence of sulfate exceedances in groundwater just outside of the east-southeast portion of the unit suggests that leakage from the GMF GSP may be causing elevated sulfate concentrations in this area. The CCR and the liner adjacent to this area, and in the entire southern portion of the GMF GSP, will be removed during closure which will provide source control in the future.

Sulfate exceedances of the GWPS at G215 are defined laterally within the UA by monitoring wells G213 to the southwest and G217 to the north. The lateral extent downgradient and east of G215 is being further evaluated with the installation of monitoring wells G219 and G220 in April 2024. Based on the surface water elevations of the Unnamed Tributary and groundwater elevations measured east of the tributary, the Unnamed Tributary as a local groundwater receiving body may prevent or reduce groundwater migration east of the Unnamed Tributary.

Conditions within UA groundwater are predicted to favor amorphous iron oxide stability at most locations near the GMF GSP, which indicates that a portion of the sulfate concentrations in the groundwater system may be attenuated via surface complexation reactions. However, batch attenuation testing results indicate that chemical attenuation of sulfate downgradient of the GMF GSP could be minimal.

6. CONCLUSIONS AND FUTURE ACTIVITIES

In accordance with 35 I.A.C. § 845.650(d)(1), the nature and extent of statistical GWPS exceedances of sulfate have been described in sufficient detail to support a complete and accurate assessment of the corrective measures necessary to effectively clean up all releases from the GMF GSP.

The lateral extents of statistical exceedances in the UA are illustrated in **Figure 3-1**. Sulfate extent is defined upgradient and laterally to G215 by multiple surrounding groundwater monitoring wells screened across the UA. Sulfate exceedances are constrained vertically by the underlying Vandalia Till. As discussed in **Section 3.2.1**, monitoring wells G219 and G220 were installed downgradient of the GMF GSP in March 2024 (**Figure 3-2**) and the downgradient delineation of sulfate exceedances is ongoing. Findings from the installation and sampling of these additional wells will be incorporated into the final CAP Permit application, which will be submitted in 2025.

Sulfate was selected for modeling source control presented in the Final Closure Plan, as described in the Groundwater Modeling Report [14]. For modeling purposes, it was assumed that sulfate would not significantly sorb or chemically react with aquifer solids (soil adsorption coefficient [Kd] was set to 0 milliliters per gram), which is a conservative estimate for predicting contaminant transport times in the model. The GCSM results indicate sulfate attenuation downgradient is expected to be minimal. Additional data collection is ongoing and geochemical modeling will be completed to evaluate how sorption to solid phases may affect sulfate mobility and therefore the time for sulfate to reach the GWPS.

7. REFERENCES

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TABLES

Table 2-1. Summary of Groundwater Elevations
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

Well ID	Well Type	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G200	Background	05/30/2023	5.89	620.04
G206	Compliance	05/30/2023	11.17	621.64
G206D	Compliance	05/30/2023	30.22	603.91
G209	Compliance	05/30/2023	11.07	621.83
G212	Compliance	05/30/2023	11.64	621.24
G213	Compliance	05/30/2023	11.96	620.84
G215	Compliance	05/30/2023	14.76	618.29
G217	Compliance	06/08/2023	[16.35]	[616.75]
G218	Compliance	05/30/2023	13.72	619.38
R201	Background	05/30/2023	5.31	621.02
SG-04	Water Level	05/30/2023	6.41	593.11

Notes:
Only wells with groundwater elevations measured are included.
BMP = below measuring point
Bracketing [ ] indicates that the measurement was obtained outside of the 24-hour period from initiation of depth to groundwater measurements.
NAVD88 = North American Vertical Datum of 1988

Table 2-1. Summary of Groundwater Elevations
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

Well ID	Well Type	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G200	Background	08/08/2023	9.21	616.73
G206	Compliance	08/08/2023	13.89	618.93
G206D	Compliance	08/08/2023	30.04	604.10
G209	Compliance	08/08/2023	13.79	619.12
G212	Compliance	08/08/2023	14.61	618.28
G213	Compliance	08/08/2023	15.05	617.76
G215	Compliance	08/08/2023	17.22	615.84
G217	Compliance	08/08/2023	18.29	614.81
G218	Compliance	08/08/2023	16.98	616.13
R201	Background	08/08/2023	11.61	614.73

Notes:
Only wells with groundwater elevations measured are included.
BMP = below measuring point
NAVD88 = North American Vertical Datum of 1988

Table 2-1. Summary of Groundwater Elevations
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

Well ID	Well Type	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G200	Background	11/13/2023	11.88	614.06
G206	Compliance	11/13/2023	16.16	616.66
G206D	Compliance	11/13/2023	30.40	603.74
G209	Compliance	11/13/2023	16.24	616.67
G212	Compliance	11/13/2023	16.92	615.97
G213	Compliance	11/13/2023	17.41	615.40
G215	Compliance	11/13/2023	19.03	614.03
G217	Compliance	11/13/2023	19.68	613.42
G218	Compliance	11/13/2023	18.67	614.44
R201	Background	11/13/2023	11.73	614.61
NE Riser	Water Level	11/13/2023	Not Measured	
SG-04	Water Level	11/13/2023	Not Measured	

Notes:
Only wells with groundwater elevations measured are included.
BMP = below measuring point
NAVD88 = North American Vertical Datum of 1988

Table 2-2. Vertical Hydraulic Gradients
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

Date	G206 Groundwater Elevation (ft NAVD88)	G206D Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	UA	DA (PMP)				
4/20/2021	622.07	585.96	36.11	33.51	1.08	down
5/3/2021	622.60	587.42	35.18	33.51	1.05	down
5/17/2021	622.31	587.81	34.50	33.51	1.03	down
6/9/2021	621.71	584.19	37.52	33.51	1.12	down
6/23/2021	620.54	589.66	30.88	33.51	0.92	down
7/12/2021	622.39	590.72	31.67	33.51	0.95	down
7/26/2021	622.00	591.14	30.86	33.51	0.92	down
8/16/2021	622.08	592.00	30.08	33.51	0.90	down
10/25/2021	622.94	595.04	27.90	33.51	0.83	down
2/7/2022	622.37	598.22	24.15	33.51	0.72	down
5/9/2022	623.70	601.30	22.40	33.51	0.67	down
8/23/2022	621.61	602.86	18.75	33.51	0.56	down
3/30/2023	623.69	601.99	21.70	33.51	0.65	down
4/30/2023	622.54	603.60	18.94	33.51	0.57	down
5/30/2023	621.64	603.91	17.73	33.51	0.53	down
7/8/2023	620.69	604.04	16.65	33.51	0.50	down
8/8/2023	618.93	604.10	14.83	33.51	0.44	down
9/25/2023	618.08	604.06	14.02	33.51	0.42	down
10/25/2023	617.11	603.80	13.31	33.51	0.40	down
11/13/2023	616.66	603.74	12.92	33.51	0.39	down
12/18/2023	616.97	603.82	13.15	33.51	0.39	down
			Middle of screen elevation G206			610.8
			Middle of screen elevation G206D			577.3

[O: KLT 6/4/21, C:YMD 6/7/21][U:KLT 8/25/21, C:EDP 8/31/21]
[KLT 5/3/24, C: SSW 5/7/24]

Notes:

[1] Distance change was calculated using the midpoint of the piezometer screen and water table surface. If the water table surface was above the top of the monitoring well screen, then distance change was calculated using the midpoint of both screens.

[2] Vertical gradients between ±0.0015 are considered flat, and typically have less than 0.02 foot difference in groundwater elevation between wells.

-- = no data collected on date / no vertical gradient calculated
DA = deep aquifer
dh = head change
dl = distance change
ft = foot/feet
NAVD88 = North American Vertical Datum of 1988
PMP = potential migration pathway
UA = uppermost aquifer

RAMBOLL

Table 2-3. Field Hydraulic Conductivities
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

Well ID	Gradient Position	Bottom of Screen Elevation (ft NAVD88)	Screen Length [1] (ft)	Field Identified Screened Material	Slug Type	Analysis Method	Falling Head (Slug In) Hydraulic Conductivity (cm/s)	Rising Head (Slug Out) Hydraulic Conductivity (cm/s)	Minimum Hydraulic Conductivity (cm/s)	Maximum Hydraulic Conductivity (cm/s)	Hydraulic Conductivity Geometric Mean (cm/s)
Uppermost Aquifer											
G206	D	608.61	4.41	SM, s(CL), CL	solid	Kansas Geological Survey	5.0E-04	4.9E-04	2.5E-04	4.0E-03	1.4E-03
G209	D	608.29	4.54	CL	solid	Kansas Geological Survey	- -	2.5E-04			
G212	D	609.30	4.55	SM, s(CL), CL	solid	Kansas Geological Survey	2.1E-03	1.8E-03			
G215	D	606.68	4.39	SM, s(CL), ML	solid	Kansas Geological Survey	4.0E-03	3.5E-03			
G218	D	605.87	4.44	SM, SC, CL	solid	Kansas Geological Survey	2.6E-03	2.4E-03			

[O: KLT, C:EDP 8/31/21]

Notes:
1. All wells are constructed from 2 inch PVC with 0.01 inch slotted screens.
- - = Test not analyzed/performed
cm/s = centimeters per second
D = downgradient
ft = foot/feet
NAVD88 = North American Vertical Datum of 1988
PVC = polyvinyl chloride

USCS = Unified Soil Classification System
CL = Lean Clay
s(CL) = Sandy Lean Clay
ML = Silt
SC = Clayey Sand
SM = Silty Sand

Table 2-4. Geotechnical Data Summary

Nature and Extent Report

Coffeen Power Plant

GMF Gypsum Stack Pond

Coffeen, IL

Sample ID	Field Location ID	Top of Sample (ft bgs)	Bottom of Sample (ft bgs)	Moisture Content (%)	Dry Density (pcf)	Specific Gravity	Calculated Porosity [1] (%)	Vertical Hydraulic Conductivity (cm/s)	LL	PL	PI	USCS	Gravel (%)	Sand (%)	Fines (%)
Loess Unit															
G206D/Comp 1	G206D	4	16	20.5	105.3	2.60	35.1	--	42	18	24	CL	0	20	80
SB289/Comp 1	SB289	4	16	21.2	103.4	2.56	35.3	--	40	18	22	CL	0	20	80
SB289, ST5	SB289	8	10	20.2	105.9	--	--	1.1E-08	--	--	--	CL/CH	--	--	--
Hagarstown Member															
G206D/Comp 2	G206D	18.8	20	10.1	117.4	2.56	26.5	--	22	15	7	SC	0	57	43
SB289/Comp 2	SB289	18	22	16.6	112.6	2.60	30.6	--	23	14	9	CL	0	46	54
Vandalia Member															
G206D/Comp 3	G206D	20	31.8	8.3	131.4	2.56	17.7	--	21	13	8	CL	0	46	54
SB289/Comp 3	SB289	22	32.9	8.9	132.7	2.64	19.4	--	19	12	7	ML	0	47	53
Smithboro Member															
G206D/Comp 4	G206D	34	52	13.4	120.6	2.62	26.2	--	29	14	15	CL	0	29	72
SB289/Comp 4	SB289	34	52	14.9	116.6	2.61	28.4	--	31	15	16	CL	0	26	74
Yarmouth Soil															
G206D/Comp 5	G206D	54	58	14.9	--	2.75	--	--	18	12	6	SM	0	78	22
Lierle Clay															
SB289/Comp 5	SB289	54	60	25	98.4	2.63	40.0	--	48	18	30	CL	0	21	79
CCR															
Gypsum	NE Riser	grab	grab	25.3	78.0	--	--	8.9E-04	NP	NP	NP	Gypsum	0	22	78

[O:KLT, QC: FPO; U: FPO, QC:KLT 8/9/21; U:KLT 8/13/21, C:EDP 8/30/21]

Notes:

[1] Porosity calculated as relationship of bulk density (p_b) to particle density (p_d) ($n = 100[1- (p_b/p_d)]$)

-- = not analyzed

% = Percent

bgs = below ground surface

cm/s = centimeters per second

ft = foot/feet

GMF = Gypsum Management Facility

LL = Liquid limit

NP = Non Plastic

pcf = pounds per cubic foot

PI = Plasticity Index

PL = Plastic Limit

USCS = Unified Soil Classification System

CH = Fat Clay

CL = Lean Clay

ML = Silt

SC = Clayey Sand

SM = Silty Sand

Table 3-1. Monitoring Well Construction Details
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

Location	HSU	Date Constructed	Top of PVC Elevation (ft)	Measuring Point Elevation (ft)	Measuring Point Description	Ground Elevation (ft)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Top Elevation (ft)	Screen Bottom Elevation (ft)	Well Depth (ft bgs)	Bottom of Boring Elevation (ft)	Screen Length (ft)	Screen Diameter (inches)	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
G200	UA	2008-02-25	--	625.71	Top of Disk	623.27	12.19	16.98	611.08	606.29	17.36	605.30	4.8	2	39.0751386	-89.3950088
G206	UA	2010-10-14	--	632.73	Top of Disk	630.53	17.51	21.92	613.02	608.61	22.42	606.50	4.4	2	39.0673987	-89.3985475
G206D	DA	2021-01-25	634.14	633.85	Top of PVC	631.41	49.2	59.0	582.2	572.4	59.4	571.4	9.8	2	39.067428	-89.398493
G209	UA	2010-10-07	--	632.68	Top of Disk	630.57	17.74	22.28	612.83	608.29	22.81	606.60	4.5	2	39.0679228	-89.3968503
G212	UA	2010-10-11	--	632.77	Top of Disk	630.59	16.74	21.29	613.85	609.30	21.81	606.60	4.6	2	39.0684296	-89.395318
G213	UA	2010-10-12	--	632.80	Top of Disk	630.34	16.75	21.29	613.59	609.05	21.82	606.30	4.5	2	39.0685852	-89.3948216
G215	UA	2010-10-13	--	632.96	Top of Disk	630.48	19.41	23.80	611.07	606.68	24.31	606.20	4.4	2	39.0693092	-89.39394
G217	UA	2010-10-12	--	633.04	Top of Disk	630.67	20.49	24.88	610.18	605.79	25.38	604.70	4.4	2	39.07034	-89.3939589
G218	UA	2010-10-12	--	632.91	Top of Disk	630.64	20.33	24.77	610.31	605.87	25.27	604.60	4.4	2	39.0708763	-89.393956
R201	UA	2010-10-08	--	626.12	Top of Disk	624.02	14.59	19.32	609.43	604.70	19.85	604.20	4.7	2	39.0751423	-89.3978553
NE Riser	S	--	--	--	--	--	--	--	--	--	--	--	--	--	39.07111111	-89.39388889

Notes:
All elevation data are presented relative to the North American Vertical Datum of 1988 (NAVD88), GEOID 12A
-- = not measured/recorded
bgs = below ground surface
DA = Deep Aquifer
ft = foot or feet
HSU = Hydrostratigraphic Unit
PVC = polyvinyl chloride
S = Source Water
UA = Uppermost Aquifer

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Table 3-2. Exceedance Parameter Statistical Results
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

Location	Parameter	Unit	Groundwater Protection Standard	2023 Q2 LCL	2023 Q3 LCL	2023 Q4 LCL
G215	Sulfate, total	mg/L	400	468	474	488

Notes:
LCL = Lower Confidence Level
mg/L = milligrams per liter

Table 3-3. Summary of Groundwater Data
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

HSU	Location	Parameter	Unit	Sample Count	Non-Detect Result Count	Percent Non-Detect Results	First Sample	Last Sample	Minimum	Median	Mean	Maximum
DA	G206D	Sulfate, total	mg/L	9	0	0	03/30/2021	11/17/2023	153	250	331	600
S	NE Riser	Sulfate, total	mg/L	9	0	0	03/31/2021	02/15/2023	8,800	10,000	10,533	12,000
UA	G200	Sulfate, total	mg/L	35	0	0	01/20/2015	11/14/2023	87.0	100	102	120
UA	G206	Sulfate, total	mg/L	32	0	0	01/21/2015	11/15/2023	32.0	130	124	150
UA	G209	Sulfate, total	mg/L	32	0	0	01/21/2015	11/16/2023	95.0	250	247	310
UA	G212	Sulfate, total	mg/L	32	0	0	01/21/2015	11/16/2023	49.0	54.5	55.7	66.0
UA	G213	Sulfate, total	mg/L	17	0	0	01/21/2015	11/16/2023	50.0	56.0	57.8	79.0
UA	G215	Sulfate, total	mg/L	33	0	0	01/21/2015	11/16/2023	100	180	283	560
UA	G217	Sulfate, total	mg/L	17	0	0	01/21/2015	11/16/2023	130	240	253	427
UA	G218	Sulfate, total	mg/L	32	0	0	01/21/2015	11/16/2023	94.0	145	200	433
UA	R201	Sulfate, total	mg/L	38	0	0	01/20/2015	11/14/2023	89.0	220	212	370

Notes:
DA = Deep Aquifer
HSU = Hydrostratigraphic Unit
mg/L = milligrams per liter
S = Source Water
UA = Uppermost Aquifer

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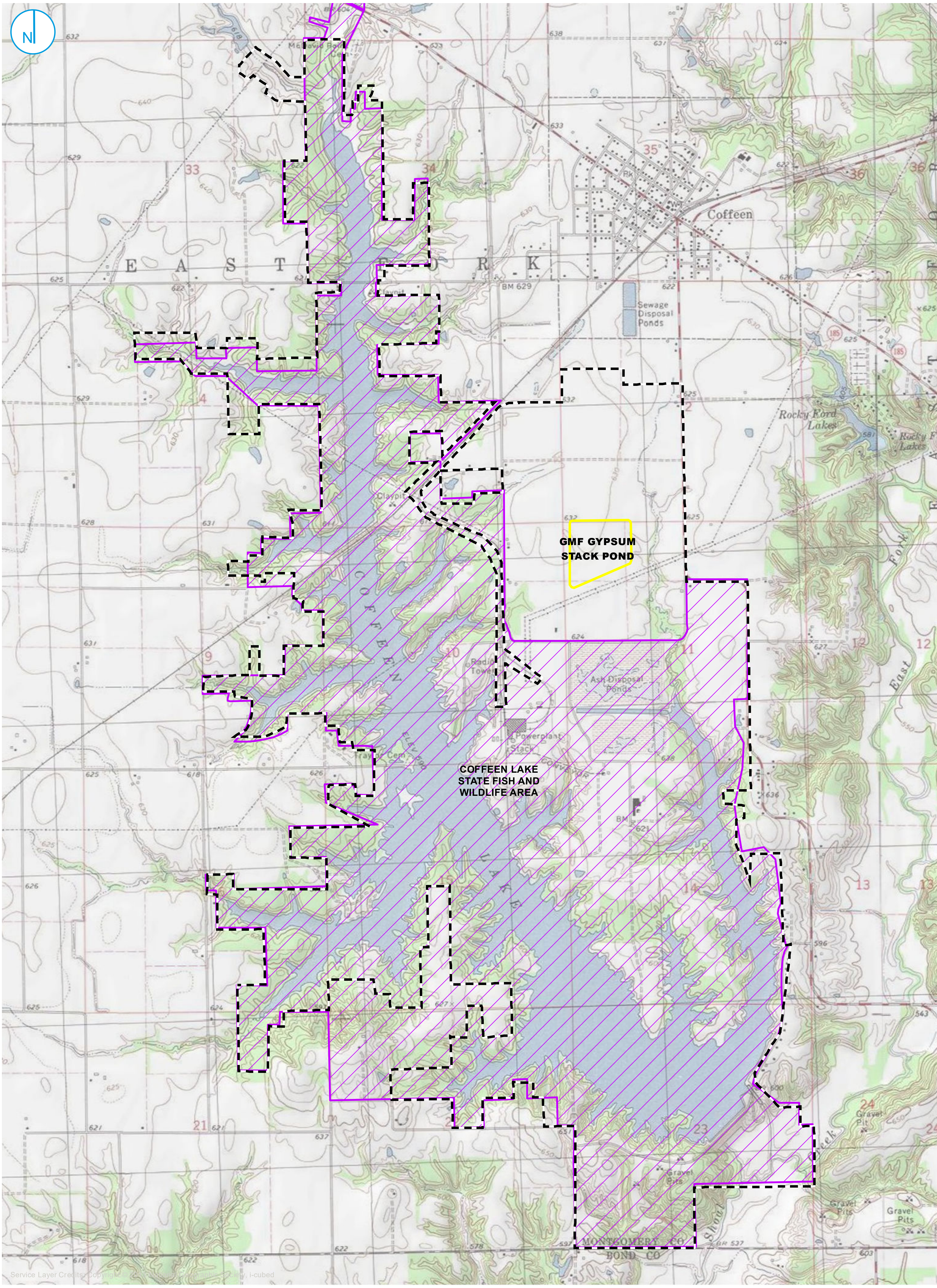
FIGURES

PROJECT: 169000XXXX | DATED: 10/12/2021 | DESIGNER: HOTCALD

Y:\Mapping\Projects\22\2285\MXD\845_Operating_Permit\Coffeen\GMF_GSP\Figure 1-1_Site Location Map GSP.mxd



PART 845 REGULATED UNIT (SUBJECT UNIT)
PROPERTY BOUNDARY
COFFEEN LAKE STATE FISH AND WILDLIFE AREA

0 1,000 2,000 Feet

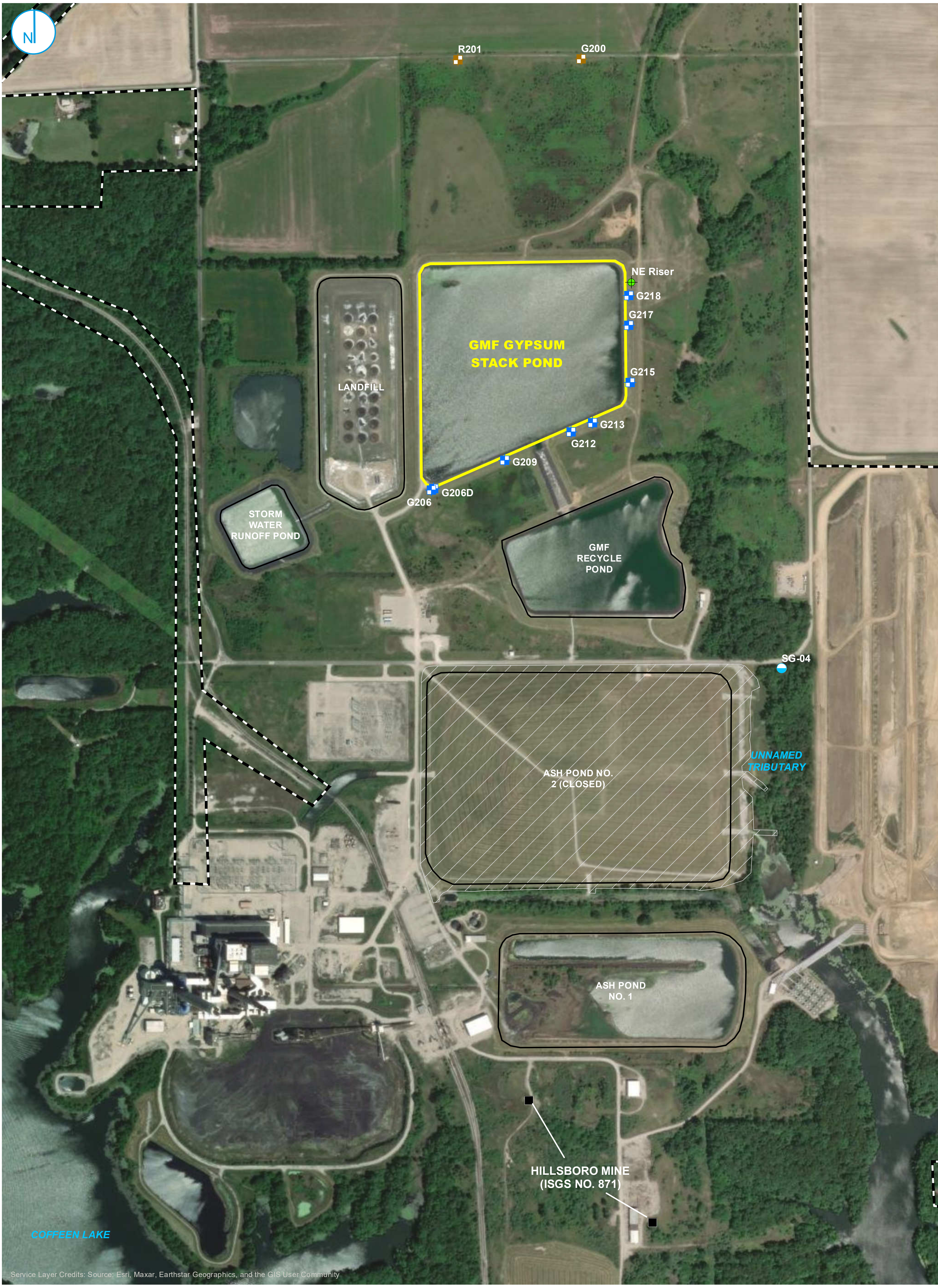
SITE LOCATION MAP

FIGURE 2-1

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL



COMPLIANCE MONITORING WELL
BACKGROUND MONITORING WELL
LEACHATE WELL
STAFF GAGE, RIVER
COAL MINE SHAFT

REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
LIMITS OF FINAL COVER
PROPERTY BOUNDARY

NOTE:
STAFF GAGE SG-04 WAS IDENTIFIED AS DESTROYED DURING OCTOBER 2023.

0 300 600 Feet

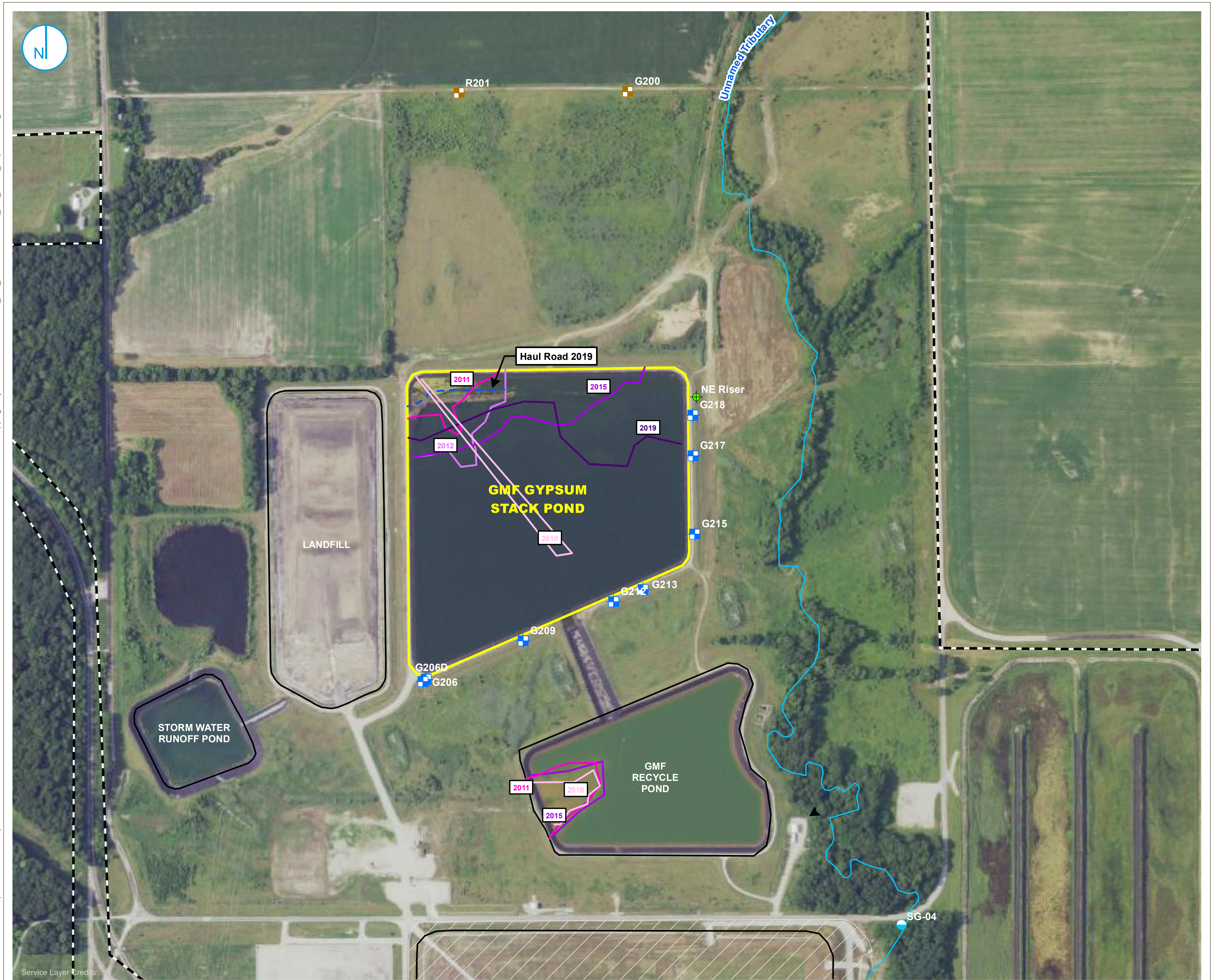
MONITORING WELL LOCATION MAP

FIGURE 2-2

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL



COMPLIANCE MONITORING WELL
BACKGROUND MONITORING WELL
LEACHATE WELL
STAFF GAGE, RIVER
APPROXIMATE LIMITS OF ASH BASED ON 2010 AERIAL
APPROXIMATE LIMITS OF ASH BASED ON 2011 AERIAL
APPROXIMATE LIMITS OF ASH BASED ON 2012 AERIAL
APPROXIMATE LIMITS OF ASH BASED ON 2015 AERIAL
APPROXIMATE LIMITS OF ASH BASED ON 2019 AERIAL
HAUL ROAD 2019
SURFACE WATER FEATURE
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
LIMITS OF FINAL COVER
PROPERTY BOUNDARY

NOTE:
STAFF GAGE SG-04 WAS IDENTIFIED AS DESTROYED DURING OCTOBER 2023.

0 225 450 Feet

CCR OBSERVATIONS

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

FIGURE 2-3

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

PROJECT: 169000XXXX | DATED: 5/9/2024 | DESIGNER: GALARNMC

Y:\Mapping\Projects\22\2285\MXD\Nature_and_Extent\CCR\Nature_and_Extent_Report\1103\Figure 2-3. CCR Observations.mxd

Y:\Mapping\Projects\22\2285\MXD\Nature_and_Extent\COF\Nature_and_Extent_Report\103\Figure 2-4. CCR Access Summary.mxd

PROJECT: 169000XXXX | DATED: 5/29/2024 | DESIGNER: GALARNMC

MONITORING WELL
LEACHATE WELL
SOIL BORING
CCR SAMPLE
626-FT ELEVATION CONTOUR (NAVD88)
SURFACE WATER FEATURE
ELEVATION BELOW 626
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
PROPERTY BOUNDARY

0 75 150 Feet

CCR ACCESS SUMMARY

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

FIGURE 2-4

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Y:\Mapping\Projects\22\2285\MXD\Nature_and_Extent\COF\Nature_and_Extent_Report\103\Figure 2-5. Base of CCR.mxd

PROJECT: 169000XXXX | DATED: 5/10/2024 | DESIGNER: GALARNMC

10-FT BOTTOM OF ASH ELEVATION CONTOUR (NAVD88)

2-FT BOTTOM OF ASH ELEVATION CONTOUR (NAVD88)

SURFACE WATER FEATURE

REGULATED UNIT (SUBJECT UNIT)

SITE FEATURE

0 75 150 Feet

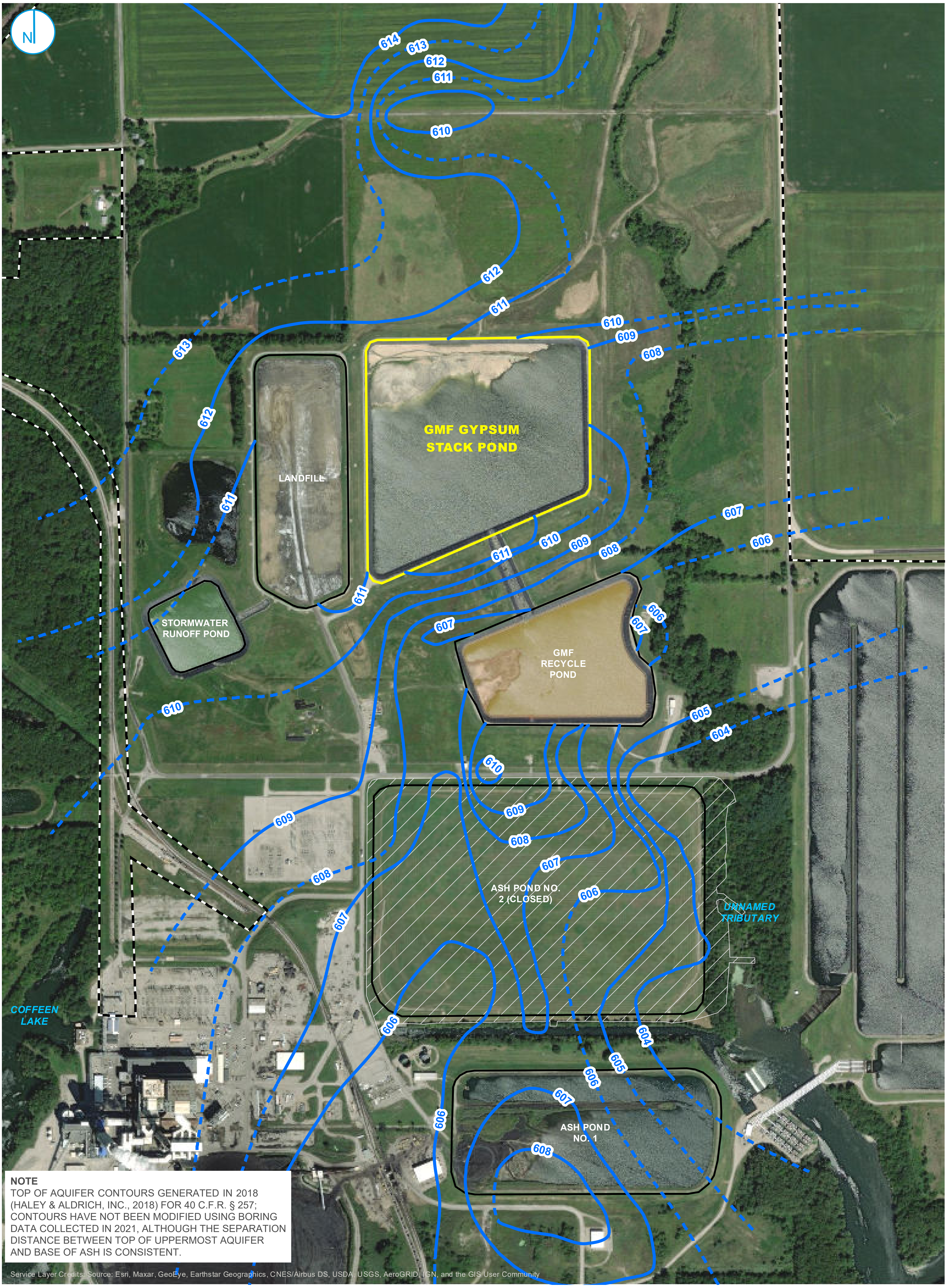
BASE OF CCR

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

FIGURE 2-5

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL



HAGARSTOWN MEMBER ELEVATION CONTOUR (1-FT INTERVAL, NAVD88)
INFERRED HAGARSTOWN MEMBER ELEVATION CONTOUR
PART 845 REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
LIMITS OF FINAL COVER
PROPERTY BOUNDARY

0 275 550 Feet

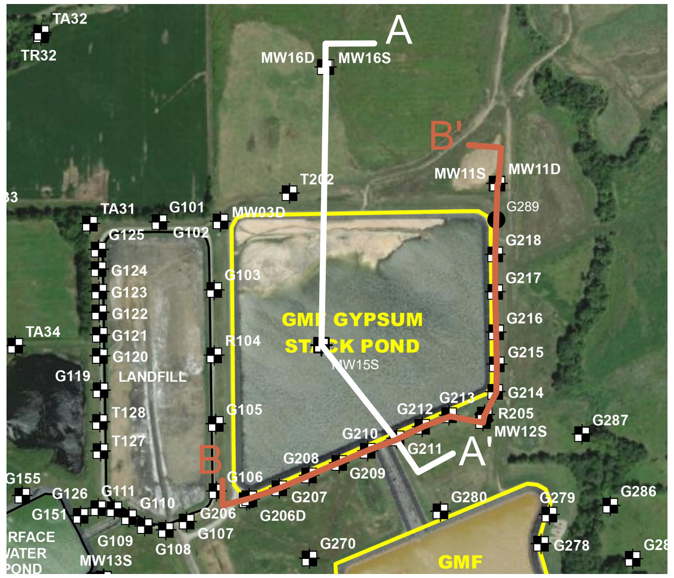
TOP OF UPPERMOST AQUIFER

FIGURE 2-6

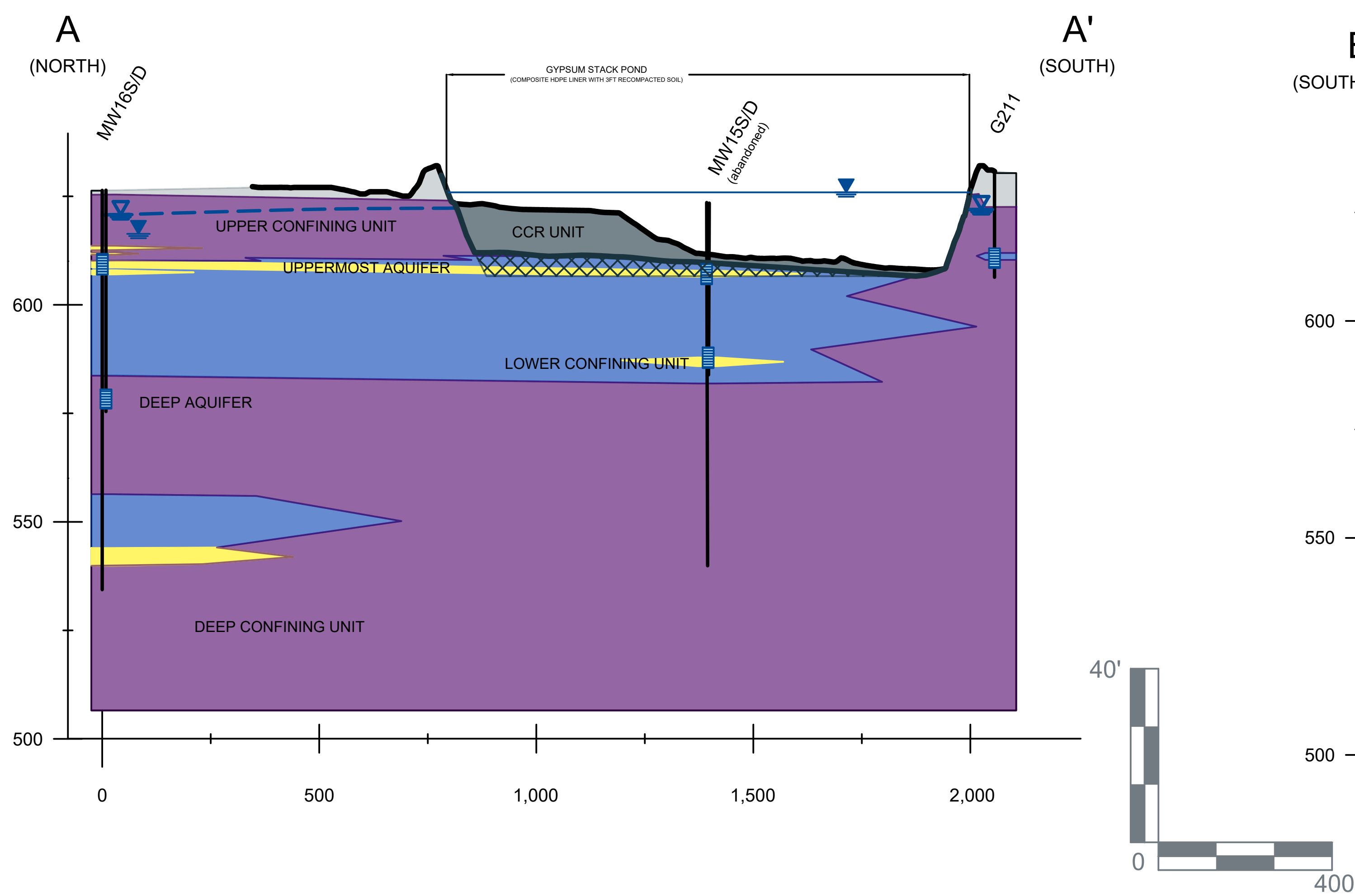
NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

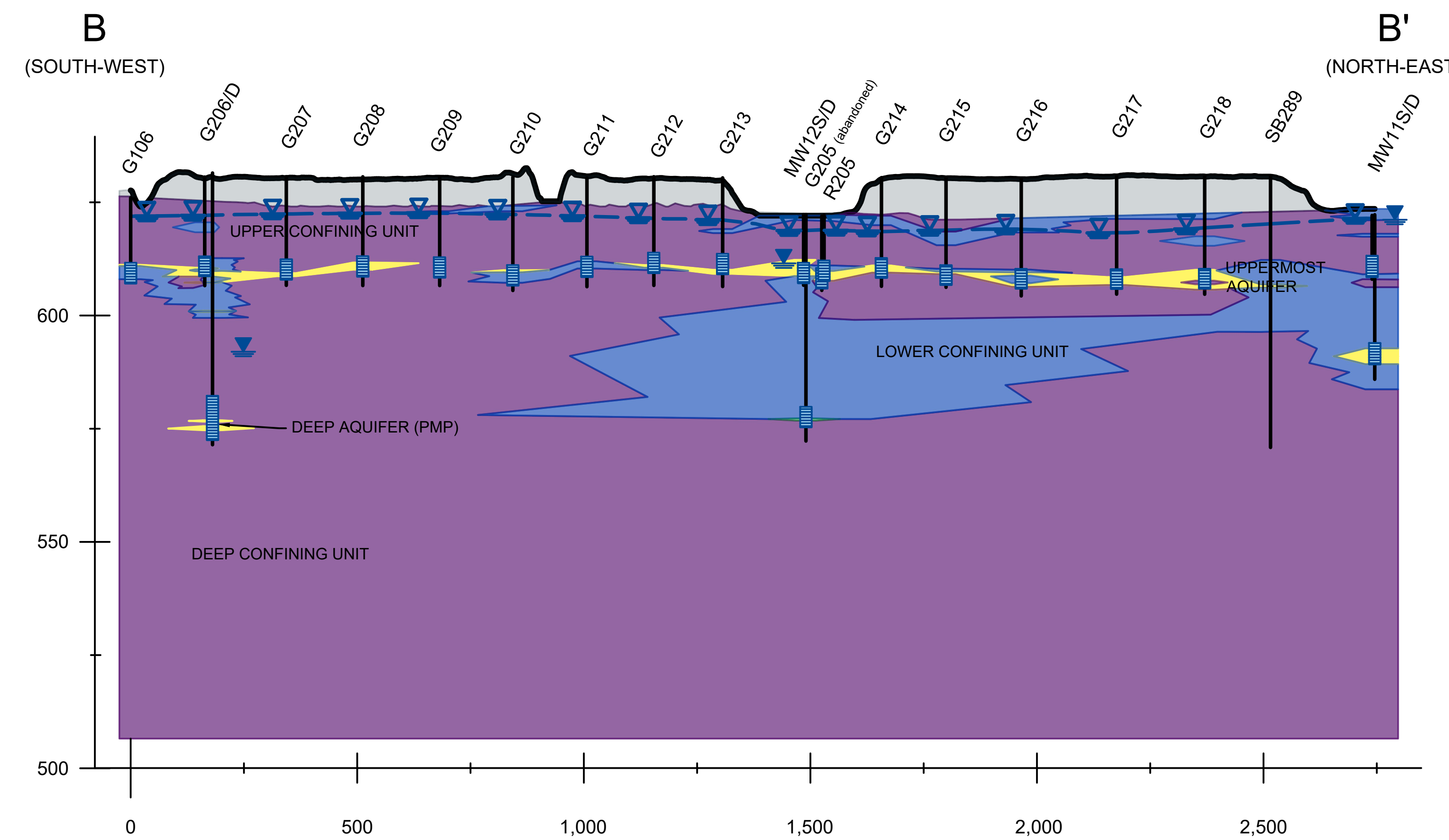
RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL



NOTES
1. This profile was developed by interpolation between widely spaced boreholes. Only at the borehole location should it be considered as an approximately accurate representation and then only to the degree implied by the notes on the borehole logs.
2. Scale is approximate.
3. Vertical scale is exaggerated 10X.
4. Groundwater elevations measured on July 26, 2021.
5. Updated June 2024 to illustrate area where the uppermost aquifer was removed during unit construction.





LEGEND

- COAL COMBUSTION RESIDUALS (CCR)
- FILL
- CLAY (CL/CH)
- SILT (ML)
- SAND (SP/SM/SW)
- PEAT
- WELL SCREEN INTERVAL
- UPPERMOST AQUIFER POTENTIOMETRIC SURFACE
- UPPERMOST AQUIFER GROUNDWATER ELEVATION
- BEDROCK GROUNDWATER / OTHER GROUNDWATER / SURFACE WATER ELEVATION(S)
- SURFACE WATER
- MATERIAL REMOVED DURING CONSTRUCTION

GEOLOGIC CROSS SECTIONS
A-A' & B-B'

HYDROGEOLOGIC SITE CHARACTERIZATION REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

FIGURE 2-7

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

C:\Users\Engelhsa\OneDrive - Ramboll\Projects\Vistra\Modeling & Calcs\COF\CAD\Cross Sections\Coffeen-GMF-GSP-Cross Sections.dwg
DESIGNER: ENGELHSA
DATED: 6/11/2024
PROJECT: 1940100806

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)
LIMITS OF FINAL COVER
PROPERTY BOUNDARY
SITE FEATURE

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)

UPPERMOST AQUIFER POTENTIOMETRIC SURFACE MAP MAY 30, 2023 (E001)

FIGURE 2-8

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND

COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL

MONITORING WELL

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

0 325 650 Feet

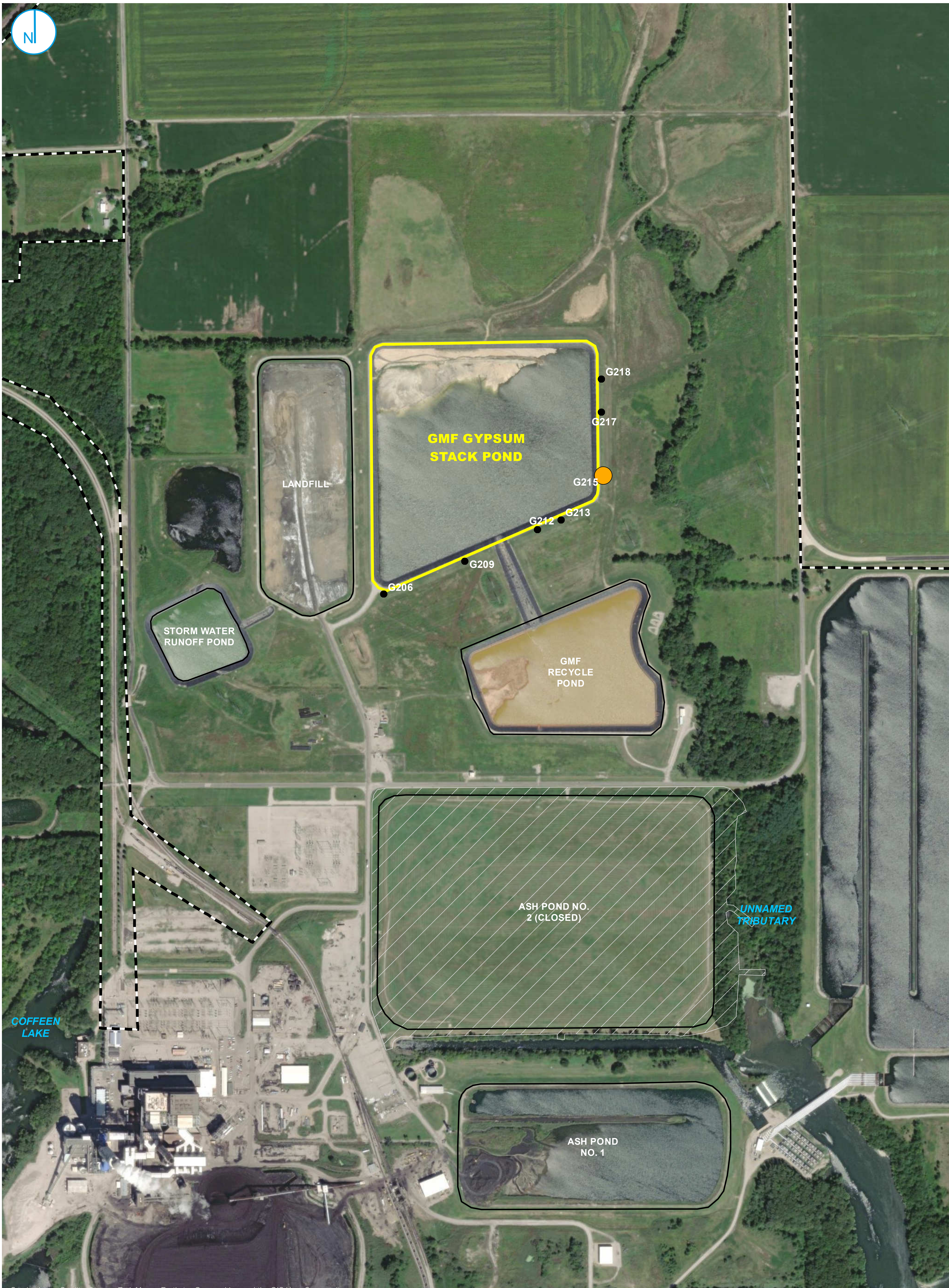
DEEP AQUIFER POTENTIOMETRIC SURFACE MAP- AUGUST 8, 2023 (E002)

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

FIGURE 2-9

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL



TOTAL SULFATE EXCEEDANCE

COMPLIANCE WELL WITHOUT EXCEEDANCE

REGULATED UNIT (SUBJECT UNIT)

SITE FEATURE

LIMITS OF FINAL COVER

PROPERTY BOUNDARY

0 275 550 Feet

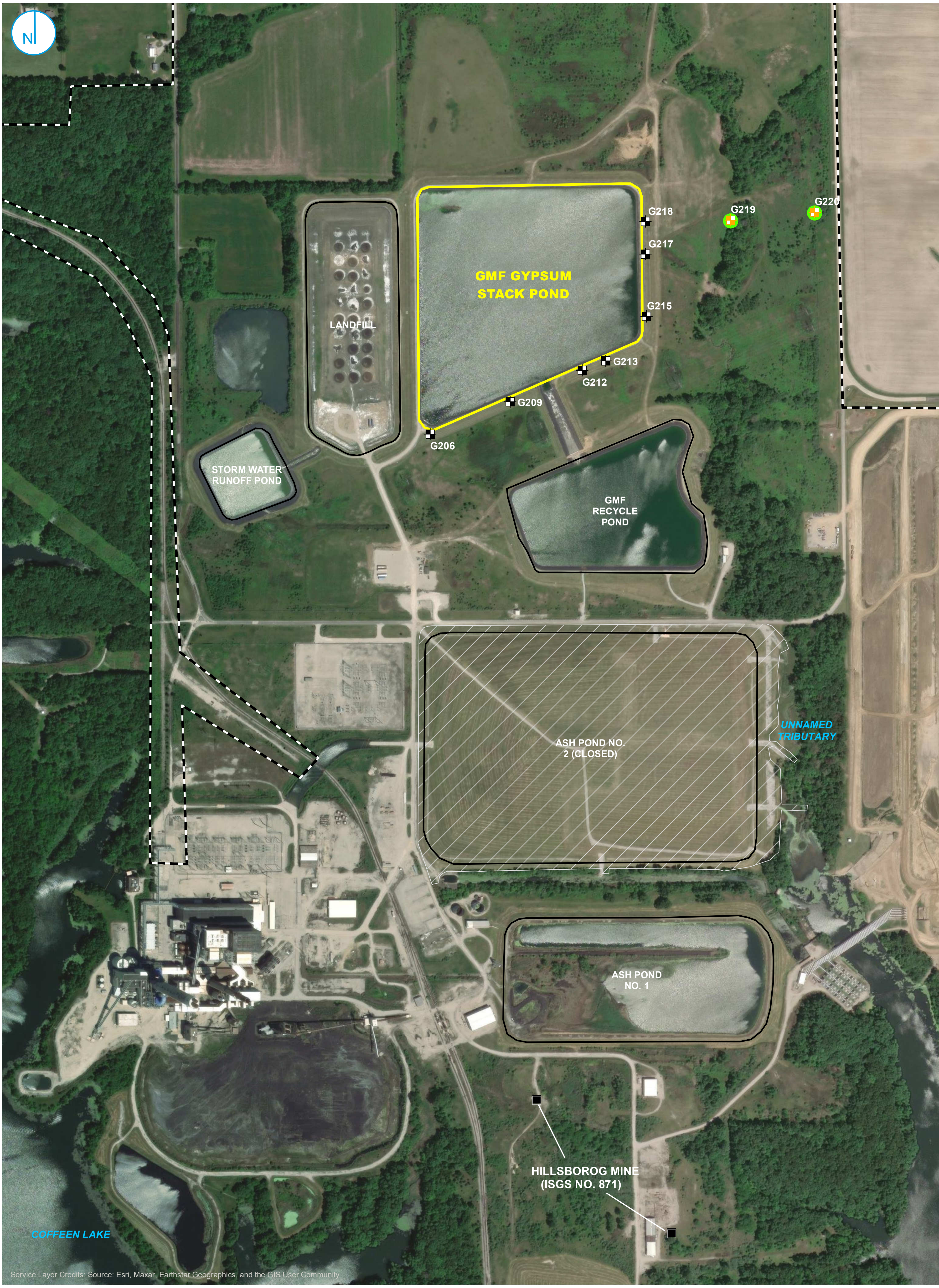
GWPS EXCEEDANCE MAP
UPPERMOST AQUIFER

FIGURE 3-1

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL



2024 NATURE AND EXTENT INVESTIGATION WELLS
MONITORING WELL
LOCATION IS PRELIMINARY AND PENDING OFFICIAL SURVEY
COAL MINE SHAFT
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
LIMITS OF FINAL COVER
PROPERTY BOUNDARY

0 275 550 Feet

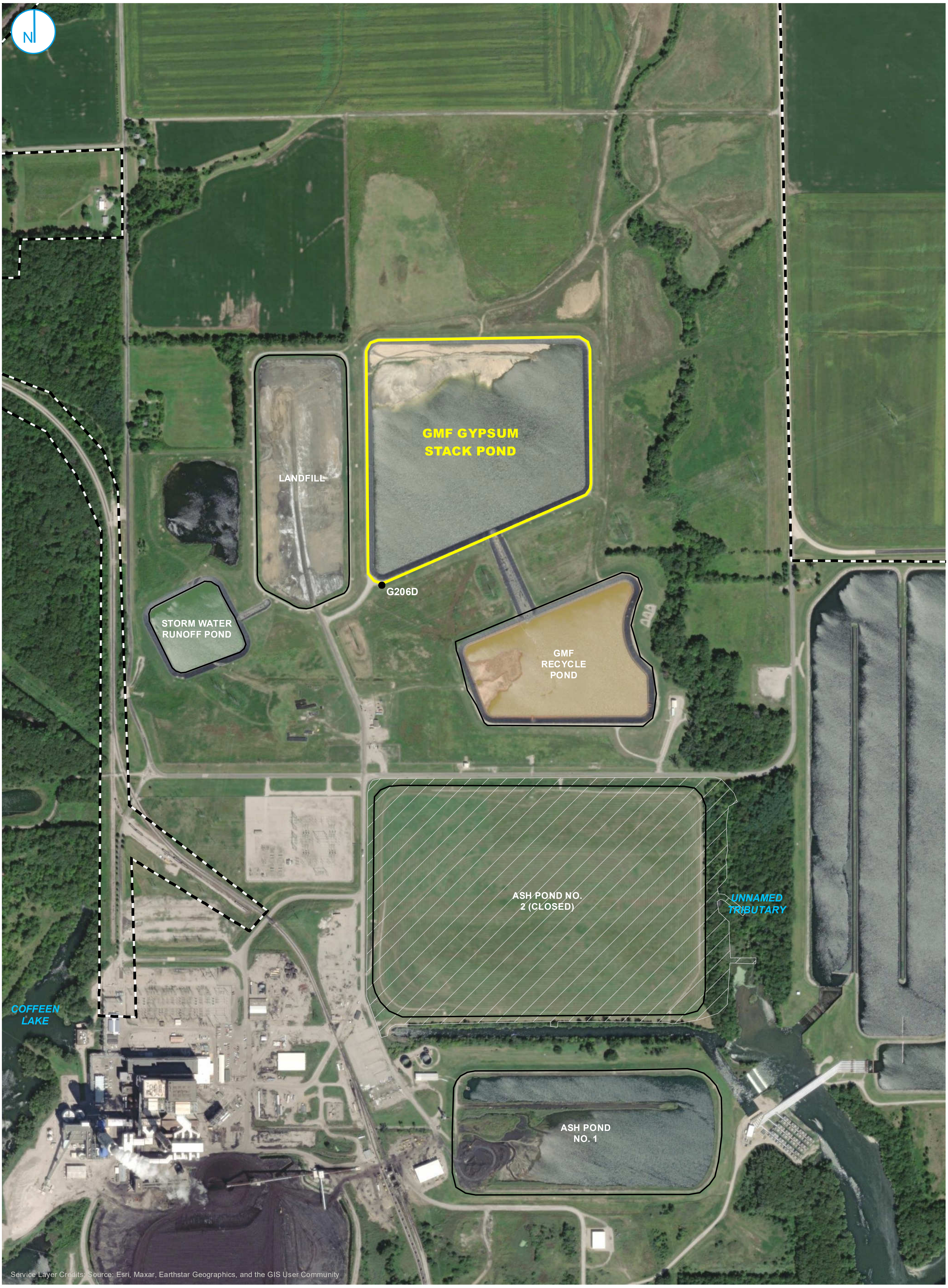
2024 NATURE AND EXTENT INVESTIGATION LOCATIONS

FIGURE 3-2

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS ENGINEERING SOLUTIONS, INC.

RAMBOLL



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

0 275 550 Feet

GWPS EXCEEDANCE MAP
DEEP AQUIFER

FIGURE 3-3

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND

COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

APPENDICES

APPENDIX A
Site-Wide Groundwater Elevations

Appendix A. Site-Wide Groundwater Elevations
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G045D	Water Level	LCU	02/13/2023	9.12	614.69
G045D	Water Level	LCU	05/30/2023	9.82	613.99
G045D	Water Level	LCU	08/08/2023	10.34	613.47
G045D	Water Level	LCU	10/24/2023	10.41	613.40
G045D	Water Level	LCU	11/13/2023	10.26	613.55
G046D	Water Level	LCU	02/13/2023	14.85	610.39
G046D	Water Level	LCU	05/30/2023	14.54	610.70
G046D	Water Level	LCU	08/08/2023	15.10	610.14
G046D	Water Level	LCU	10/24/2023	15.59	609.65
G046D	Water Level	LCU	11/13/2023	15.54	609.70
G1001	Water Level	LCU	02/13/2023	6.12	591.49
G1001	Water Level	LCU	03/30/2023	6.09	591.51
G1001	Water Level	LCU	04/30/2023	6.53	591.07
G1001	Water Level	LCU	05/30/2023	6.61	590.99
G1001	Water Level	LCU	08/08/2023	6.32	591.29
G1001	Water Level	LCU	09/25/2023	6.14	591.46
G1001	Water Level	LCU	10/24/2023	6.20	591.41
G1001	Water Level	LCU	11/13/2023	6.49	591.12
G1001	Water Level	LCU	12/18/2023	5.88	591.73
G1003	Water Level	LCU	02/13/2023	Dry	Dry
G1003	Water Level	LCU	05/30/2023	Dry	Dry
G1003	Water Level	LCU	08/08/2023	Dry	Dry
G1003	Water Level	LCU	10/24/2023	Dry	Dry
G1003	Water Level	LCU	11/13/2023	Dry	Dry
G101	Water Level	UA	02/13/2023	4.71	622.89
G101	Water Level	UA	05/30/2023	6.53	621.07
G101	Water Level	UA	08/08/2023	11.16	616.44
G101	Water Level	UA	10/25/2023	14.15	613.45
G101	Water Level	UA	11/13/2023	13.95	613.65
G102	Water Level	UA	02/13/2023	4.80	624.24
G102	Water Level	UA	08/08/2023	10.34	618.70
G102	Water Level	UA	10/24/2023	12.60	616.44
G102	Water Level	UA	11/13/2023	12.84	616.20
G102	Water Level	UA	12/18/2023	12.82	616.22

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Appendix A. Site-Wide Groundwater Elevations
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G103	Water Level	UA	02/13/2023	9.59	624.21
G103	Water Level	UA	03/30/2023	7.94	625.85
G103	Water Level	UA	04/30/2023	9.58	624.21
G103	Water Level	UA	05/30/2023	10.49	623.31
G103	Water Level	UA	06/08/2023	11.00	622.80
G103	Water Level	UA	07/08/2023	12.05	621.74
G103	Water Level	UA	08/08/2023	13.53	620.27
G103	Water Level	UA	09/25/2023	14.74	619.06
G103	Water Level	UA	10/25/2023	15.66	618.14
G103	Water Level	UA	11/13/2023	16.00	617.80
G103	Water Level	UA	12/18/2023	16.24	617.56
G105	Water Level	UA	02/13/2023	8.24	623.84
G105	Water Level	UA	08/08/2023	10.84	621.24
G105	Water Level	UA	09/25/2023	15.74	616.34
G105	Water Level	UA	10/25/2023	12.90	619.18
G105	Water Level	UA	11/13/2023	13.46	618.62
G105	Water Level	UA	12/18/2023	13.63	618.45
G106	Water Level	UA	02/13/2023	8.44	622.71
G106	Water Level	UA	03/30/2023	7.82	623.32
G106	Water Level	UA	04/30/2023	9.16	621.98
G106	Water Level	UA	05/30/2023	9.81	621.33
G106	Water Level	UA	06/08/2023	10.39	620.76
G106	Water Level	UA	07/08/2023	10.50	620.65
G106	Water Level	UA	08/08/2023	12.17	618.98
G106	Water Level	UA	09/25/2023	12.97	618.18
G106	Water Level	UA	10/25/2023	14.01	617.14
G106	Water Level	UA	11/13/2023	14.21	616.94
G106	Water Level	UA	12/18/2023	13.87	617.28
G107	Water Level	UA	02/13/2023	9.07	621.15
G107	Water Level	UA	05/30/2023	10.85	619.37
G107	Water Level	UA	08/08/2023	12.76	617.46
G107	Water Level	UA	10/25/2023	14.31	615.91
G107	Water Level	UA	11/13/2023	14.40	615.82
G108	Water Level	UA	02/13/2023	9.67	620.55

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G108	Water Level	UA	05/30/2023	11.65	618.57
G108	Water Level	UA	08/08/2023	13.24	616.98
G108	Water Level	UA	10/25/2023	14.89	615.33
G108	Water Level	UA	11/13/2023	14.96	615.26
G109	Water Level	UA	02/13/2023	9.81	619.95
G109	Water Level	UA	05/30/2023	11.89	617.87
G109	Water Level	UA	08/08/2023	13.64	616.12
G109	Water Level	UA	10/25/2023	14.89	614.87
G109	Water Level	UA	11/13/2023	15.09	614.67
G110	Water Level	UA	02/13/2023	10.80	618.85
G110	Water Level	UA	05/30/2023	12.70	616.95
G110	Water Level	UA	08/08/2023	14.16	615.49
G110	Water Level	UA	10/25/2023	15.31	614.34
G110	Water Level	UA	11/13/2023	15.43	614.22
G111	Water Level	UA	02/13/2023	12.91	616.99
G111	Water Level	UA	05/30/2023	13.70	616.20
G111	Water Level	UA	08/08/2023	14.95	614.95
G111	Water Level	UA	10/25/2023	16.00	613.90
G111	Water Level	UA	11/13/2023	16.09	613.81
G119	Water Level	UA	02/13/2023	14.64	616.91
G119	Water Level	UA	05/30/2023	15.08	616.47
G119	Water Level	UA	08/08/2023	15.65	615.90
G119	Water Level	UA	10/25/2023	16.40	615.15
G119	Water Level	UA	11/13/2023	16.25	615.30
G120	Water Level	UA	02/13/2023	14.43	617.44
G120	Water Level	UA	05/30/2023	14.86	617.01
G120	Water Level	UA	08/08/2023	16.31	615.56
G120	Water Level	UA	10/25/2023	17.18	614.69
G120	Water Level	UA	11/13/2023	17.08	614.79
G121	Water Level	UA	02/13/2023	14.72	618.11
G121	Water Level	UA	05/30/2023	15.38	617.45
G121	Water Level	UA	08/08/2023	18.40	614.43
G121	Water Level	UA	10/25/2023	19.45	613.38
G121	Water Level	UA	11/13/2023	18.96	613.87

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G122	Water Level	UA	02/13/2023	13.89	618.80
G122	Water Level	UA	05/30/2023	14.00	618.69
G122	Water Level	UA	08/08/2023	19.54	613.15
G122	Water Level	UA	10/25/2023	21.21	611.48
G122	Water Level	UA	11/13/2023	20.40	612.29
G123	Water Level	UA	02/13/2023	11.80	621.16
G123	Water Level	UA	05/30/2023	12.68	620.28
G123	Water Level	UA	08/08/2023	18.57	614.39
G123	Water Level	UA	10/25/2023	20.09	612.87
G123	Water Level	UA	11/13/2023	19.94	613.02
G124	Water Level	UA	02/13/2023	12.14	621.25
G124	Water Level	UA	05/30/2023	13.43	619.96
G124	Water Level	UA	08/08/2023	18.49	614.90
G124	Water Level	UA	10/25/2023	21.05	612.34
G124	Water Level	UA	11/13/2023	Dry	Dry
G125	Water Level	UA	02/13/2023	11.99	621.52
G125	Water Level	UA	05/30/2023	13.54	619.97
G125	Water Level	UA	08/08/2023	18.53	614.98
G125	Water Level	UA	10/25/2023	21.21	612.30
G125	Water Level	UA	11/13/2023	Dry	Dry
G126	Water Level	UA	02/13/2023	8.92	616.47
G126	Water Level	UA	05/30/2023	10.04	615.35
G126	Water Level	UA	08/08/2023	10.93	614.46
G126	Water Level	UA	10/25/2023	11.85	613.54
G126	Water Level	UA	11/13/2023	11.91	613.48
G151	Water Level	UA	02/13/2023	10.88	615.05
G151	Water Level	UA	05/30/2023	11.58	614.35
G151	Water Level	UA	08/08/2023	12.22	613.71
G151	Water Level	UA	10/25/2023	12.99	612.94
G151	Water Level	UA	11/13/2023	12.97	612.96
G152	Water Level	UA	02/13/2023	10.25	616.27
G152	Water Level	UA	05/30/2023	11.11	615.41
G152	Water Level	UA	08/08/2023	12.40	614.12
G152	Water Level	UA	10/25/2023	13.42	613.10

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G152	Water Level	UA	11/13/2023	13.07	613.45
G153	Water Level	UA	02/13/2023	12.24	614.16
G153	Water Level	UA	05/30/2023	11.40	615.00
G153	Water Level	UA	08/08/2023	13.08	613.32
G153	Water Level	UA	10/25/2023	14.81	611.59
G153	Water Level	UA	11/13/2023	14.90	611.50
G154	Water Level	UA	02/13/2023	10.91	615.44
G154	Water Level	UA	05/30/2023	13.15	613.20
G154	Water Level	UA	08/08/2023	14.60	611.75
G154	Water Level	UA	10/25/2023	15.90	610.45
G154	Water Level	UA	11/13/2023	15.76	610.59
G155	Water Level	UA	02/13/2023	11.56	614.30
G155	Water Level	UA	05/30/2023	12.44	613.42
G155	Water Level	UA	08/08/2023	13.21	612.65
G155	Water Level	UA	10/25/2023	14.01	611.85
G155	Water Level	UA	11/13/2023	13.92	611.94
G200	Water Level	UA	02/13/2023	2.91	623.03
G200	Water Level	UA	03/30/2023	3.01	622.92
G200	Water Level	UA	04/30/2023	4.51	621.42
G200	Water Level	UA	05/30/2023	5.89	620.04
G200	Water Level	UA	06/08/2023	6.44	619.49
G200	Water Level	UA	08/08/2023	9.21	616.73
G200	Water Level	UA	09/25/2023	10.61	615.33
G200	Water Level	UA	10/25/2023	11.51	614.43
G200	Water Level	UA	11/13/2023	11.88	614.06
G200	Water Level	UA	12/18/2023	11.48	614.46
G206	Water Level	UA	02/13/2023	9.20	623.62
G206	Water Level	UA	03/30/2023	9.12	623.69
G206	Water Level	UA	04/30/2023	10.27	622.54
G206	Water Level	UA	05/30/2023	11.17	621.64
G206	Water Level	UA	07/08/2023	12.13	620.69
G206	Water Level	UA	08/08/2023	13.89	618.93
G206	Water Level	UA	09/25/2023	14.74	618.08
G206	Water Level	UA	10/25/2023	15.71	617.11

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G206	Water Level	UA	11/13/2023	16.16	616.66
G206	Water Level	UA	12/18/2023	15.85	616.97
G206D	Water Level	DA	02/13/2023	9.92	624.22
G206D	Water Level	DA	02/16/2023	[29.69]	[604.16]
G206D	Water Level	DA	03/30/2023	32.14	601.99
G206D	Water Level	DA	04/30/2023	30.53	603.60
G206D	Water Level	DA	05/30/2023	30.22	603.91
G206D	Water Level	DA	07/08/2023	30.10	604.04
G206D	Water Level	DA	08/08/2023	30.04	604.10
G206D	Water Level	DA	09/25/2023	30.08	604.06
G206D	Water Level	DA	10/25/2023	30.34	603.80
G206D	Water Level	DA	11/13/2023	30.40	603.74
G206D	Water Level	DA	12/18/2023	30.32	603.82
G207	Water Level	UA	02/13/2023	10.25	622.96
G207	Water Level	UA	03/30/2023	9.67	623.53
G207	Water Level	UA	04/30/2023	10.55	622.65
G207	Water Level	UA	05/30/2023	11.47	621.73
G207	Water Level	UA	07/08/2023	12.45	620.76
G207	Water Level	UA	08/08/2023	14.20	619.01
G207	Water Level	UA	09/25/2023	15.27	617.94
G207	Water Level	UA	10/25/2023	16.24	616.97
G207	Water Level	UA	11/13/2023	16.67	616.54
G207	Water Level	UA	12/18/2023	16.31	616.90
G208	Water Level	UA	02/13/2023	10.28	622.88
G208	Water Level	UA	03/30/2023	9.65	623.50
G208	Water Level	UA	04/30/2023	10.30	622.85
G208	Water Level	UA	05/30/2023	11.10	622.05
G208	Water Level	UA	06/08/2023	12.38	620.78
G208	Water Level	UA	07/08/2023	12.32	620.83
G208	Water Level	UA	08/08/2023	14.08	619.08
G208	Water Level	UA	09/25/2023	15.31	617.84
G208	Water Level	UA	10/25/2023	16.25	616.91
G208	Water Level	UA	11/13/2023	16.66	616.50
G208	Water Level	UA	12/18/2023	16.24	616.92

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G209	Water Level	UA	02/13/2023	10.01	622.90
G209	Water Level	UA	03/30/2023	9.63	623.27
G209	Water Level	UA	04/30/2023	10.25	622.65
G209	Water Level	UA	05/30/2023	11.07	621.83
G209	Water Level	UA	07/08/2023	11.82	621.08
G209	Water Level	UA	08/08/2023	13.79	619.12
G209	Water Level	UA	09/25/2023	14.78	618.13
G209	Water Level	UA	10/25/2023	15.60	617.31
G209	Water Level	UA	11/13/2023	16.24	616.67
G209	Water Level	UA	12/18/2023	16.04	616.87
G210	Water Level	UA	02/13/2023	10.49	622.50
G210	Water Level	UA	03/30/2023	9.73	623.25
G210	Water Level	UA	04/30/2023	10.36	622.62
G210	Water Level	UA	05/30/2023	11.09	621.89
G210	Water Level	UA	06/08/2023	11.76	621.23
G210	Water Level	UA	07/08/2023	12.29	620.70
G210	Water Level	UA	08/08/2023	13.75	619.24
G210	Water Level	UA	09/25/2023	14.67	618.32
G210	Water Level	UA	10/25/2023	15.52	617.47
G210	Water Level	UA	11/13/2023	15.82	617.17
G210	Water Level	UA	12/18/2023	15.99	617.00
G211	Water Level	UA	02/13/2023	9.90	622.74
G211	Water Level	UA	03/30/2023	9.18	623.45
G211	Water Level	UA	04/30/2023	9.99	622.64
G211	Water Level	UA	05/30/2023	10.54	622.09
G211	Water Level	UA	06/08/2023	11.76	620.88
G211	Water Level	UA	07/08/2023	12.43	620.21
G211	Water Level	UA	08/08/2023	13.44	619.20
G211	Water Level	UA	09/25/2023	14.74	617.90
G211	Water Level	UA	10/25/2023	15.15	617.49
G211	Water Level	UA	11/13/2023	15.61	617.03
G211	Water Level	UA	12/18/2023	15.93	616.71
G212	Water Level	UA	02/13/2023	10.38	622.51
G212	Water Level	UA	03/30/2023	9.77	623.11

RAMBOLL

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G212	Water Level	UA	04/30/2023	10.89	621.99
G212	Water Level	UA	05/30/2023	11.64	621.24
G212	Water Level	UA	06/08/2023	12.80	620.08
G212	Water Level	UA	07/08/2023	13.48	619.41
G212	Water Level	UA	08/08/2023	14.61	618.28
G212	Water Level	UA	09/25/2023	15.97	616.92
G212	Water Level	UA	10/25/2023	16.46	616.43
G212	Water Level	UA	11/13/2023	16.92	615.97
G212	Water Level	UA	12/18/2023	17.00	615.89
G213	Water Level	UA	02/13/2023	10.83	621.98
G213	Water Level	UA	03/30/2023	10.15	622.65
G213	Water Level	UA	04/30/2023	11.04	621.76
G213	Water Level	UA	05/30/2023	11.96	620.84
G213	Water Level	UA	06/08/2023	12.80	620.00
G213	Water Level	UA	07/08/2023	13.50	619.31
G213	Water Level	UA	08/08/2023	15.05	617.76
G213	Water Level	UA	09/25/2023	15.90	616.91
G213	Water Level	UA	10/25/2023	16.81	616.00
G213	Water Level	UA	11/13/2023	17.41	615.40
G213	Water Level	UA	12/18/2023	17.34	615.47
G214	Water Level	UA	02/13/2023	14.53	618.32
G214	Water Level	UA	03/30/2023	13.04	619.80
G214	Water Level	UA	04/30/2023	13.98	618.86
G214	Water Level	UA	05/30/2023	14.73	618.11
G214	Water Level	UA	06/08/2023	15.56	617.29
G214	Water Level	UA	07/08/2023	16.44	616.41
G214	Water Level	UA	08/08/2023	17.64	615.21
G214	Water Level	UA	09/25/2023	18.42	614.43
G214	Water Level	UA	10/25/2023	19.14	613.71
G214	Water Level	UA	11/13/2023	19.35	613.50
G214	Water Level	UA	12/18/2023	19.23	613.62
G215	Water Level	UA	02/13/2023	14.38	618.68
G215	Water Level	UA	03/30/2023	13.16	619.89
G215	Water Level	UA	04/30/2023	14.03	619.02

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G215	Water Level	UA	05/30/2023	14.76	618.29
G215	Water Level	UA	06/08/2023	15.46	617.59
G215	Water Level	UA	07/08/2023	16.06	616.99
G215	Water Level	UA	08/08/2023	17.22	615.84
G215	Water Level	UA	09/25/2023	18.06	614.99
G215	Water Level	UA	10/25/2023	18.41	614.65
G215	Water Level	UA	11/13/2023	19.03	614.03
G215	Water Level	UA	12/18/2023	18.75	614.31
G216	Water Level	UA	02/13/2023	13.54	619.22
G216	Water Level	UA	03/30/2023	12.27	620.48
G216	Water Level	UA	04/30/2023	12.94	619.81
G216	Water Level	UA	05/30/2023	13.63	619.12
G216	Water Level	UA	06/08/2023	14.99	617.77
G216	Water Level	UA	07/08/2023	15.42	617.33
G216	Water Level	UA	08/08/2023	16.51	616.25
G216	Water Level	UA	09/25/2023	17.38	615.38
G216	Water Level	UA	10/25/2023	17.86	614.90
G216	Water Level	UA	11/13/2023	18.21	614.55
G216	Water Level	UA	12/18/2023	18.00	614.76
G217	Water Level	UA	02/13/2023	14.72	618.38
G217	Water Level	UA	08/08/2023	18.29	614.81
G217	Water Level	UA	10/25/2023	19.51	613.59
G217	Water Level	UA	11/13/2023	19.68	613.42
G217	Water Level	UA	12/18/2023	19.33	613.77
G218	Water Level	UA	02/13/2023	13.71	619.40
G218	Water Level	UA	03/30/2023	12.50	620.60
G218	Water Level	UA	04/30/2023	12.98	620.12
G218	Water Level	UA	05/30/2023	13.72	619.38
G218	Water Level	UA	06/08/2023	15.11	618.00
G218	Water Level	UA	07/08/2023	15.80	617.31
G218	Water Level	UA	08/08/2023	16.98	616.13
G218	Water Level	UA	09/25/2023	17.95	615.16
G218	Water Level	UA	10/25/2023	18.48	614.63
G218	Water Level	UA	11/13/2023	18.67	614.44

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G218	Water Level	UA	12/18/2023	18.38	614.73
G270	Water Level	UA	02/13/2023	2.53	623.33
G270	Water Level	UA	03/30/2023	2.41	623.44
G270	Water Level	UA	04/30/2023	2.83	623.02
G270	Water Level	UA	05/30/2023	5.06	620.79
G270	Water Level	UA	08/14/2023	[8.52]	[617.34]
G270	Water Level	UA	10/25/2023	10.92	614.94
G270	Water Level	UA	11/13/2023	10.90	614.96
G270	Water Level	UA	12/18/2023	9.84	616.02
G271	Water Level	UA	02/13/2023	8.93	616.64
G271	Water Level	UA	03/30/2023	7.12	618.44
G271	Water Level	UA	04/30/2023	8.97	616.59
G271	Water Level	UA	05/30/2023	9.28	616.28
G271	Water Level	UA	06/08/2023	9.57	615.99
G271	Water Level	UA	07/08/2023	9.83	615.73
G271	Water Level	UA	08/08/2023	11.20	614.37
G271	Water Level	UA	09/25/2023	12.44	613.13
G271	Water Level	UA	10/25/2023	12.95	612.62
G271	Water Level	UA	11/13/2023	13.00	612.57
G271	Water Level	UA	12/18/2023	12.79	612.78
G272	Water Level	UA	02/13/2023	8.55	615.26
G272	Water Level	UA	03/30/2023	6.96	616.84
G272	Water Level	UA	04/30/2023	9.20	614.60
G272	Water Level	UA	05/30/2023	9.48	614.32
G272	Water Level	UA	08/08/2023	10.55	613.26
G272	Water Level	UA	09/25/2023	11.63	612.18
G272	Water Level	UA	10/25/2023	12.03	611.78
G272	Water Level	UA	11/13/2023	12.01	611.80
G272	Water Level	UA	12/18/2023	11.81	612.00
G273	Water Level	UA	02/13/2023	8.95	614.07
G273	Water Level	UA	03/30/2023	7.80	615.21
G273	Water Level	UA	04/30/2023	10.09	612.92
G273	Water Level	UA	05/30/2023	10.41	612.60
G273	Water Level	UA	08/08/2023	11.56	611.46

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G273	Water Level	UA	09/25/2023	12.39	610.63
G273	Water Level	UA	10/25/2023	12.78	610.24
G273	Water Level	UA	11/13/2023	12.71	610.31
G273	Water Level	UA	12/18/2023	12.40	610.62
G274	Water Level	UA	02/13/2023	13.22	610.82
G274	Water Level	UA	03/30/2023	11.96	612.07
G274	Water Level	UA	04/30/2023	13.85	610.18
G274	Water Level	UA	05/30/2023	14.16	609.87
G274	Water Level	UA	06/08/2023	14.41	609.63
G274	Water Level	UA	07/08/2023	14.33	609.70
G274	Water Level	UA	08/08/2023	14.99	609.05
G274	Water Level	UA	09/25/2023	15.46	608.57
G274	Water Level	UA	10/25/2023	Dry	Dry
G274	Water Level	UA	11/13/2023	15.77	608.27
G274	Water Level	UA	12/18/2023	15.53	608.51
G275	Water Level	UA	02/13/2023	13.02	605.24
G275	Water Level	UA	05/30/2023	13.38	604.88
G275	Water Level	UA	08/08/2023	Dry	Dry
G275	Water Level	UA	11/13/2023	Dry	Dry
G275D	Water Level	DA	02/13/2023	39.49	580.82
G275D	Water Level	DA	08/08/2023	31.27	589.04
G275D	Water Level	DA	09/25/2023	42.29	578.02
G275D	Water Level	DA	10/25/2023	39.74	580.57
G275D	Water Level	DA	12/18/2023	43.46	576.85
G276	Water Level	UA	02/13/2023	27.37	604.63
G276	Water Level	UA	03/30/2023	25.78	606.21
G276	Water Level	UA	04/30/2023	26.04	605.95
G276	Water Level	UA	05/30/2023	26.60	605.39
G276	Water Level	UA	06/08/2023	26.84	605.16
G276	Water Level	UA	07/08/2023	27.27	604.73
G276	Water Level	UA	08/08/2023	27.75	604.25
G276	Water Level	UA	10/25/2023	28.49	603.51
G276	Water Level	UA	11/13/2023	28.59	603.41
G276	Water Level	UA	12/18/2023	28.71	603.29

Appendix A. Site-Wide Groundwater Elevations
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GMF Gypsum Stack Pond
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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G277	Water Level	UA	02/13/2023	19.67	603.41
G277	Water Level	UA	05/30/2023	18.21	604.87
G277	Water Level	UA	08/08/2023	19.76	603.32
G277	Water Level	UA	11/13/2023	Dry	Dry
G278	Water Level	UA	02/13/2023	19.95	611.22
G278	Water Level	UA	05/30/2023	21.75	609.42
G278	Water Level	UA	08/08/2023	20.98	610.19
G278	Water Level	UA	10/25/2023	23.48	607.69
G278	Water Level	UA	11/13/2023	24.23	606.94
G279	Water Level	UA	02/13/2023	20.83	611.21
G279	Water Level	UA	05/30/2023	22.73	609.31
G279	Water Level	UA	08/08/2023	23.69	608.35
G279	Water Level	UA	10/25/2023	24.56	607.48
G279	Water Level	UA	11/13/2023	23.39	608.65
G280	Water Level	UA	02/13/2023	3.01	622.34
G280	Water Level	UA	03/30/2023	2.74	622.60
G280	Water Level	UA	04/30/2023	3.52	621.82
G280	Water Level	UA	05/30/2023	3.96	621.38
G280	Water Level	UA	08/08/2023	5.80	619.55
G280	Water Level	UA	09/25/2023	7.42	617.92
G280	Water Level	UA	10/25/2023	8.56	616.79
G280	Water Level	UA	11/13/2023	8.91	616.44
G280	Water Level	UA	12/18/2023	9.04	616.31
G281	Water Level	UA	02/13/2023	4.63	621.73
G281	Water Level	UA	03/30/2023	3.94	622.41
G281	Water Level	UA	04/30/2023	6.44	619.91
G281	Water Level	UA	05/30/2023	6.64	619.71
G281	Water Level	UA	08/08/2023	6.39	619.97
G281	Water Level	UA	10/24/2023	8.64	617.72
G281	Water Level	UA	11/13/2023	8.59	617.77
G281	Water Level	UA	12/18/2023	6.83	619.53
G283	Water Level	LCU	02/13/2023	4.61	606.14
G283	Water Level	LCU	03/30/2023	3.55	607.19
G283	Water Level	LCU	04/30/2023	4.71	606.03

Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G283	Water Level	LCU	05/30/2023	5.60	605.14
G283	Water Level	LCU	08/14/2023	[7.45]	[603.30]
G283	Water Level	LCU	10/24/2023	7.79	602.96
G283	Water Level	LCU	11/13/2023	7.22	603.53
G283	Water Level	LCU	12/18/2023	6.49	604.26
G284	Water Level	UA	02/13/2023	9.72	608.70
G284	Water Level	UA	03/30/2023	8.65	609.76
G284	Water Level	UA	04/30/2023	11.62	606.79
G284	Water Level	UA	05/30/2023	12.43	605.98
G284	Water Level	UA	08/14/2023	[12.28]	[606.14]
G284	Water Level	UA	10/24/2023	Dry	Dry
G284	Water Level	UA	11/13/2023	Dry	Dry
G284	Water Level	UA	12/18/2023	12.91	605.51
G285	Water Level	LCU	02/13/2023	6.12	607.40
G285	Water Level	LCU	03/30/2023	4.18	609.33
G285	Water Level	LCU	04/30/2023	5.80	607.71
G285	Water Level	LCU	05/30/2023	6.71	606.80
G285	Water Level	LCU	07/08/2023	8.14	605.37
G285	Water Level	LCU	08/08/2023	8.25	605.26
G285	Water Level	LCU	08/14/2023	[8.44]	[605.08]
G285	Water Level	LCU	09/25/2023	8.47	605.05
G285	Water Level	LCU	10/24/2023	8.96	604.56
G285	Water Level	LCU	11/13/2023	9.38	604.14
G285	Water Level	LCU	12/18/2023	8.03	605.49
G286	Water Level	UA	02/13/2023	6.18	606.95
G286	Water Level	UA	08/10/2023	[Dry]	[Dry]
G286	Water Level	UA	10/24/2023	Dry	Dry
G286	Water Level	UA	11/13/2023	Dry	Dry
G286	Water Level	UA	12/18/2023	Dry	Dry
G287	Water Level	UA	02/13/2023	5.75	611.70
G288	Water Level	UA	02/13/2023	9.78	610.29
G288	Water Level	UA	03/30/2023	4.70	615.37
G288	Water Level	UA	04/30/2023	6.66	613.41
G288	Water Level	UA	05/30/2023	7.40	612.67

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G288	Water Level	UA	06/08/2023	8.05	612.02
G288	Water Level	UA	07/08/2023	7.65	612.42
G288	Water Level	UA	08/08/2023	8.62	611.45
G288	Water Level	UA	08/11/2023	[8.70]	[611.37]
G288	Water Level	UA	09/25/2023	9.57	610.50
G288	Water Level	UA	10/24/2023	9.95	610.12
G288	Water Level	UA	11/13/2023	9.84	610.23
G288	Water Level	UA	12/18/2023	8.56	611.51
G301	Water Level	UA	02/13/2023	5.30	617.35
G301	Water Level	UA	06/08/2023	7.70	614.94
G301	Water Level	UA	07/08/2023	7.82	614.82
G301	Water Level	UA	08/08/2023	8.11	614.54
G301	Water Level	UA	10/24/2023	8.51	614.14
G301	Water Level	UA	11/13/2023	8.43	614.22
G301	Water Level	UA	12/18/2023	8.00	614.65
G302	Water Level	UA	02/13/2023	7.16	612.88
G302	Water Level	UA	03/30/2023	4.68	615.35
G302	Water Level	UA	04/30/2023	9.10	610.93
G302	Water Level	UA	05/30/2023	11.04	608.99
G302	Water Level	UA	06/08/2023	11.57	608.46
G302	Water Level	UA	07/08/2023	12.07	607.96
G302	Water Level	UA	08/08/2023	12.68	607.36
G302	Water Level	UA	09/25/2023	13.12	606.92
G302	Water Level	UA	11/13/2023	13.16	606.88
G302	Water Level	UA	12/18/2023	12.47	607.57
G303	Water Level	UA	02/13/2023	4.20	617.82
G303	Water Level	UA	03/30/2023	3.62	618.39
G303	Water Level	UA	04/30/2023	4.62	617.39
G303	Water Level	UA	05/30/2023	5.92	616.09
G303	Water Level	UA	08/08/2023	8.40	613.62
G303	Water Level	UA	09/25/2023	9.18	612.83
G303	Water Level	UA	10/24/2023	9.71	612.31
G303	Water Level	UA	11/13/2023	9.32	612.70
G303	Water Level	UA	12/18/2023	8.22	613.80

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G305	Water Level	UA	02/13/2023	6.08	619.59
G305	Water Level	UA	03/30/2023	5.81	619.85
G305	Water Level	UA	04/30/2023	6.59	619.07
G305	Water Level	UA	05/30/2023	7.63	618.03
G305	Water Level	UA	06/08/2023	8.35	617.31
G305	Water Level	UA	07/08/2023	8.23	617.43
G305	Water Level	UA	08/08/2023	9.19	616.48
G305	Water Level	UA	10/24/2023	9.95	615.72
G305	Water Level	UA	11/13/2023	8.50	617.17
G305	Water Level	UA	12/18/2023	8.24	617.43
G306	Water Level	UA	02/13/2023	5.80	620.11
G306	Water Level	UA	03/30/2023	5.41	620.49
G306	Water Level	UA	04/30/2023	6.64	619.26
G306	Water Level	UA	05/30/2023	8.13	617.77
G306	Water Level	UA	06/08/2023	9.18	616.72
G306	Water Level	UA	07/08/2023	8.60	617.30
G306	Water Level	UA	08/08/2023	9.70	616.21
G306	Water Level	UA	10/24/2023	10.81	615.10
G306	Water Level	UA	11/13/2023	10.13	615.78
G306	Water Level	UA	12/18/2023	7.56	618.35
G307	Water Level	UA	02/13/2023	Above Top of Casing	Above Top of Casing
G307	Water Level	UA	08/08/2023	0.70	623.90
G307	Water Level	UA	11/13/2023	1.96	622.64
G307D	Water Level	LCU	02/13/2023	2.75	622.13
G307D	Water Level	LCU	03/30/2023	2.32	622.55
G307D	Water Level	LCU	04/30/2023	2.41	622.46
G307D	Water Level	LCU	05/30/2023	2.48	622.39
G307D	Water Level	LCU	08/08/2023	7.89	616.99
G307D	Water Level	LCU	10/24/2023	11.33	613.55
G307D	Water Level	LCU	11/13/2023	12.36	612.52
G307D	Water Level	LCU	12/18/2023	7.55	617.33
G308	Water Level	UA	02/13/2023	3.88	620.71
G308	Water Level	UA	03/30/2023	3.79	620.79
G308	Water Level	UA	04/30/2023	4.84	619.74

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G308	Water Level	UA	05/30/2023	5.56	619.02
G308	Water Level	UA	06/08/2023	5.93	618.66
G308	Water Level	UA	07/08/2023	5.37	619.22
G308	Water Level	UA	08/08/2023	5.09	619.50
G308	Water Level	UA	09/25/2023	6.16	618.42
G308	Water Level	UA	10/24/2023	6.19	618.40
G308	Water Level	UA	11/13/2023	6.00	618.59
G308	Water Level	UA	12/18/2023	4.71	619.88
G309	Water Level	UA	02/13/2023	9.64	616.24
G309	Water Level	UA	08/08/2023	8.04	617.84
G309	Water Level	UA	09/25/2023	8.24	617.64
G309	Water Level	UA	10/24/2023	8.69	617.19
G309	Water Level	UA	11/13/2023	8.32	617.56
G309	Water Level	UA	12/18/2023	7.60	618.28
G310	Water Level	UA	02/13/2023	7.09	615.78
G310	Water Level	UA	03/30/2023	6.42	616.44
G310	Water Level	UA	04/30/2023	8.94	613.92
G310	Water Level	UA	05/30/2023	9.57	613.29
G310	Water Level	UA	06/08/2023	9.96	612.90
G310	Water Level	UA	08/08/2023	10.30	612.57
G310	Water Level	UA	09/25/2023	10.73	612.14
G310	Water Level	UA	10/24/2023	10.82	612.05
G310	Water Level	UA	11/13/2023	10.56	612.31
G310	Water Level	UA	12/18/2023	9.95	612.92
G311	Water Level	UA	05/30/2023	8.26	612.78
G311	Water Level	UA	08/08/2023	9.08	611.96
G311	Water Level	UA	10/24/2023	9.29	611.75
G311	Water Level	UA	11/13/2023	9.38	611.66
G311D	Water Level	LCU	02/13/2023	23.66	597.58
G311D	Water Level	LCU	05/30/2023	23.26	597.98
G311D	Water Level	LCU	08/08/2023	23.52	597.72
G311D	Water Level	LCU	10/24/2023	23.51	597.73
G311D	Water Level	LCU	11/13/2023	24.15	597.09
G312	Water Level	UA	03/30/2023	8.28	611.49

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G312	Water Level	UA	04/30/2023	10.81	608.96
G312	Water Level	UA	05/30/2023	12.42	607.35
G312	Water Level	UA	06/08/2023	12.87	606.91
G312	Water Level	UA	07/08/2023	13.42	606.36
G312	Water Level	UA	08/08/2023	14.00	605.78
G312	Water Level	UA	10/24/2023	Dry	Dry
G312	Water Level	UA	11/13/2023	Dry	Dry
G312	Water Level	UA	12/18/2023	14.45	605.33
G313	Water Level	UA	02/13/2023	3.24	611.06
G313	Water Level	UA	08/08/2023	3.01	611.29
G313	Water Level	UA	10/24/2023	3.08	611.22
G313	Water Level	UA	11/13/2023	3.36	610.94
G313	Water Level	UA	12/18/2023	3.48	610.82
G314	Water Level	LCU	02/13/2023	6.14	607.74
G314	Water Level	LCU	03/30/2023	8.96	604.91
G314	Water Level	LCU	04/30/2023	5.53	608.34
G314	Water Level	LCU	05/30/2023	4.81	609.06
G314	Water Level	LCU	06/08/2023	9.43	604.44
G314	Water Level	LCU	07/08/2023	5.67	608.20
G314	Water Level	LCU	08/08/2023	4.88	609.00
G314	Water Level	LCU	09/25/2023	4.96	608.92
G314	Water Level	LCU	10/24/2023	5.30	608.58
G314	Water Level	LCU	11/13/2023	5.67	608.21
G314	Water Level	LCU	12/18/2023	7.39	606.49
G314D	Water Level	DA	02/13/2023	16.40	597.30
G314D	Water Level	DA	03/30/2023	9.98	603.71
G314D	Water Level	DA	04/30/2023	7.48	606.21
G314D	Water Level	DA	05/30/2023	6.69	607.00
G314D	Water Level	DA	06/08/2023	11.80	601.90
G314D	Water Level	DA	07/08/2023	7.25	606.45
G314D	Water Level	DA	08/08/2023	7.78	605.92
G314D	Water Level	DA	09/25/2023	8.50	605.20
G314D	Water Level	DA	10/24/2023	8.56	605.14
G314D	Water Level	DA	11/13/2023	7.97	605.73

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G314D	Water Level	DA	12/18/2023	7.04	606.66
G315	Water Level	UA	02/13/2023	2.08	621.44
G315	Water Level	UA	08/08/2023	3.50	620.02
G315	Water Level	UA	10/24/2023	4.04	619.48
G315	Water Level	UA	11/13/2023	4.11	619.41
G315	Water Level	UA	12/18/2023	2.55	620.97
G316	Water Level	LCU	02/13/2023	11.53	591.06
G316	Water Level	LCU	05/30/2023	12.28	590.31
G316	Water Level	LCU	08/08/2023	11.70	590.89
G316	Water Level	LCU	10/24/2023	12.54	590.05
G316	Water Level	LCU	11/13/2023	12.46	590.13
G317	Water Level	UA	02/13/2023	34.52	607.41
G317	Water Level	UA	08/08/2023	Dry	Dry
G317	Water Level	UA	09/25/2023	37.42	604.51
G317	Water Level	UA	10/24/2023	Dry	Dry
G317	Water Level	UA	11/13/2023	Dry	Dry
G317	Water Level	UA	12/18/2023	38.02	603.91
G401	Water Level	UA	02/13/2023	21.17	604.40
G401	Water Level	UA	05/30/2023	21.72	603.85
G401	Water Level	UA	08/08/2023	21.75	603.82
G401	Water Level	UA	10/24/2023	21.66	603.91
G401	Water Level	UA	11/13/2023	13.63	611.94
G402	Water Level	UA	02/13/2023	8.83	604.54
G402	Water Level	UA	03/30/2023	8.23	605.13
G402	Water Level	UA	04/30/2023	9.59	603.77
G402	Water Level	UA	05/30/2023	10.56	602.80
G402	Water Level	UA	06/08/2023	10.94	602.43
G402	Water Level	UA	07/08/2023	11.08	602.29
G402	Water Level	UA	08/08/2023	11.65	601.72
G402	Water Level	UA	10/24/2023	12.01	601.36
G402	Water Level	UA	11/13/2023	11.71	601.66
G402	Water Level	UA	12/18/2023	11.48	601.89
G403	Water Level	UA	02/13/2023	6.05	620.42
G403	Water Level	UA	03/30/2023	5.81	620.65

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G403	Water Level	UA	04/30/2023	7.09	619.37
G403	Water Level	UA	05/30/2023	8.13	618.33
G403	Water Level	UA	06/08/2023	8.74	617.73
G403	Water Level	UA	07/08/2023	7.21	619.26
G403	Water Level	UA	08/08/2023	7.45	619.02
G403	Water Level	UA	09/25/2023	8.82	617.64
G403	Water Level	UA	10/24/2023	8.62	617.85
G403	Water Level	UA	11/13/2023	8.27	618.20
G403	Water Level	UA	12/18/2023	6.64	619.83
G404	Water Level	UA	02/13/2023	3.46	612.21
G404	Water Level	UA	03/30/2023	3.24	612.42
G404	Water Level	UA	04/30/2023	4.64	611.02
G404	Water Level	UA	05/30/2023	5.42	610.24
G404	Water Level	UA	08/14/2023	[5.62]	[610.05]
G404	Water Level	UA	10/24/2023	7.09	608.58
G404	Water Level	UA	11/13/2023	6.48	609.19
G404	Water Level	UA	12/18/2023	4.70	610.97
G405	Water Level	UA	02/13/2023	6.13	617.50
G405	Water Level	UA	03/30/2023	5.87	617.75
G405	Water Level	UA	04/30/2023	6.53	617.09
G405	Water Level	UA	05/30/2023	6.83	616.79
G405	Water Level	UA	06/08/2023	7.08	616.55
G405	Water Level	UA	07/08/2023	6.59	617.04
G405	Water Level	UA	08/08/2023	6.85	616.78
G405	Water Level	UA	09/25/2023	7.59	616.04
G405	Water Level	UA	10/24/2023	7.84	615.79
G405	Water Level	UA	11/13/2023	7.73	615.90
G405	Water Level	UA	12/18/2023	6.55	617.08
G406	Water Level	UA	02/13/2023	11.25	614.11
G406	Water Level	UA	03/30/2023	9.94	615.41
G406	Water Level	UA	04/30/2023	12.48	612.87
G406	Water Level	UA	05/30/2023	13.06	612.29
G406	Water Level	UA	06/08/2023	13.75	611.61
G406	Water Level	UA	07/08/2023	11.92	613.44

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
G406	Water Level	UA	08/08/2023	11.49	613.87
G406	Water Level	UA	09/25/2023	13.95	611.41
G406	Water Level	UA	10/24/2023	14.08	611.28
G406	Water Level	UA	11/13/2023	13.83	611.53
G406	Water Level	UA	12/18/2023	12.03	613.33
G407	Water Level	UA	02/13/2023	5.60	615.72
G407	Water Level	UA	03/30/2023	5.49	615.82
G407	Water Level	UA	04/30/2023	6.91	614.40
G407	Water Level	UA	05/30/2023	7.35	613.96
G407	Water Level	UA	06/08/2023	8.75	612.57
G407	Water Level	UA	07/08/2023	8.22	613.10
G407	Water Level	UA	08/08/2023	8.79	612.53
G407	Water Level	UA	10/24/2023	8.39	612.93
G407	Water Level	UA	11/13/2023	8.31	613.01
G407	Water Level	UA	12/18/2023	6.76	614.56
G410	Water Level	UA	02/13/2023	7.44	612.35
G410	Water Level	UA	05/30/2023	8.99	610.80
G410	Water Level	UA	08/08/2023	9.66	610.13
G410	Water Level	UA	10/24/2023	10.88	608.91
G410	Water Level	UA	11/13/2023	10.68	609.11
G411	Water Level	UA	02/13/2023	6.15	617.10
G411	Water Level	UA	05/30/2023	8.52	614.73
G411	Water Level	UA	08/08/2023	8.69	614.56
G411	Water Level	UA	10/24/2023	11.33	611.92
G411	Water Level	UA	11/13/2023	11.20	612.05
MW03D	Water Level	DA	02/13/2023	30.75	598.26
MW03D	Water Level	DA	03/30/2023	30.43	598.57
MW03D	Water Level	DA	04/30/2023	30.00	599.01
MW03D	Water Level	DA	05/30/2023	30.11	598.90
MW03D	Water Level	DA	06/08/2023	30.17	598.83
MW03D	Water Level	DA	07/08/2023	30.39	598.62
MW03D	Water Level	DA	08/08/2023	30.65	598.36
MW03D	Water Level	DA	09/25/2023	29.29	599.72
MW03D	Water Level	DA	10/25/2023	29.64	599.37

Appendix A. Site-Wide Groundwater Elevations
Nature and Extent Report
Coffeen Power Plant
GMF Gypsum Stack Pond
Coffeen, IL

Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
MW03D	Water Level	DA	11/13/2023	32.01	597.00
MW03D	Water Level	DA	12/18/2023	32.08	596.93
MW04S	Water Level	UA	02/13/2023	4.30	621.59
MW04S	Water Level	UA	05/30/2023	6.63	619.26
MW04S	Water Level	UA	08/08/2023	9.80	616.09
MW04S	Water Level	UA	11/13/2023	12.20	613.69
MW05S	Water Level	UA	02/13/2023	5.22	620.73
MW05S	Water Level	UA	05/30/2023	7.25	618.70
MW05S	Water Level	UA	08/08/2023	9.35	616.60
MW05D	Water Level	DA	02/13/2023	19.65	606.26
MW05D	Water Level	DA	05/30/2023	18.29	607.62
MW05D	Water Level	DA	08/08/2023	21.12	604.79
MW06S	Water Level	UA	02/13/2023	4.51	621.64
MW06S	Water Level	UA	05/30/2023	6.45	619.70
MW06S	Water Level	UA	08/08/2023	8.72	617.43
MW06S	Water Level	UA	10/24/2023	9.94	616.21
MW06S	Water Level	UA	11/13/2023	8.91	617.24
MW07S	Water Level	UA	02/13/2023	3.15	624.45
MW07S	Water Level	UA	05/30/2023	5.23	622.37
MW07S	Water Level	UA	08/08/2023	7.79	619.81
MW07S	Water Level	UA	10/24/2023	9.37	618.23
MW07S	Water Level	UA	11/13/2023	8.48	619.12
MW09S	Water Level	UA	02/13/2023	3.14	624.48
MW09S	Water Level	UA	05/30/2023	5.45	622.17
MW09S	Water Level	UA	08/08/2023	8.11	619.51
MW09D	Water Level	LCU	05/30/2023	13.91	613.70
MW09D	Water Level	LCU	08/08/2023	14.73	612.88
MW10S	Water Level	UA	05/30/2023	5.44	619.01
MW10S	Water Level	UA	08/08/2023	8.67	615.78
MW10D	Water Level	LCU	02/14/2023	3.41	621.06
MW10D	Water Level	LCU	05/30/2023	15.73	608.74
MW10D	Water Level	LCU	08/08/2023	18.69	605.78
MW11S	Water Level	UA	02/14/2023	3.78	621.49
MW11S	Water Level	UA	08/08/2023	8.00	617.27

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
MW11D	Water Level	LCU	02/14/2023	4.73	620.79
MW11D	Water Level	LCU	03/30/2023	3.97	621.55
MW11D	Water Level	LCU	04/30/2023	4.00	621.51
MW11D	Water Level	LCU	05/30/2023	4.76	620.75
MW11D	Water Level	LCU	06/08/2023	6.52	618.99
MW11D	Water Level	LCU	07/08/2023	7.38	618.14
MW11D	Water Level	LCU	08/08/2023	8.57	616.95
MW12S	Water Level	UA	02/14/2023	5.30	620.01
MW12S	Water Level	UA	05/30/2023	7.36	617.95
MW12S	Water Level	UA	08/08/2023	10.87	614.44
MW12S	Water Level	UA	10/25/2023	12.51	612.80
MW12S	Water Level	UA	11/13/2023	12.80	612.51
MW12D	Water Level	DA	02/14/2023	13.63	611.58
MW12D	Water Level	DA	03/30/2023	13.17	612.04
MW12D	Water Level	DA	04/30/2023	12.69	612.52
MW12D	Water Level	DA	05/30/2023	12.71	612.50
MW12D	Water Level	DA	06/08/2023	12.80	612.41
MW12D	Water Level	DA	07/08/2023	13.31	611.90
MW12D	Water Level	DA	08/08/2023	13.93	611.28
MW12D	Water Level	DA	09/25/2023	14.86	610.35
MW12D	Water Level	DA	10/25/2023	15.32	609.89
MW12D	Water Level	DA	11/13/2023	15.64	609.57
MW12D	Water Level	DA	12/18/2023	16.00	609.21
MW13S	Water Level	UA	02/13/2023	8.55	617.41
MW13S	Water Level	UA	05/30/2023	10.19	615.77
MW13S	Water Level	UA	08/08/2023	11.34	614.62
MW13S	Water Level	UA	10/25/2023	12.79	613.17
MW13S	Water Level	UA	11/13/2023	12.33	613.63
MW13D	Water Level	DA	02/13/2023	1.20	624.66
MW13D	Water Level	DA	05/30/2023	13.52	612.34
MW13D	Water Level	DA	08/08/2023	12.86	613.00
MW13D	Water Level	DA	10/25/2023	12.75	613.11
MW13D	Water Level	DA	11/13/2023	12.45	613.41
MW16S	Water Level	UA	02/14/2023	6.61	622.86

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
MW16S	Water Level	UA	03/30/2023	3.70	625.77
MW16S	Water Level	UA	04/30/2023	5.10	624.37
MW16S	Water Level	UA	05/30/2023	6.89	622.57
MW16S	Water Level	UA	06/08/2023	8.31	621.16
MW16S	Water Level	UA	07/08/2023	9.95	619.52
MW16S	Water Level	UA	08/08/2023	11.63	617.84
MW16D	Water Level	DA	02/14/2023	14.63	614.75
MW16D	Water Level	DA	03/30/2023	13.05	616.33
MW16D	Water Level	DA	04/30/2023	12.09	617.29
MW16D	Water Level	DA	05/30/2023	11.83	617.55
MW16D	Water Level	DA	06/08/2023	11.85	617.53
MW16D	Water Level	DA	07/08/2023	12.34	617.04
MW16D	Water Level	DA	08/08/2023	12.97	616.41
MW17S	Water Level	UA	05/30/2023	6.91	623.65
MW17S	Water Level	UA	08/08/2023	10.81	619.75
MW17D	Water Level	DA	02/14/2023	19.92	610.37
MW17D	Water Level	DA	05/30/2023	13.33	616.96
MW17D	Water Level	DA	08/08/2023	14.58	615.71
MW20S	Water Level	UA	02/13/2023	8.21	614.69
MW20S	Water Level	UA	03/30/2023	6.59	616.31
MW20S	Water Level	UA	04/30/2023	8.97	613.93
MW20S	Water Level	UA	05/30/2023	9.28	613.61
MW20S	Water Level	UA	06/08/2023	9.56	613.33
MW20S	Water Level	UA	07/08/2023	9.63	613.26
MW20S	Water Level	UA	08/08/2023	10.60	612.30
MW20S	Water Level	UA	09/25/2023	11.53	611.37
MW20S	Water Level	UA	10/25/2023	11.74	611.16
MW20S	Water Level	UA	11/13/2023	11.96	610.94
MW20S	Water Level	UA	12/18/2023	11.60	611.30
R104	Water Level	UA	02/14/2023	7.44	625.40
R104	Water Level	UA	03/30/2023	6.14	626.69
R104	Water Level	UA	04/30/2023	7.47	625.36
R104	Water Level	UA	05/30/2023	8.02	624.81
R104	Water Level	UA	06/08/2023	8.41	624.43

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
R104	Water Level	UA	07/08/2023	8.92	623.92
R104	Water Level	UA	08/08/2023	10.45	622.39
R104	Water Level	UA	09/25/2023	11.50	621.34
R104	Water Level	UA	10/25/2023	12.52	620.32
R104	Water Level	UA	11/13/2023	12.91	619.93
R104	Water Level	UA	12/18/2023	12.81	620.03
R201	Water Level	UA	02/14/2023	2.80	623.54
R201	Water Level	UA	03/30/2023	2.56	623.77
R201	Water Level	UA	04/30/2023	3.95	622.38
R201	Water Level	UA	05/30/2023	5.31	621.02
R201	Water Level	UA	06/08/2023	6.13	620.21
R201	Water Level	UA	07/08/2023	6.75	619.59
R201	Water Level	UA	08/08/2023	11.61	614.73
R201	Water Level	UA	09/25/2023	10.12	616.22
R201	Water Level	UA	10/24/2023	11.20	615.14
R201	Water Level	UA	11/13/2023	11.73	614.61
R201	Water Level	UA	12/18/2023	11.37	614.97
R205	Water Level	UA	02/13/2023	7.49	617.03
R205	Water Level	UA	08/08/2023	9.69	614.83
R205	Water Level	UA	10/25/2023	11.16	613.36
R205	Water Level	UA	11/13/2023	11.48	613.04
R205	Water Level	UA	12/18/2023	11.16	613.36
T127	Water Level	UA	02/13/2023	14.15	616.81
T127	Water Level	UA	05/30/2023	14.56	616.40
T127	Water Level	UA	08/08/2023	15.20	615.76
T127	Water Level	UA	10/25/2023	15.99	614.97
T127	Water Level	UA	11/13/2023	15.95	615.01
T128	Water Level	UA	02/13/2023	13.97	616.96
T128	Water Level	UA	05/30/2023	14.26	616.67
T128	Water Level	UA	08/08/2023	14.80	616.13
T128	Water Level	UA	10/25/2023	15.54	615.39
T128	Water Level	UA	11/13/2023	15.50	615.43
T202	Water Level	UA	02/13/2023	5.04	623.59
T202	Water Level	UA	05/30/2023	5.80	622.83

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
T202	Water Level	UA	08/08/2023	9.23	619.40
T202	Water Level	UA	10/24/2023	11.02	617.61
T202	Water Level	UA	11/13/2023	11.66	616.97
T408	Water Level	LCU	02/13/2023	6.92	617.16
T408	Water Level	LCU	05/30/2023	7.42	616.66
T408	Water Level	LCU	08/08/2023	7.46	616.62
T408	Water Level	LCU	10/24/2023	8.11	615.97
T408	Water Level	LCU	11/13/2023	8.02	616.06
T409	Water Level	LCU	02/13/2023	9.36	615.65
T409	Water Level	LCU	05/30/2023	11.27	613.74
T409	Water Level	LCU	08/08/2023	9.99	615.02
T409	Water Level	LCU	10/24/2023	12.46	612.55
T409	Water Level	LCU	11/13/2023	12.00	613.01
TA31	Water Level	UA	02/13/2023	5.00	621.55
TA31	Water Level	UA	05/30/2023	7.06	619.49
TA31	Water Level	UA	08/08/2023	11.98	614.57
TA31	Water Level	UA	10/24/2023	14.65	611.90
TA31	Water Level	UA	11/13/2023	14.31	612.24
TA33	Water Level	UA	02/13/2023	8.04	617.23
TA33	Water Level	UA	05/30/2023	8.42	616.85
TA33	Water Level	UA	08/08/2023	12.10	613.17
TA33	Water Level	UA	10/24/2023	13.86	611.41
TA33	Water Level	UA	11/13/2023	13.98	611.29
TA34	Water Level	UA	02/13/2023	8.03	618.49
TA34	Water Level	UA	05/30/2023	9.48	617.04
TA34	Water Level	UA	08/08/2023	18.31	608.21
TA34	Water Level	UA	10/24/2023	12.98	613.54
TA34	Water Level	UA	11/13/2023	12.60	613.92
TR32	Water Level	UA	02/13/2023	6.11	615.57
TR32	Water Level	UA	05/30/2023	6.18	615.50
TR32	Water Level	UA	10/24/2023	9.02	612.66
TR32	Water Level	UA	11/13/2023	9.67	612.01
X201	Water Level	S	02/14/2023	--	614.71
X201	Water Level	S	03/30/2023	--	614.53

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
X201	Water Level	S	04/30/2023	--	614.69
X201	Water Level	S	05/30/2023	--	614.93
X201	Water Level	S	08/08/2023	--	615.31
X201	Water Level	S	11/13/2023	[34.00]	[584.47]
X201	Water Level	S	12/12/2023	--	617.10
XPW01	Water Level	CCR	02/13/2023	4.51	630.06
XPW01	Water Level	CCR	03/30/2023	3.99	630.57
XPW01	Water Level	CCR	04/30/2023	4.24	630.32
XPW01	Water Level	CCR	05/30/2023	4.56	630.00
XPW01	Water Level	CCR	08/08/2023	5.29	629.28
XPW01	Water Level	CCR	10/24/2023	6.03	628.54
XPW01	Water Level	CCR	11/13/2023	6.32	628.25
XPW01	Water Level	CCR	12/18/2023	6.11	628.46
XPW02	Water Level	CCR	02/13/2023	9.38	630.31
XPW02	Water Level	CCR	03/30/2023	8.87	630.81
XPW02	Water Level	CCR	04/30/2023	9.11	630.57
XPW02	Water Level	CCR	05/30/2023	9.40	630.28
XPW02	Water Level	CCR	08/08/2023	10.30	629.39
XPW02	Water Level	CCR	09/25/2023	10.71	628.98
XPW02	Water Level	CCR	10/24/2023	10.93	628.76
XPW02	Water Level	CCR	11/13/2023	11.12	628.57
XPW02	Water Level	CCR	12/18/2023	11.02	628.67
NE Riser	Water Level	S	02/14/2023	--	625.24
XSG-01	Water Level	CCR	02/13/2023	5.40	630.12
XSG-01	Water Level	CCR	05/30/2023	5.45	630.07
XSG-01	Water Level	CCR	08/08/2023	6.25	629.27
XSG-01	Water Level	CCR	10/24/2023	7.02	628.50
XSG-01	Water Level	CCR	11/13/2023	10.38	625.14
XSG-01	Water Level	CCR	12/18/2023	7.04	628.48
SG-02	Water Level	SW	02/13/2023	7.25	598.62
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

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Well ID	Well Type	Monitored Unit	Date	Depth to Groundwater (feet BMP)	Groundwater Elevation (feet NAVD88)
SG-03	Water Level	SW	02/13/2023	9.55	585.39
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	02/13/2023	6.27	593.25
SG-04	Water Level	SW	05/30/2023	6.41	593.11

Notes:
Bracketing [] indicates that the measurement was obtained outside of the 24-hour period from initiaion of depth to groundwater measurements.
BMP = below measuring point
CCR = coal combustion residuals
DA = deep aquifer
LCU = lower confining unit
NAVD88 = North American Vertical Datum of 1988
S = source
SW = surface water

APPENDIX B
Supplemental Vertical Hydraulic Gradients

Appendix B. Supplemental Vertical Hydraulic Gradients
Nature and Extent Report
Ash Pond No. 1
Coffeen Power Plant
Coffeen, IL

Date	G405 Groundwater Elevation (ft NAVD88)	T408 Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	UA	LCU (upper)				
2/4/2017	618.47	619.46	-0.99	12.00	-0.08	up
5/13/2017	618.74	619.00	-0.26	12.00	-0.02	up
7/8/2017	618.54	619.12	-0.58	12.00	-0.05	up
10/21/2017	614.47	614.81	-0.34	12.00	-0.03	up
5/8/2018	618.94	615.82	3.12	12.00	0.26	down
8/2/2018	617.55	614.45	3.10	12.00	0.26	down
10/23/2018	616.40	616.30	0.10	12.00	0.01	down
1/15/2019	616.81	617.01	-0.20	12.00	-0.02	up
8/5/2019	617.72	617.15	0.57	12.00	0.05	down
1/20/2020	619.28	619.13	0.15	12.00	0.01	down
8/10/2020	617.62	617.38	0.24	12.00	0.02	down
1/20/2021	617.12	616.85	0.27	12.00	0.02	down
4/20/2021	617.13	616.65	0.48	12.00	0.04	down
7/26/2021	617.37	617.21	0.16	12.00	0.01	down
8/16/2021	617.28	617.22	0.06	12.00	0.00	down
10/25/2021	618.12	615.50	2.62	12.00	0.22	down
2/7/2022	617.28	616.88	0.40	12.00	0.03	down
5/9/2022	617.91	617.78	0.13	12.00	0.01	down
8/23/2022	616.85	616.99	-0.14	12.00	-0.01	up
2/13/2023	617.50	617.16	0.34	12.00	0.03	down
5/30/2023	616.79	616.66	0.13	12.00	0.01	down
8/8/2023	616.78	616.62	0.16	12.00	0.01	down
10/24/2023	615.79	615.97	-0.18	12.00	-0.02	up
11/13/2023	615.90	616.06	-0.16	12.00	-0.01	up
			Middle of screen elevation G405D			610.0
			Middle of screen elevation T408			598.0

Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report

Ash Pond No. 1

Coffeen Power Plant

Coffeen, IL

Date	G406 Groundwater Elevation (ft NAVD88)	T409 Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	UA	LCU (upper)				
2/4/2017	617.52	615.93	1.59	8.23	0.19	down
5/13/2017	616.20	616.75	-0.55	8.23	-0.07	up
7/8/2017	616.29	617.05	-0.76	8.23	-0.09	up
10/21/2017	611.27	612.16	-0.89	8.23	-0.11	up
5/8/2018	615.47	616.02	-0.55	8.23	-0.07	up
8/2/2018	615.75	615.25	0.50	8.23	0.06	down
10/23/2018	614.11	613.96	0.15	8.23	0.02	down
1/15/2019	615.36	614.78	0.58	8.23	0.07	down
8/5/2019	616.50	615.10	1.40	8.23	0.17	down
1/20/2020	617.48	617.16	0.32	8.23	0.04	down
8/10/2020	615.54	615.43	0.11	8.23	0.01	down
1/20/2021	612.97	614.41	-1.44	8.23	-0.17	up
4/20/2021	613.78	615.33	-1.55	8.23	-0.19	up
7/26/2021	614.20	615.72	-1.52	8.23	-0.18	up
8/16/2021	613.82	615.42	-1.60	8.23	-0.19	up
10/25/2021	614.93	616.43	-1.50	8.23	-0.18	up
2/7/2022	613.55	614.97	-1.42	8.23	-0.17	up
5/9/2022	615.36	616.81	-1.45	8.23	-0.18	up
8/23/2022	613.47	610.73	2.74	8.23	0.33	down
2/13/2023	614.11	615.65	-1.54	8.23	-0.19	up
5/30/2023	612.29	613.74	-1.45	8.23	-0.18	up
8/8/2023	613.87	615.02	-1.15	8.23	-0.14	up
10/24/2023	611.28	612.55	-1.27	8.23	-0.15	up
11/13/2023	611.53	613.01	-1.48	8.23	-0.18	up
			Middle of screen elevation G406			605.9
			Middle of screen elevation T409			597.7

Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report

Ash Pond No. 1

Coffeen Power Plant

Coffeen, IL

Date	T408 Groundwater Elevation (ft NAVD88)	G45D Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	LCU (upper)	LCU (lower)				
2/4/2017	619.46	587.71	31.75	13.78	2.30	down
5/13/2017	619.00	586.19	32.81	13.78	2.38	down
7/8/2017	619.12	586.29	32.83	13.78	2.38	down
10/21/2017	614.81	584.69	30.12	13.78	2.19	down
5/8/2018	615.82	587.56	28.26	13.78	2.05	down
8/2/2018	614.45	585.81	28.64	13.78	2.08	down
10/23/2018	616.30	584.60	31.70	13.78	2.30	down
1/15/2019	617.01	586.96	30.05	13.78	2.18	down
8/5/2019	617.15	588.04	29.11	13.78	2.11	down
8/10/2020	617.38	614.21	3.17	13.78	0.23	down
1/20/2021	616.85	614.60	2.25	13.78	0.16	down
4/20/2021	616.65	614.32	2.33	13.78	0.17	down
7/26/2021	617.21	613.58	3.63	13.78	0.26	down
8/16/2021	617.22	613.83	3.39	13.78	0.25	down
10/25/2021	615.50	614.51	0.99	13.78	0.07	down
2/7/2022	616.88	615.01	1.87	13.78	0.14	down
5/9/2022	617.78	614.95	2.83	13.78	0.21	down
8/23/2022	616.99	614.58	2.41	13.78	0.17	down
2/13/2023	617.16	614.69	2.47	13.78	0.18	down
5/30/2023	616.66	613.99	2.67	13.78	0.19	down
8/8/2023	616.62	613.47	3.15	13.78	0.23	down
10/24/2023	615.97	613.40	2.57	13.78	0.19	down
11/13/2023	616.06	613.55	2.51	13.78	0.18	down
			Middle of screen elevation T408			598.0
			Middle of screen elevation G45D			584.2

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Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report
Ash Pond No. 1
Coffeen Power Plant
Coffeen, IL

Date	T409 Groundwater Elevation (ft NAVD88)	G46D Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	LCU (upper)	LCU (lower)				
2/4/2017	615.93	586.06	29.87	22.19	1.35	down
5/13/2017	616.75	584.87	31.88	22.19	1.44	down
7/8/2017	617.05	585.22	31.83	22.19	1.43	down
5/8/2018	616.02	585.86	30.16	22.19	1.36	down
8/2/2018	615.25	583.95	31.30	22.19	1.41	down
10/23/2018	613.96	582.05	31.91	22.19	1.44	down
1/15/2019	614.78	583.17	31.61	22.19	1.42	down
8/5/2019	615.10	583.68	31.42	22.19	1.42	down
8/10/2020	615.43	609.00	6.43	22.19	0.29	down
1/20/2021	614.41	610.49	3.92	22.19	0.18	down
4/20/2021	615.33	611.06	4.27	22.19	0.19	down
7/26/2021	615.72	607.21	8.51	22.19	0.38	down
8/16/2021	615.42	608.17	7.25	22.19	0.33	down
10/25/2021	616.43	609.87	6.56	22.19	0.30	down
2/7/2022	614.97	610.71	4.26	22.19	0.19	down
5/9/2022	616.81	611.34	5.47	22.19	0.25	down
8/23/2022	610.73	615.13	-4.40	22.19	-0.20	up
2/13/2023	615.65	610.39	5.26	22.19	0.24	down
5/30/2023	613.74	610.70	3.04	22.19	0.14	down
8/8/2023	615.02	610.14	4.88	22.19	0.22	down
10/24/2023	612.55	609.65	2.90	22.19	0.13	down
11/13/2023	613.01	609.70	3.31	22.19	0.15	down
			Middle of screen elevation T409			597.7
			Middle of screen elevation G46D			575.5

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Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report

Ash Pond No. 1

Coffeen Power Plant

Coffeen, IL

Date	G307 Groundwater Elevation (ft NAVD88)	G307D Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	UA	LCU (lower)				
4/20/2021	624.50	622.48	2.02	38.06	0.05	down
5/17/2021	624.45	622.44	2.01	38.06	0.05	down
7/12/2021	624.45	622.59	1.86	38.06	0.05	down
8/16/2021	624.46	621.49	2.97	38.06	0.08	down
2/7/2022	624.60	622.32	2.28	38.06	0.06	down
5/9/2022	624.60	616.31	8.29	38.06	0.22	down
8/23/2022	624.60	615.09	9.51	38.06	0.25	down
2/13/2023	624.60	622.13	2.47	38.06	0.06	down
8/8/2023	623.90	616.99	6.91	38.06	0.18	down
11/13/2023	622.64	612.52	10.12	38.06	0.27	down
			Middle of screen elevation G307			606.7
			Middle of screen elevation G307D			568.6

Date	G311 Groundwater Elevation (ft NAVD88)	G311D Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	UA	LCU (lower)				
3/29/2021	616.54	575.42	41.12	43.41	0.95	down
4/22/2021	613.68	575.74	37.94	43.41	0.87	down
5/3/2021	614.01	573.09	40.92	43.41	0.94	down
5/17/2021	613.86	572.40	41.46	43.41	0.96	down
6/9/2021	613.13	573.85	39.28	43.41	0.90	down
6/15/2021	612.78	575.25	37.53	43.41	0.86	down
6/23/2021	612.45	571.74	40.71	43.41	0.94	down
7/12/2021	613.75	571.63	42.12	43.41	0.97	down
7/26/2021	613.05	569.74	43.31	43.41	1.00	down
8/16/2021	613.30	570.34	42.96	43.41	0.99	down
10/25/2021	615.13	583.70	31.43	43.41	0.72	down
2/7/2022	614.28	593.14	21.14	43.41	0.49	down
5/9/2022	615.74	596.43	19.31	43.41	0.44	down
8/23/2022	613.19	597.46	15.73	43.41	0.36	down
5/30/2023	612.78	597.98	14.80	43.41	0.34	down
8/8/2023	611.96	597.72	14.24	43.41	0.33	down
10/24/2023	611.75	597.73	14.02	43.41	0.32	down
11/13/2023	611.66	597.09	14.57	43.41	0.34	down
			Middle of screen elevation G311			606.7
			Middle of screen elevation G311D			563.3

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Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report

Ash Pond No. 1

Coffeen Power Plant

Coffeen, IL

Date	G314 Groundwater Elevation (ft NAVD88)	G314D Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	LCU (upper)	DA (PMP)				
3/29/2021	596.40	572.75	23.65	29.76	0.79	down
4/20/2021	603.16	571.76	31.40	27.40	1.15	down
5/3/2021	604.66	568.77	35.89	27.40	1.31	down
5/17/2021	605.61	566.84	38.77	27.40	1.42	down
6/9/2021	607.54	567.45	40.09	27.40	1.46	down
6/14/2021	608.16	568.60	39.56	27.40	1.44	down
6/23/2021	605.19	566.77	38.42	27.40	1.40	down
7/12/2021	605.32	566.88	38.44	27.40	1.40	down
7/26/2021	606.66	566.65	40.01	27.40	1.46	down
8/16/2021	608.60	567.28	41.32	27.40	1.51	down
10/25/2021	610.36	581.05	29.31	27.40	1.07	down
2/7/2022	607.85	590.46	17.39	27.40	0.63	down
5/9/2022	609.11	594.81	14.30	27.40	0.52	down
8/23/2022	610.58	595.70	14.88	27.40	0.54	down
2/13/2023	607.74	597.30	10.44	27.40	0.38	down
3/30/2023	604.91	603.71	1.20	27.40	0.04	down
4/30/2023	608.34	606.21	2.13	27.40	0.08	down
5/30/2023	609.06	607.00	2.06	27.40	0.08	down
6/8/2023	604.44	601.90	2.54	27.40	0.09	down
7/8/2023	608.20	606.45	1.75	27.40	0.06	down
8/8/2023	609.00	605.92	3.08	27.40	0.11	down
9/25/2023	608.92	605.20	3.72	27.40	0.14	down
10/24/2023	608.58	605.14	3.44	27.40	0.13	down
11/13/2023	608.21	605.73	2.48	27.40	0.09	down
12/18/2023	606.49	606.66	-0.17	27.40	-0.01	up
			Middle of screen elevation G314			594.0
			Middle of screen elevation G314D			566.6

[O: KLT 6/4/21, C:YMD 6/7/21; U:KLT 8/25/21, C:EDP 8/31/21]
[KLT 5/3/24, C: SSW 5/7/24]

Notes:

[1] Distance change was calculated using the midpoint of the piezometer screen and water table surface. If the water table surface was above the top of the monitoring well screen, then distance change was calculated using the midpoint of both screens.

[2] Vertical gradients between ±0.0015 are considered flat, and typically have less than 0.02 foot difference in groundwater elevation between wells.

- - = no data collected on date / no vertical gradient calculated
DA = deep aquifer
dh = head change
dl = distance change
ft = foot/feet
LCU (lower) = lower confining unit (Smithboro)
LCU (upper) = lower confining unit (Vandalia)
NAVD88 = North American Vertical Datum of 1988
PMP = potential migration pathway
UA = uppermost aquifer

Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report

Ash Pond No. 2

Coffeen Power Plant

Coffeen, IL

Date	G405 Groundwater Elevation (ft NAVD88)	T408 Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	UA	LCU (upper)				
2/4/2017	618.47	619.46	-0.99	12.00	-0.08	up
5/13/2017	618.74	619.00	-0.26	12.00	-0.02	up
7/8/2017	618.54	619.12	-0.58	12.00	-0.05	up
10/21/2017	614.47	614.81	-0.34	12.00	-0.03	up
5/8/2018	618.94	615.82	3.12	12.00	0.26	down
8/2/2018	617.55	614.45	3.10	12.00	0.26	down
10/23/2018	616.40	616.30	0.10	12.00	0.01	down
1/15/2019	616.81	617.01	-0.20	12.00	-0.02	up
8/5/2019	617.72	617.15	0.57	12.00	0.05	down
1/20/2020	619.28	619.13	0.15	12.00	0.01	down
8/10/2020	617.62	617.38	0.24	12.00	0.02	down
1/20/2021	617.12	616.85	0.27	12.00	0.02	down
4/20/2021	617.13	616.65	0.48	12.00	0.04	down
7/26/2021	617.37	617.21	0.16	12.00	0.01	down
8/16/2021	617.28	617.22	0.06	12.00	0.00	down
10/25/2021	618.12	615.50	2.62	12.00	0.22	down
2/7/2022	617.28	616.88	0.40	12.00	0.03	down
5/9/2022	617.91	617.78	0.13	12.00	0.01	down
8/23/2022	616.85	616.99	-0.14	12.00	-0.01	up
2/13/2023	617.50	617.16	0.34	12.00	0.03	down
5/30/2023	616.79	616.66	0.13	12.00	0.01	down
8/8/2023	616.78	616.62	0.16	12.00	0.01	down
10/24/2023	615.79	615.97	-0.18	12.00	-0.02	up
11/13/2023	615.90	616.06	-0.16	12.00	-0.01	up
			Middle of screen elevation G405D			610.0
			Middle of screen elevation T408			598.0

Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report

Ash Pond No. 2

Coffeen Power Plant

Coffeen, IL

Date	G406 Groundwater Elevation (ft NAVD88)	T409 Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	UA	LCU (upper)				
2/4/2017	617.52	615.93	1.59	8.23	0.19	down
5/13/2017	616.20	616.75	-0.55	8.23	-0.07	up
7/8/2017	616.29	617.05	-0.76	8.23	-0.09	up
10/21/2017	611.27	612.16	-0.89	8.23	-0.11	up
5/8/2018	615.47	616.02	-0.55	8.23	-0.07	up
8/2/2018	615.75	615.25	0.50	8.23	0.06	down
10/23/2018	614.11	613.96	0.15	8.23	0.02	down
1/15/2019	615.36	614.78	0.58	8.23	0.07	down
8/5/2019	616.50	615.10	1.40	8.23	0.17	down
1/20/2020	617.48	617.16	0.32	8.23	0.04	down
8/10/2020	615.54	615.43	0.11	8.23	0.01	down
1/20/2021	612.97	614.41	-1.44	8.23	-0.17	up
4/20/2021	613.78	615.33	-1.55	8.23	-0.19	up
7/26/2021	614.20	615.72	-1.52	8.23	-0.18	up
8/16/2021	613.82	615.42	-1.60	8.23	-0.19	up
10/25/2021	614.93	616.43	-1.50	8.23	-0.18	up
2/7/2022	613.55	614.97	-1.42	8.23	-0.17	up
5/9/2022	615.36	616.81	-1.45	8.23	-0.18	up
8/23/2022	613.47	610.73	2.74	8.23	0.33	down
2/13/2023	614.11	615.65	-1.54	8.23	-0.19	up
5/30/2023	612.29	613.74	-1.45	8.23	-0.18	up
8/8/2023	613.87	615.02	-1.15	8.23	-0.14	up
10/24/2023	611.28	612.55	-1.27	8.23	-0.15	up
11/13/2023	611.53	613.01	-1.48	8.23	-0.18	up
			Middle of screen elevation G406			605.9
			Middle of screen elevation T409			597.7

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Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report

Ash Pond No. 2

Coffeen Power Plant

Coffeen, IL

Date	T408 Groundwater Elevation (ft NAVD88)	G45D Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	LCU (upper)	LCU (lower)				
2/4/2017	619.46	587.71	31.75	13.78	2.30	down
5/13/2017	619.00	586.19	32.81	13.78	2.38	down
7/8/2017	619.12	586.29	32.83	13.78	2.38	down
10/21/2017	614.81	584.69	30.12	13.78	2.19	down
5/8/2018	615.82	587.56	28.26	13.78	2.05	down
8/2/2018	614.45	585.81	28.64	13.78	2.08	down
10/23/2018	616.30	584.60	31.70	13.78	2.30	down
1/15/2019	617.01	586.96	30.05	13.78	2.18	down
8/5/2019	617.15	588.04	29.11	13.78	2.11	down
8/10/2020	617.38	614.21	3.17	13.78	0.23	down
1/20/2021	616.85	614.60	2.25	13.78	0.16	down
4/20/2021	616.65	614.32	2.33	13.78	0.17	down
7/26/2021	617.21	613.58	3.63	13.78	0.26	down
8/16/2021	617.22	613.83	3.39	13.78	0.25	down
10/25/2021	615.50	614.51	0.99	13.78	0.07	down
2/7/2022	616.88	615.01	1.87	13.78	0.14	down
5/9/2022	617.78	614.95	2.83	13.78	0.21	down
8/23/2022	616.99	614.58	2.41	13.78	0.17	down
2/13/2023	617.16	614.69	2.47	13.78	0.18	down
5/30/2023	616.66	613.99	2.67	13.78	0.19	down
8/8/2023	616.62	613.47	3.15	13.78	0.23	down
10/24/2023	615.97	613.40	2.57	13.78	0.19	down
11/13/2023	616.06	613.55	2.51	13.78	0.18	down
			Middle of screen elevation T408			598.0
			Middle of screen elevation G45D			584.2

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Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report

Ash Pond No. 2

Coffeen Power Plant

Coffeen, IL

Date	T409 Groundwater Elevation (ft NAVD88)	G46D Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	LCU (upper)	LCU (lower)				
2/4/2017	615.93	586.06	29.87	22.19	1.35	down
5/13/2017	616.75	584.87	31.88	22.19	1.44	down
7/8/2017	617.05	585.22	31.83	22.19	1.43	down
5/8/2018	616.02	585.86	30.16	22.19	1.36	down
8/2/2018	615.25	583.95	31.30	22.19	1.41	down
10/23/2018	613.96	582.05	31.91	22.19	1.44	down
1/15/2019	614.78	583.17	31.61	22.19	1.42	down
8/5/2019	615.10	583.68	31.42	22.19	1.42	down
8/10/2020	615.43	609.00	6.43	22.19	0.29	down
1/20/2021	614.41	610.49	3.92	22.19	0.18	down
4/20/2021	615.33	611.06	4.27	22.19	0.19	down
7/26/2021	615.72	607.21	8.51	22.19	0.38	down
8/16/2021	615.42	608.17	7.25	22.19	0.33	down
10/25/2021	616.43	609.87	6.56	22.19	0.30	down
2/7/2022	614.97	610.71	4.26	22.19	0.19	down
5/9/2022	616.81	611.34	5.47	22.19	0.25	down
8/23/2022	610.73	615.13	-4.40	22.19	-0.20	up
2/13/2023	615.65	610.39	5.26	22.19	0.24	down
5/30/2023	613.74	610.70	3.04	22.19	0.14	down
8/8/2023	615.02	610.14	4.88	22.19	0.22	down
10/24/2023	612.55	609.65	2.90	22.19	0.13	down
11/13/2023	613.01	609.70	3.31	22.19	0.15	down
			Middle of screen elevation T409			597.7
			Middle of screen elevation G46D			575.5

[O: KLT 6/4/21, C:YMD 6/7/21; U:KLT 8/25/21, C:EDP 8/31/21]
[KLT 5/3/24, C: 5/7/24]

Notes:

[1] Distance change was calculated using the midpoint of the piezometer screen and water table surface. If the water table surface was above the top of the monitoring well screen, then distance change was calculated using the midpoint of both screens.

[2] Vertical gradients between ±0.0015 are considered flat, and typically have less than 0.02 foot difference in groundwater elevation between wells.

- - = no data collected on date / no vertical gradient calculated

DA = deep aquifer

dh = head change

dl = distance change

ft = foot/feet

LCU (lower) = lower confining unit (Smithboro)

LCU (upper) = lower confining unit (Vandalia)

NAVD88 = North American Vertical Datum of 1988

PMP = potential migration pathway

UA = uppermost aquifer

Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report

GMF Recycle Pond

Coffeen Power Plant

Coffeen, IL

Date	G405 Groundwater Elevation (ft NAVD88)	T408 Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	UA	LCU (upper)				
2/4/2017	618.47	619.46	-0.99	12.00	-0.08	up
5/13/2017	618.74	619.00	-0.26	12.00	-0.02	up
7/8/2017	618.54	619.12	-0.58	12.00	-0.05	up
10/21/2017	614.47	614.81	-0.34	12.00	-0.03	up
5/8/2018	618.94	615.82	3.12	12.00	0.26	down
8/2/2018	617.55	614.45	3.10	12.00	0.26	down
10/23/2018	616.40	616.30	0.10	12.00	0.01	down
1/15/2019	616.81	617.01	-0.20	12.00	-0.02	up
8/5/2019	617.72	617.15	0.57	12.00	0.05	down
1/20/2020	619.28	619.13	0.15	12.00	0.01	down
8/10/2020	617.62	617.38	0.24	12.00	0.02	down
1/20/2021	617.12	616.85	0.27	12.00	0.02	down
4/20/2021	617.13	616.65	0.48	12.00	0.04	down
7/26/2021	617.37	617.21	0.16	12.00	0.01	down
8/16/2021	617.28	617.22	0.06	12.00	0.005	down
10/25/2021	618.12	615.50	2.62	12.00	0.218	down
2/7/2022	617.28	616.88	0.40	12.00	0.033	down
5/9/2022	617.91	617.78	0.13	12.00	0.011	down
8/23/2022	616.85	616.99	-0.14	12.00	-0.012	up
2/13/2023	617.50	617.16	0.34	12.00	0.028	down
5/30/2023	616.79	616.66	0.13	12.00	0.011	down
8/8/2023	616.78	616.62	0.16	12.00	0.013	down
10/24/2023	615.79	615.97	-0.18	12.00	-0.015	up
11/13/2023	615.90	616.06	-0.16	12.00	-0.013	up
			Middle of screen elevation G405D			610.0
			Middle of screen elevation T408			598.0

Appendix B. Supplemental Vertical Hydraulic Gradients

Nature and Extent Report

GMF Recycle Pond

Coffeen Power Plant

Coffeen, IL

Date	G275 Groundwater Elevation (ft NAVD88)	G275D Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	UA	DA (PMP)				
4/20/21-4/21/20	605.00	568.33	36.67	42.14	0.87	down
7/12/21-7/13/21	605.63	570.43	35.20	42.77	0.82	down
7/26/2021	605.05	570.35	34.70	42.18	0.82	down
8/16/2021	605.09	571.48	33.61	42.23	0.80	down
10/25/2021	605.17	578.52	26.65	42.30	0.63	down
2/7/2022	605.10	580.46	24.64	42.24	0.58	down
5/9/2022	605.67	581.11	24.56	42.80	0.57	down
2/13/2023	605.24	580.82	24.42	42.38	0.58	down
			Middle of screen elevation G275			605.7
			Middle of screen elevation G275D			562.9

Appendix B. Supplemental Vertical Hydraulic Gradients
Nature and Extent Report
GMF Recycle Pond
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Date	T408 Groundwater Elevation (ft NAVD88)	G45D Groundwater Elevation (ft NAVD88)	Head Change (ft)	Distance Change [1] (ft)	Vertical Hydraulic Gradient [2] (dh/dl)	
	LCU (upper)	LCU (lower)				
2/4/2017	619.46	587.71	31.75	13.78	2.30	down
5/13/2017	619.00	586.19	32.81	13.78	2.38	down
7/8/2017	619.12	586.29	32.83	13.78	2.38	down
10/21/2017	614.81	584.69	30.12	13.78	2.19	down
5/8/2018	615.82	587.56	28.26	13.78	2.05	down
8/2/2018	614.45	585.81	28.64	13.78	2.08	down
10/23/2018	616.30	584.60	31.70	13.78	2.30	down
1/15/2019	617.01	586.96	30.05	13.78	2.18	down
8/5/2019	617.15	588.04	29.11	13.78	2.11	down
8/10/2020	617.38	614.21	3.17	13.78	0.23	down
1/20/2021	616.85	614.60	2.25	13.78	0.16	down
4/20/2021	616.65	614.32	2.33	13.78	0.17	down
7/26/2021	617.21	613.58	3.63	13.78	0.26	down
8/16/2021	617.22	613.83	3.39	13.78	0.25	down
10/25/2021	615.50	614.51	0.99	13.78	0.07	down
2/7/2022	616.88	615.01	1.87	13.78	0.14	down
5/9/2022	617.78	614.95	2.83	13.78	0.21	down
8/23/2022	616.99	614.58	2.41	13.78	0.17	down
2/13/2023	617.16	614.69	2.47	13.78	0.18	down
5/30/2023	616.66	613.99	2.67	13.78	0.19	down
8/8/2023	616.62	613.47	3.15	13.78	0.23	down
10/24/2023	615.97	613.40	2.57	13.78	0.19	down
11/13/2023	616.06	613.55	2.51	13.78	0.18	down
			Middle of screen elevation T408			598.0
			Middle of screen elevation G45D			584.2

[O: KLT 6/4/21, C:YMD 6/7/21][U:KLT 8/25/21, C:EDP 8/31/21]
[KLT 5/3/24, C: 5/7/24]

Notes:
[1] Distance change was calculated using the midpoint of the piezometer screen and water table surface. If the water table surface was above the top of the monitoring well screen, then distance change was calculated using the midpoint of both screens.
[2] Vertical gradients between ±0.0015 are considered flat, and typically have less than 0.02 foot difference in groundwater elevation between wells.
-- = no data collected on date / no vertical gradient calculated
DA = deep aquifer
dh = head change
dl = distance change
ft = foot/feet
LCU (lower) = lower confining unit (Smithboro)
LCU (upper) = lower confining unit (Vandalia)
NAVD88 = North American Vertical Datum of 1988
PMP = potential migration pathway
UA = uppermost aquifer

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APPENDIX C
Historical Field and Laboratory Hydraulic Conductivities

Appendix C. Historical Field and Laboratory Hydraulic Conductivities
Nature and Extent Report
GMF Recycle Pond
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Well ID	Unit	Method (fh)	Method (rh)	K (fh)	K (rh)	Well Geometric Mean	Approximate Screened Elevation (ft)	Interpreted Unit
Upper-most Aquifer								
R104	Landfill	KGS	B-R	7.0E-05	2.8E-04	1.4E-04	614.4-609.7	Hagarstown Beds
G105	Landfill	KGS	KGS	1.5E-04	5.7E-05	9.2E-05	613.2-608.4	Hagarstown Beds
G106	Landfill	B-R	B-R	4.0E-05	7.4E-04	1.7E-04	614.0-609.4	Hagarstown Beds
G107	Landfill	KGS	KGS	6.3E-05	8.9E-05	7.5E-05	613.9-609.3	Hagarstown Beds
G110	Landfill	KGS	KGS	4.7E-05	2.0E-05	3.1E-05	612.0-607.4	Hagarstown Beds
G119	Landfill	KGS	KGS	8.6E-05	8.2E-05	8.4E-05	611.6-607	Hagarstown Beds
G120	Landfill	low water elevation; no test conducted					614.2-609.7	Hagarstown Beds
G125	Landfill	KGS	KGS	4.8E-05	4.1E-05	4.4E-05	613.7-609.1	Hagarstown Beds
T127	Landfill	KGS	KGS	1.2E-03	1.7E-05	1.4E-04	610.5-606	Hagarstown Beds
			Unit Geometric Mean			8.5E-05		
T202	Gypsum Pond	KGS	KGS	4.5E-04	5.5E-04	5.0E-04	614.0-609.6	Hagarstown Beds
G206	Gypsum Pond	B-R	KGS	3.0E-04	1.6E-04	2.2E-04	613.0-608.6	Hagarstown Beds
G208	Gypsum Pond	KGS	KGS	6.0E-05	2.1E-05	3.5E-05	613.0-608.5	Hagarstown Beds
G209	Gypsum Pond	KGS	KGS	2.0E-04	1.6E-04	1.8E-04	612.8-608.3	Hagarstown Beds
G210	Gypsum Pond	KGS	KGS	5.0E-04	4.8E-04	4.9E-04	611.1-606.6	Hagarstown Beds
G212	Gypsum Pond	KGS	KGS	1.3E-04	1.8E-04	1.5E-04	613.9-609.3	Hagarstown Beds
G215	Gypsum Pond	KGS	KGS	5.0E-04	3.5E-04	4.2E-04	611.1-606.7	Hagarstown Beds
G218	Gypsum Pond	KGS	KGS	4.1E-04	4.1E-04	4.1E-04	610.3-605.9	Hagarstown Beds
			Unit Geometric Mean			2.3E-04		
G270	Recycle Pond	KGS	KGS	5.5E-04	4.8E-04	5.1E-04	609.8-605.0	Hagarstown Beds
G271	Recycle Pond	KGS	KGS	1.6E-04	1.1E-03	4.2E-04	612.9-608.6	Hagarstown Beds
G273	Recycle Pond	KGS	KGS	1.0E-03	8.3E-04	9.1E-04	611.1-605.6	Hagarstown Beds
G276	Recycle Pond	low water					606.7-601.9	Hagarstown Beds, v. thin
G279	Recycle Pond	KGS	KGS	1.7E-03	1.5E-03	1.6E-03	606.8-602.4	Hagarstown Beds
G280	Recycle Pond	KGS	KGS	1.3E-03	1.3E-03	1.3E-03	610.2-605.3	Hagarstown Beds
G281	Recycle Pond	KGS	KGS	2.1E-03	8.9E-04	1.4E-03	608.3-603.7	Hagarstown Beds
			Unit Geometric Mean			9.0E-04		
G301	Ash Pond 1	KGS	KGS	2.7E-04	5.0E-04	3.7E-04	609-604.3	Upper Vandalia Till
G302	Ash Pond 1	KGS	KGS	4.9E-04	6.3E-04	5.6E-04	604.7-600.1	Upper Vandalia Till
G303	Ash Pond 1	KGS	KGS	5.6E-05	3.1E-05	4.2E-05	609.1-599.1	Hagarstown/Vandalia Till Contact
G304	Ash Pond 1	KGS	KGS	8.9E-04	1.0E-03	9.4E-04	613.5-603.5	Hagarstown Beds
			Unit Geometric Mean			3.0E-04		
G401	Ash Pond 2	B-R	B-R	1.8E-04	2.8E-04	2.2E-04	608.7-603.7	Hagarstown Beds
G402	Ash Pond 2	KGS	KGS	4.5E-04	1.9E-04	2.9E-04	600.6-590.6	Upper Vandalia Till
G403	Ash Pond 2	KGS	KGS	4.3E-05	7.2E-05	5.6E-05	610.7-606.0	Hagarstown Beds, v. thin
G404	Ash Pond 2	KGS	KGS	4.2E-04	3.8E-04	4.0E-04	606.7-601.9	Hagarstown Beds
G405	Ash Pond 2	KGS	KGS	9.8E-04	9.7E-04	9.7E-04	611.9-607.1	Hagarstown Beds
			Unit Geometric Mean			2.7E-04		
G153	SW Pond	KGS	KGS	2.5E-04	5.4E-04	3.7E-04	607.5-603.0	Hagarstown Beds
			Unit Geometric Mean			3.7E-04		
MW03S	2009 Hydrogeo. Invest.	B-R	B-R	6.0E-04	1.1E-03	8.1E-04	613.7-608.6	Hagarstown Beds
MW04S	2009 Hydrogeo. Invest.	B-R	B-R	1.3E-03	8.0E-04	1.0E-03	612.6-607.6	Hagarstown Beds
MW10S	2009 Hydrogeo. Invest.	B-R	B-R	8.0E-04	8.0E-04	8.0E-04	610.9-604.9	Hagarstown Beds
MW13S	2009 Hydrogeo. Invest.	B-R	B-R	1.0E-03	2.0E-04	4.5E-04	611.3-606.1	Hagarstown Beds
MW14S	2009 Hydrogeo. Invest.	B-R	B-R	1.0E-03	5.0E-04	7.1E-04	612.4-607.2	Hagarstown Beds
MW15S	2009 Hydrogeo. Invest.	B-R	B-R	1.5E-04	8.1E-05	1.1E-04	609.3-604.2	Hagarstown Beds
MW16S	2009 Hydrogeo. Invest.	B-R	B-R	6.0E-04	4.5E-04	5.2E-04	611.5-606.3	Hagarstown Beds
MW17S	2009 Hydrogeo. Invest.	B-R	B-R	5.8E-04	5.5E-04	5.6E-04	613.1-603	Hagarstown Beds
			Unit Geometric Mean			5.4E-04		

Well ID	Unit	Method (fh)	Method (rh)	K (fh)	K (rh)	Well Geometric Mean	Approximate Screened Elevation (ft)	Interpreted Unit
Lower Confining Unit (Vandalia and Smithboro Till)								
T408	Ash Pond 2	KGS	KGS	2.15E-06	7.50E-08	9.02E-07	600.4-595.2	Vandalia Till
T409	Ash Pond 2	KGS	KGS	3.6E-05	3.20E-05	3.41E-05	600.1-594.9	Vandalia Till (sand seam)
G405D	Ash Pond 2	KGS	KGS			4.90E-07	589.1-579	Smithboro Till
G406D	Ash Pond 2	KGS	KGS			4.00E-08	580.3-570.3	Smithboro Till
			Unit Geometric Mean			5.55E-06		

Notes:
fh = Falling head test
rh = Rising head test

Hydraulic Conductivity tests analyzed using Aqtesolv® Pro version 4.50 (HydroSOLVE, Inc.)

Test Methods

B-R Bouwer and Rice, 1976. "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifer with Completely or Partially Penetrating Wells", Water Resources Research v.12, no. 3. American Geophysical Union, Washington, DC. pp. 423-428.

KGS Hyder, Z., J.J. Butler, C.D. McElwee, and W. Liu, 1974. "Slug tests in partially penetrating wells", Water Resources Research, v. 30, no. 11. American Geophysical Union, Washington, DC. pp. 2945-2957.

Appendix C. Historical Field and Laboratory Hydraulic Conductivities
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Laboratory Tests			
Well/ Soil Boring ID	**Approximate Sample Elevation (ft)**	**Hydraulic Conductivity (cm/sec)**	**Interpreted Unit**
COF-B001	613.0	1.3E-08	Loess - Upper Confining Unit
COF-B003	606.5	2.2E-07	
COF-B004	610.5	5.0E-07	
COF-B007	615.0	7.0E-08	
	Geometric Mean	**1.0E-07**	
G46D	599.2	4.5E-06	Vandalia Till
T408	597.6	1.5E-07	
SB-12	577.7-572.7	6.8E-09	
SB-13	598-593	7.0E-09	
SB-18	603.5-603	8.8E-09	
	Geometric Mean	**4.9E-08**	
SB-09	598.5-598	1.9E-06	Mulberry Grove Silt
SB-16	589-588.5	1.6E-06	
	Geometric Mean	**1.7E-06**	
G45D	586.4	1.0E-07	Smithboro Till
G46D	578.9	2.1E-08	
SB-07	572-571.5	1.1E-09	
	Geometric Mean	**1.3E-08**	
SB-19	569-564	3.4E-09	Deep Confining Unit
SB-16	548-547.5	1.3E-08	
	Geometric Mean	**6.6E-09**	

APPENDIX D
Geochemical Conceptual Site Model

Geochemical Conceptual Site Model

Coffeen Power Plant – Gypsum Management Facility Gypsum Stack Pond

(CCR Unit #103)

Prepared for

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June 2024

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ACRONYMS AND ABBREVIATIONS

CEC	cation exchange capacity
CCR	coal combustion residuals
COCs	constituents of concern
CPP	Coffeen Power Plant
DA	deep aquifer
DCU	deep confining unit
GCSM	geochemical conceptual site model
GMF	Gypsum Management Facility
GSP	Gypsum Stack Pond
GWPS	groundwater protection standards
HSU	hydrostratigraphic unit
I.A.C.	Illinois Administrative Code
IEPA	Illinois Environmental Protection Agency
LCU	lower confining unit
meq/100g	milliequivalents per 100 grams
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
N&E	nature and extent
ORP	oxidation-reduction potential
PMP	potential migration pathway
SU	standard units
TDS	total dissolved solids
TOC	total organic carbon
UA	uppermost aquifer
UCU	upper confining unit
XRD	X-Ray diffraction

1. EXECUTIVE SUMMARY

A geochemical conceptual site model (GCSM) has been developed to describe subsurface conditions at the Coffeen Power Plant Gypsum Management Facility (GMF) Gypsum Stack Pond (GSP) coal combustion residuals unit (Unit #103). A GCSM describes the geochemical processes that contribute to the mobilization, distribution, and attenuation of constituents of concern (COCs) in the subsurface environment. This report describes the GCSM for constituents that have exceeded the groundwater protection standards (GWPS) in GMF GSP groundwater, and which will be addressed in the corrective action plan. Sulfate is the only constituent with an exceedance at the GMF GSP, with an exceedance present in the uppermost aquifer (UA). The UA is comprised predominantly of sandy to gravelly silts with thin sand beds.

The coal combustion residual (CCR) materials within the GMF GSP are the primary source of constituent loading to the CCR porewater (i.e., CCR source water). Over an extended period (e.g., months to years), the CCR source water (i.e., water contained within the interstitial pore spaces of the CCR that can be sampled by low-flow groundwater sampling methods) reaches equilibrium with the CCR materials. The porewater is therefore representative of the mobile phase constituents capable of migrating into the underlying materials and potentially downgradient in groundwater. The GMF GSP CCR source water is therefore the primary indicator of sulfate available to the groundwater and is considered as the primary source term for environmental investigation and fate and transport modeling.

Conditions within UA groundwater are predicted to favor amorphous iron oxide stability at most locations, which indicates that a portion of the sulfate in the groundwater system may be attenuated via surface complexation reactions. However, crystalline iron oxides were not identified in the mineralogical analysis and a site-specific partition coefficient for sulfate could not be calculated from the results of batch attenuation testing completed with solids from the Site. These results indicate that chemical attenuation of sulfate downgradient of the GMF GSP may be limited.

2. INTRODUCTION

This report documents the development of a geochemical conceptual site model (GCSM) to describe subsurface conditions at the Coffeen Power Plant (CPP) (CPP) Gypsum Management Facility (GMF) Gypsum Stack Pond (GSP) coal combustion residuals (CCR) unit (Unit #103). A GCSM describes the environmental media and geochemical processes that contribute to the mobilization, distribution, and attenuation of constituents in the subsurface environment. The GCSM was prepared in support of an evaluation of the nature and extent of exceedances of constituents of concern (COCs) above the groundwater protection standards (GWPS) at the GSP. The document has been prepared as an appendix to the CPP GMF GSP N&E Report prepared by Ramboll Americas Engineering Solutions, Inc. (Ramboll).

Sulfate is the only constituent with an exceedance above the GWPS at the GSP for the second, third, and fourth quarters of 2023 (Q2 2023, Q3, 2023, and Q4 2023) monitoring events completed under Illinois Administrative Code (I.A.C.) Title 35 Section 845.630. An exceedance of sulfate was detected only at compliance monitoring well G215 during these sampling events (Ramboll 2024). The sulfate exceedance is present within the uppermost aquifer (UA).

3. SITE BACKGROUND

3.1 Site Overview

An overview of Site characteristics and hydrogeology is presented in CPP GMF GSP Nature and Extent (N&E) Report. A Site layout figure is provided in Attachment A.[1] The Coffeen GMF GSP impoundment is located to the north of the GMF Recycle Pond CCR unit (Unit #104). An unnamed tributary runs north to south to the east of the GMF GSP and Recycle Pond. The CPP property is located approximately two miles south of the city of Coffeen, Illinois, and bordered by lobes of Coffeen Lake to the west, east, and south, and by agricultural land to the north.

The GMF GSP is a 77-acre lined surface impoundment that received blowdown for the air emission scrubbers from 2010 to 2021. The GMF GSP was constructed in accordance with Illinois Environmental Protection Agency (IEPA) Water Pollution Control Permit No. 2008-EA-4661 and features a composite high-density polyethylene (HDPE) liner with three feet of compacted soil and an inactive groundwater underdrain system.

A Hydrogeologic Site Characterization Report (Ramboll 2021a) previously described the hydrostratigraphic units (HSUs) present in the vicinity of the GMF GSP, which consist of an Upper Confining Unit (UCU), UA, Lower Confining Unit (LCU), Deep Aquifer (DA), and Deep Confining Unit (DCU). The UCU consists of the silty or clayey silt of the Loess Unit and the upper clayey portion of the Hagerstown Member. The UA is predominantly sandy to gravelly silts with thin sand beds, with lithology identified as the Hagarstown Member. The LCU is comprised primarily of sandy to silty till, with discontinuous sand lenses that have been identified as potential migration pathways (PMPs). The LCU includes lithologies identified as the Vandalia Member, Mulberry Grove Member, and Smithboro Member. The DA is predominantly sand and sandy silt/clay units of the Yarmouth Soil and is discontinuous beneath the CPP.

Vertical gradients measured near the CPP indicate downward flow from the UA to the LCU and DA (Ramboll 2021a). Both the DA and the LCU have been identified as PMPs due to the presence of these downward gradients.

3.2 Groundwater Monitoring Network

A groundwater monitoring network was proposed in accordance with I.A.C Title 35 Section 845.630 to monitor groundwater quality which passes the waste boundary as part of the Operating Permit application to IEPA for the GMF GSP. The proposed groundwater monitoring network is described in the Groundwater Monitoring Plan (Ramboll 2021b) and shown in Attachment B.[2] Well construction information is provided in Attachment C.[3]

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[1] This figure is also provided as Figure 2-1 of the CPP GMF GSP N&E Report.
[2] This figure is also provided as Figure 2-2 of the CPP GMF GSP N&E Report.
[3] This table is also provided as Table 3-1 of the CPP GMF GSP N&E Report.

Groundwater flow is generally east to southeast in the vicinity of the GMF GSP in the direction of the unnamed tributary. Groundwater flow directions are generally consistent across seasons. A detailed discussion of the hydrology of the Site is presented in Section 2 of the CPP GMF GSP N&E Report.

4. GEOCHEMICAL SITE CONDITIONS

The general behavior of the COC, sulfate, is discussed in Section 4.1. Summaries of Site solids and aqueous conditions within the relevant HSUs are provided in Section 4.2 and 4.3, respectively, with discussion of how groundwater both upgradient and downgradient of the GMF GSP may interact with the Site solids to affect constituent behavior. This includes discussion of potential sorbing or precipitating phases and how the stability of those phases may be affected by variable groundwater pH and redox conditions.

4.1 Constituent Transport and Fate

Sulfate is the primary form of oxidized sulfur (S(VI)) in the environment and is a divalent oxyanion at pH values greater than 2 SU (Stumm and Morgan 1996). Sulfate in groundwater may sorb onto positively charged sites on solid metal oxide phases, most commonly iron and manganese oxides (Brown et al. 1999). The extent and strength of sulfate sorption to metal oxide surfaces depends on pH, ionic strength, and oxide surface area available for sorption. Sulfate can also form insoluble complexes such as barite ($BaSO_4$) (NCBI 2024). Sulfate in groundwater may be reduced to elemental sulfur (S(0)) or sulfide (S(-II)) under sufficiently reducing conditions, a process governed by local microbial communities (Stumm and Morgan 1996). Generally, reduced sulfur is less mobile in groundwater than sulfate because reduced sulfur readily precipitates as insoluble metal sulfides (Stumm and Morgan 1996).

4.2 Site Solids Characterization

Solid phase data for the CCR source material within the unit is limited to two grab sample locations in the northwest corner of the GSP due to safety concerns. These CCR solids samples consist primarily of gypsum scrubber waste.

Solids from across the monitoring network were characterized using various analytical techniques, the results of which are presented in Tables 1 and 2, to characterize their geochemical properties and to understand their effect on the geochemistry of the groundwater system.[4] Solids were collected from three locations adjacent to the following existing wells in the GMF GSP monitoring network, and one additional location adjacent to the GMF GSP:

- G200, located upgradient of the GMF GSP to the north. Solids were collected within the UA and are considered representative of background conditions for the GMF GSP.
- G206 and G206D, located at the downgradient edge of the GMF GSP to the south. Solids were collected within the UCU, UA, LCU, and DA

[4] Sequential extraction procedures are chemical extractions used to dissolve metals from specific solid-associated phases. While useful for solid phase characterization, reporting limits are often elevated for sulfate and boron and samples from the vicinity of the CPP GMF GSP were not submitted for analysis via this technique.

- SB289, located downgradient of the GMF GSP on the northeast corner. Solids were collected within the UCU, UA, LCU, and DA.
- G215, located at the downgradient edge of the GSP to the east, with solids collected within the UA. Statistical exceedances of sulfate above the GWPS limits were identified at G215 in 2023.

The monitoring well and boring locations are shown in Attachment B[5]. Boring logs for these locations are provided in Attachment D.

4.2.1 Bulk Characterization

Bulk characterization analytical data is presented on Table 1 and the analytical data is provided in Attachment E. Total organic carbon (TOC) represents only the carbon component of organic matter within a solid material. Non-detect to low (1.79 percent by dry weight [wt %]) TOC values were reported in the vicinity of the GMF GSP within the UA, with similarly low abundances in DA solids (0.08 to 0.23 % wt).[6]

The cation exchange capacity (CEC) of a solid represents the total negative surface charge of that material, which is related to the material's surface potential to sorb cations. Amorphous iron hydroxides, organic matter, and clays all tend to possess high negative surface charges at circumneutral pH and therefore tend to contribute to higher CEC values. CEC values in UA solids (3.38 to 4.68 milliequivalents per 100 g of sample [meq/100g]) are lower than in DA solids (19.98 to 21.02 meq/100g), consistent with expectations for the differing lithologies.

Where analyzed, total sulfides within Site solids were low across all lithologies (<0.1 % wt), in agreement with low total sulfur concentrations (less than 1,500 milligrams per kilogram [mg/kg]) in all samples. Acid volatile sulfide (AVS) represents the portion of sulfide within a solid material that can be liberated to hydrogen sulfide (H_2S) gas after the acidification of the sample. AVS was low in the limited number of UA samples analyzed (<0.2 mg/kg). The low abundances of total sulfides and AVS suggest sulfides have a limited abundance in the Site solids and sulfur is primarily present within other mineral phases. Sulfate was detected in UA solids (26 to 61 mg/kg), and not detected in solid samples from the DA (Table 1); samples were only analyzed for sulfate at downgradient locations so the source of the sulfate could not be identified. Note that sulfate concentrations in GMF GSP solids were 15,000 to 19,000 mg/kg, as shown on Table 1; the higher concentrations in the CCR solid materials compared to the aquifer lithology is consistent with the predominance of gypsum in the CCR.

Total metals were analyzed to determine the major and trace metal content of the solids. The abundance of total aluminum, iron, and manganese can provide insights into the potential presence

[5] Boring locations figure also provided as Figure 2-7 of the COF GMF GSP N&E Report.
[6] While the analytical laboratory reports provided in Attachment E provide TOC as mg/kg, the results have been converted to % wt for ease of interpretation.

of adsorbing phases, as oxyhydroxides of these metals can provide sorption capacity. The total metals results are presented in Table 1 and the analytical data is provided in Attachment E.

Total aluminum was only measured at two locations within the UA (SB-200 and SB-215), with concentrations ranging between 21,000 to 22,000 mg/kg, or approximately two percent (2%) by weight. Total iron concentrations are low (about 0.7% to 2.1% by weight) and similar between UA solids in background (16,000 mg/kg) and downgradient locations (6,800 to 21,000 mg/kg), with concentrations generally lower in DA solids (8,100 to 12,000 mg/kg). Total manganese concentrations follow a similar pattern to iron, with concentrations similar across UA solids (270 mg/kg to 650 mg/kg) and elevated compared to DA solids (39 to 110 mg/kg). The abundance of iron within the bulk solids matrix of the UA indicates the presence of iron-bearing minerals, which was confirmed via X-Ray diffraction (XRD) as discussed in Section 4.2.2.

4.2.2 Mineralogical Analysis

XRD with Rietveld refinement was conducted for identification of minerals in solid samples. XRD is an analytical technique that provides information about the identity of the crystalline material within a sample but does not provide information about non-crystalline or amorphous phases. XRD results are normalized to 100% of the total weight, meaning that material not detected by XRD is ignored in the percent calculation.

The XRD data are presented in Table 2 and the analytical data is provided in Attachment F. Solids from the UA across the Site were predominantly composed of quartz, ranging from 53.1 to 58.3% of the minerals present. Feldspar minerals including albite (8.0 to 9.0%) and microcline (6.2 to 6.4%), and the carbonates dolomite (12.9 to 18.2 %) and calcite (3.3-4.5%), were detected as additional primary crystalline mineral phases. While crystalline forms of iron oxides were not detected in Site solids, ankerite, an iron-bearing carbonate mineral, was detected in all Site solids at abundances from 4.3 to 5.2%. The observation of ankerite indicates that the total iron within Site solids is associated with minerals other than crystalline iron oxides and that iron oxides within Site solids are likely present as non-crystalline or amorphous phases. No crystalline manganese oxide or aluminum oxide minerals were detected in Site solids.

4.3 Aqueous Geochemistry

Groundwater from wells across the UA and DA in the vicinity of the GMF GSP were analyzed for a range of geochemical parameters, as presented in Figures 1–7. For clarity in interpretation, UA well locations are shown with square symbology and G206D, the only DA location, is shown with triangular symbology. Wells G200 and R201, both of which are screened in the UA, represent background for the GMF GSP and are shown with hollow symbology. The groundwater data used in the Site evaluation is summarized in Attachment G.

A limited set of porewater (i.e., CCR contact water) samples has been collected in the recent past from the NE Riser location, which collects contact water from process piping located in the northeast corner of the GSP. CCR porewater is water "collected from the interstitial water between waste particles in surface impoundments as it occurs in the field" (USEPA 2014) and represents the material potentially leached from impoundments. The CCR materials are the primary source of constituent loading to the CCR porewater. Over an extended period (e.g., months to years), the CCR porewater (i.e., water) reaches equilibrium with the CCR materials. The concentrations within the porewater are "the most representative data available for impoundments because these data are field-measured concentrations of leachate" (USEPA 2014). Porewater is therefore the most appropriate source term for potential flux out of CCR impoundments. The porewater data used in the Site evaluation is also summarized in Attachment G.

4.3.1 Redox/pH Summary

The oxidation-reduction (redox) potential (ORP) and pH in aqueous systems are major controls on the speciation of reactive constituents such as iron, manganese, and sulfate.

GMF GSP porewater pH values ranged between 6.9 to 7.9 SU (Figure 1). In wells across the groundwater monitoring network, pH values appear to be stable and are circumneutral, consistent with the buffering capacity associated with the presence of carbonate mineral species detected within UA solids (Table 2). Compliance UA groundwater pH values largely range between 6.5 to 7.8 SU, which overlaps the range observed for background UA groundwater with pH values 6.7 to 7.7 SU. A range of pH values between 6.9 to 7.5 SU were detected in samples from DA groundwater near the GSP, as represented by samples from G206D. Within UA compliance wells, pH values are observed to generally decrease along a transect from G206 to G213, then G215 to G218, moving northeast and then north.

A limited range of redox conditions were detected in groundwater across the Site, with both positive and negative ORP values reported at UA monitoring network wells (Figure 2). ORP values appear to be more variable after the Q4 2019 sampling event, which may be related to changes in water management at the GMF after the CPP was shut down on November 1, 2019. GMF GSP porewater at the NE Riser location is relatively more oxidizing than groundwater in the UA compliance network. This is likely due to the shallow construction of the GMF GSP and its high surface area. Since 2019, the ORP of UA background groundwater at G200 is generally comparable to downgradient conditions, whereas groundwater at R201 is relatively more reducing.

4.3.2 Exceedance Parameters

Total sulfate concentrations within GSP porewater leachate at the NE Riser location ranged between 8,800 to 12,000 mg/L, above the GWPS of 400 mg/L (Figure 3a). The only dissolved sulfate measurement (June 2023) was similarly elevated (9,100 mg/L) (Figure 3b). These elevated concentrations are consistent with the nature of the CCR material within the unit (gypsum) and the high sulfate concentrations detected for GMF GSP solids (Table 1).

Sulfate concentrations detected in groundwater samples statistically exceed the GWPS only at G215 (Figure 3a). Groundwater samples at UA background wells G200 (64 to 120 mg/L) and R201 (89 to 370 mg/L) did not exceed the GWPS for sulfate (Figure 3a). Sulfate concentrations are largely stable through time at UA background wells and compliance wells along the southern side of the GMF GSP. Sulfate concentrations at G215 have shown an increasing trend since early

2020. Increasing sulfate concentrations were also observed at G217 and G218, which are also located on the east side of the GMF GSP, over the same period, although neither yet statistically exceed the GWPS. When measured, dissolved sulfate represents the majority of total sulfate at all locations (Figure 3b), indicative of limited associated with suspended solids in the unfiltered sample.

4.3.3 Pourbaix Diagrams

Eh-pH (Pourbaix) diagrams can be used to illustrate the predicted stability of specific phases at thermodynamic equilibrium under the conditions detected for a groundwater sample. Select crystalline mineral species were suppressed to be representative of anticipated groundwater conditions (e.g. mineral formation not anticipated to be kinetically favored).

Using conditions detected at well G215 on 1 June 2023 to represent groundwater within the UA (Table 3), amorphous ferrihydrite (represented as $Fe(OH)_3$ on the diagram) is predicted to be stable under groundwater conditions at most locations (Figure 4). [7] At G206, G206D, and background location R201, amorphous ferrihydrite is not expected to be thermodynamically stable, while siderite, an iron carbonate mineral, is favored (Figure 4). Ankerite, which was identified via XRD and is an analogous iron-bearing carbonate species to siderite, is therefore expected to be thermodynamically stable within the UA based upon the detected redox conditions. With some locations experiencing groundwater conditions that are poised on the redox boundary between iron carbonates and amorphous iron oxides, dissolution of iron carbonate minerals may provide a source of iron for formation of amorphous iron oxide coatings. Overall, these modeling results indicate that amorphous iron oxides, the formation of which is more thermodynamically favorable than crystalline iron oxides, are likely to be present at most locations within the UA. However, the higher abundance of total iron at G215 (12 mg/L, Table 3) which was used to inform the Eh-pH diagram generation may overestimate the stability of solid phase iron species at locations with lower aqueous iron concentrations (see Section 4.3.4).

The manganese Eh-pH diagram predicts that solid phase manganese minerals, including manganese oxides, are not predicted to be stable under Eh and pH conditions across the Site (Figure 5).

4.3.4 Total and Dissolved Iron and Manganese Concentrations

The distribution of iron and manganese between total and dissolved phases can provide insights on Site redox conditions and constituent behavior. Paired total and dissolved iron and manganese data are available across the Site for the Q2, Q3, and Q4 2023 sampling events. A comparison of the total and dissolved iron and manganese data for these events is provided in Table 4. Total iron concentrations ranged from 0.06 mg/L at downgradient UA well G212 on 10 August 2023 to 18 mg/L at background UA well G200 on 7 June 2023. Dissolved iron concentrations ranged from below reporting limits to 3.4 mg/L at downgradient DA well G206D on 9 June 2023. Where

[7] Field ORP measurements were converted to Eh by adding +200 millivolts to correct for the Ag/AgCl electrode.

dissolved iron was detected, the dissolved concentration as a percentage of the total iron value varied spatially. At well locations on the southwest portion of the GSP, including G206 and G209 (Attachment A), dissolved iron was consistently greater than 50% of total iron, indicating that iron is largely in aqueous phases at these locations. These observations are not consistent with Eh-pH modeling results indicating geochemical conditions favoring the stability of iron oxides and carbonates at these locations (Figure 4). At well locations to the east of the GMF GSP, dissolved iron was typically less than 50% of total iron, indicating iron is largely associated with particulates at these locations. This is consistent with the higher turbidity periodically observed at these locations (Attachment G).

Total manganese concentrations ranged from 0.004 mg/L at downgradient UA well G212 on 7 June 2023 to 1.2 mg/L at background UA well G200 on 7 June 2023 (Table 4). Dissolved manganese concentrations ranged from below reporting limits to 0.61 mg/L at downgradient UA well G215 on 10 August 2023. Dissolved manganese represents the majority of total manganese concentrations at most locations, which is consistent with the predicted instability of manganese-bearing minerals based on the Pourbaix diagrams (Figure 5).

4.3.5 Major Ion Distribution and Groundwater Signatures

Piper diagrams were constructed using data from the UA to visualize major ion distributions in groundwater (Figure 6). Piper diagrams are a common tool for assessing geochemical similarities or differences between aqueous samples. The cation composition of the GMF GSP leachate is dominated by magnesium, with a major anion composition that is sulfate-dominated. Background wells G200 and R201 have lower contributions of sulfate, greater contributions of carbonate alkalinity (consistent with the high abundance of carbonate minerals in the solids [Table 2]) and are major cation distributions of relatively equal contributions of both monovalent and divalent cations. Groundwater from UA compliance wells to the south of the GMF GSP (G206, G209, G212, and G213) cluster with these background wells. Groundwater from the compliance network wells located to the east of the GSP (G215, G217, and G218) cluster together between background locations and GMF GSP leachate, consistent with the elevated concentrations of sulfate detected at these locations. These results provide further evidence for the influence of GMF GSP porewater on compliance wells located to the east.

5. EVALUATION OF PARTITION COEFFICIENT RESULTS

Batch test studies combine soil and groundwater collected from the Site to evaluate the attenuation of chemical constituents. A draft memorandum discussing batch attenuation testing at the CPP GMF GSP was included as an appendix to the *Groundwater Modeling Report (*Ramboll 2022) and is provided as Attachment H to this document.

5.1 Batch Attenuation Testing

Batch attenuation testing was conducted for sulfate to evaluate the potential for sorption and to generate site-specific distribution coefficients between the solid and aqueous phase. In 2021, Geosyntec conducted a field investigation at the GMF GSP which included completion of two soil borings ranging in depth from 18 to 28 feet below ground surface. One groundwater sample (G215) and one soil sample (SB-215) were used for batch attenuation testing at five soil:solution ratios (Table 7), each ran in duplicate. One set of microcosms was amended (i.e., spiked) with sodium sulfate (Na_2SO4) to achieve target concentrations of sulfate (Table 5). After the end of the test, the samples were filtered through a 0.45-micron (µm) filter prior to analysis for dissolved concentrations of sulfate. Analysis of the dissolved phase is important to adequately measure the portioning of mass between the solid and liquid fractions of the experiment.

5.2 Partition Coefficient Results

The mass of sulfate in the water versus in the solids of each sample was plotted according to three sorption models: linear, Langmuir, and Freundlich. Data obtained from the batch attenuation tests was used to calculate attenuation distribution coefficients (K_d) for each sorption model. The calculated linear, Langmuir, and Freundlich distribution coefficients (K_d, K_L, and K_F, respectively) and 1/*n* values are shown in Table 7. The linear and Langmuir isotherms for sulfate are provided in Figure 7.

A sulfate partition coefficient was not determined for any isotherm for the sulfate amended microcosms. The linear isotherm yielded a partition coefficient of 0.1 L/kg but had a very poor goodness-of-fit, and the Langmuir isotherm yielded a negative coefficient. A Freundlich isotherm could not be calculated because the data were not conducive to log transformation.

6. GEOCHEMICAL CONCEPTUAL SITE MODEL

6.1 Source and Mobilization Mechanisms

Sulfate is concentrated in flue gas desulfurization wastewater, as gypsum is the main solid component formed in the blowdown and the majority of sulfate mineral phases are soluble under environmental conditions such that sulfate associated with flue gas desulfurization wastewater is leachable (Koralegedara et al., 2019). The likely primary source of sulfate to the UA is GMF GSP CCR porewater. Sulfate was identified in the CCR leachate at concentrations up to 12,000 mg/L.

6.2 Potential and Observed Attenuation Mechanisms

Sulfate exceedances are currently limited to the UA. Sulfate is typically considered to be a conservative species within groundwater at circumneutral pH conditions, although sorption onto mineral surfaces is a potential attenuation mechanism. Sulfate attenuation is expected to occur largely as the result of sorption onto positively charged iron oxides and oxyhydroxides associated with solids. While crystalline iron oxide phases were not identified via XRD, modeling of redox conditions support the presence of iron oxides in amorphous phases across the Site in the UA at some locations. However, chemical attenuation of sulfate is anticipated to be limited, as batch attenuation testing was not able to determine a partition coefficient for sulfate at the Site.

7. REFERENCES

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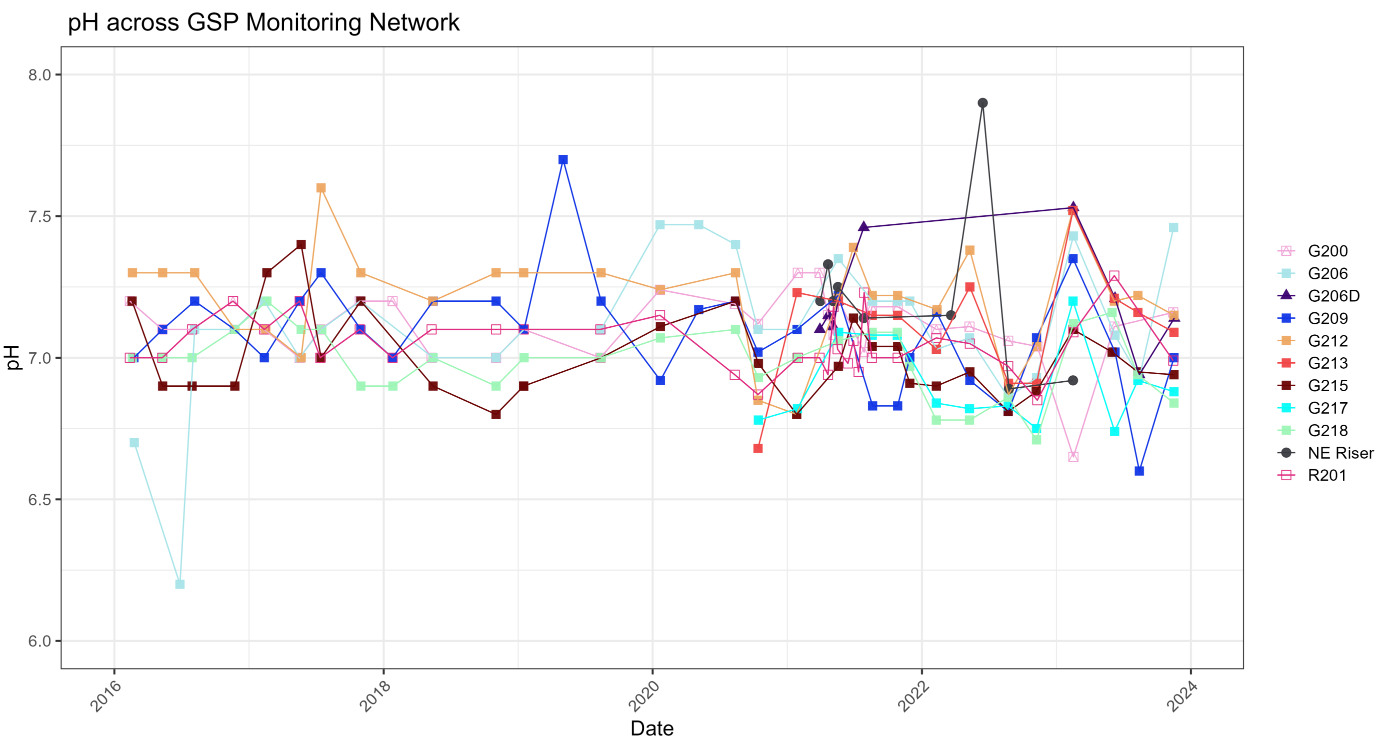
FIGURES



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Notes:
SU: Standard Units
Background wells shown with open symbols.

pH Time Series

Coffeen Power Plant – Gypsum Management Facility
Gypsum Stack Pond

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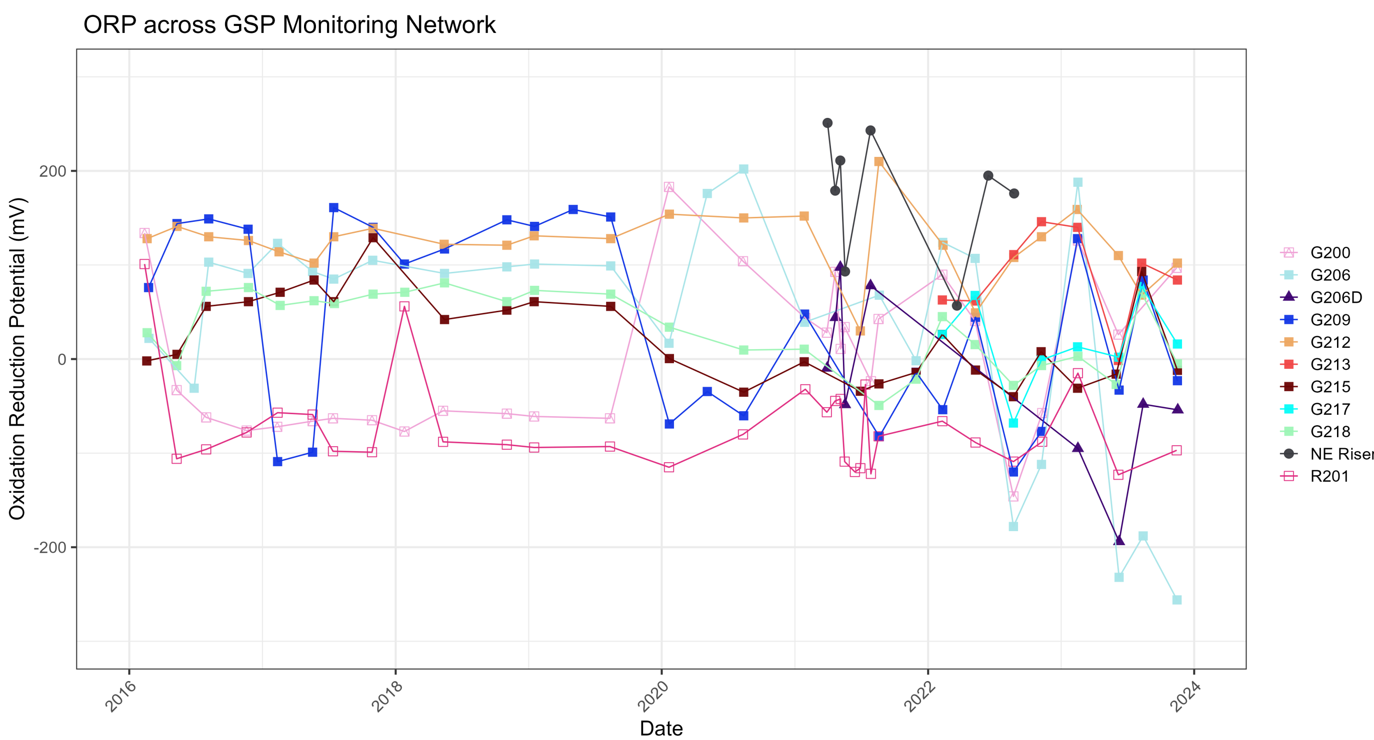
Figure 1



Notes:
mV: millivolts
Background wells shown with open symbols.

ORP Time Series

Coffeen Power Plant – Gypsum Management Facility
Gypsum Stack Pond

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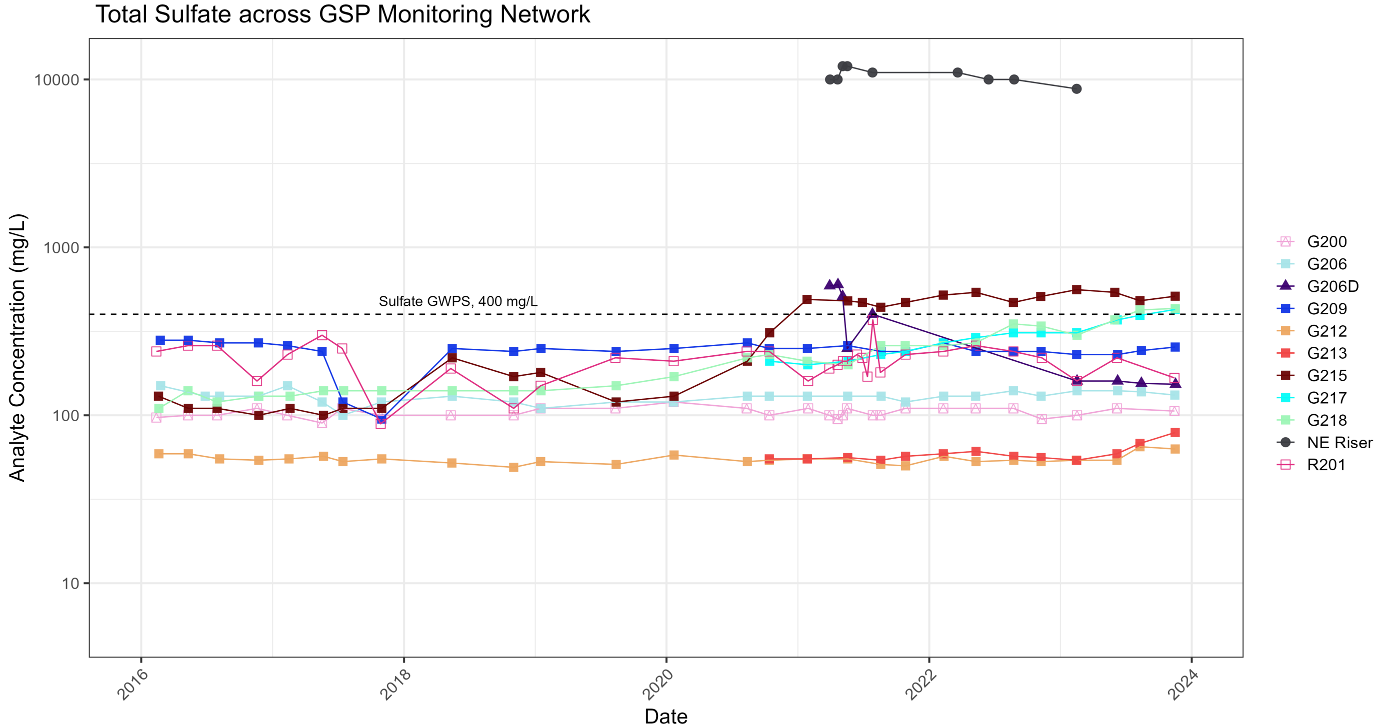
Figure
2



Notes:
mg/L: milligrams per liter
GWPS: Groundwater Protection Standard
Background wells shown with open symbols.

Total Sulfate Concentration Time Series

Coffeen Power Plant – Gypsum Management Facility
Gypsum Stack Pond

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Figure **3a**

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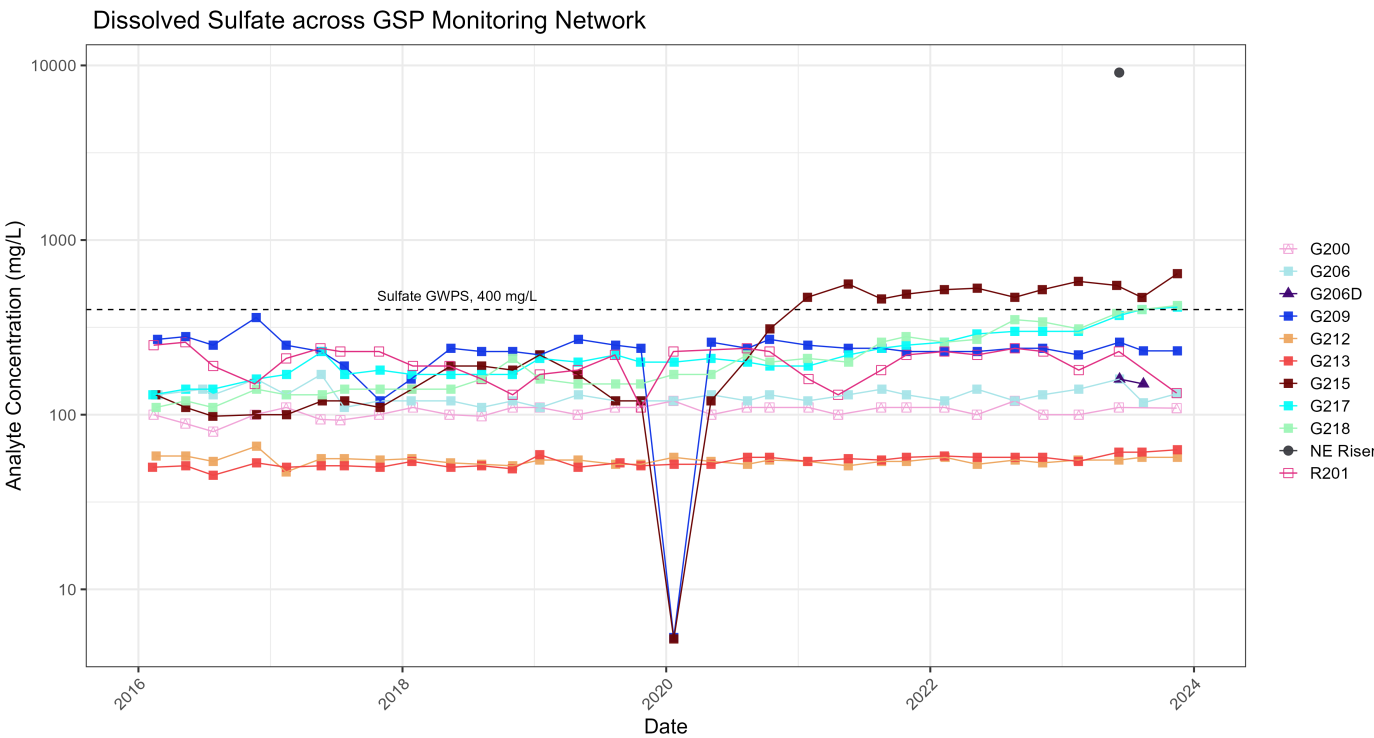

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Notes:
mg/L: milligrams per liter
GWPS: Groundwater Protection Standard
Background wells shown with open symbols.

Dissolved Sulfate Concentration Time Series

Coffeen Power Plant – Gypsum Management Facility
Gypsum Stack Pond

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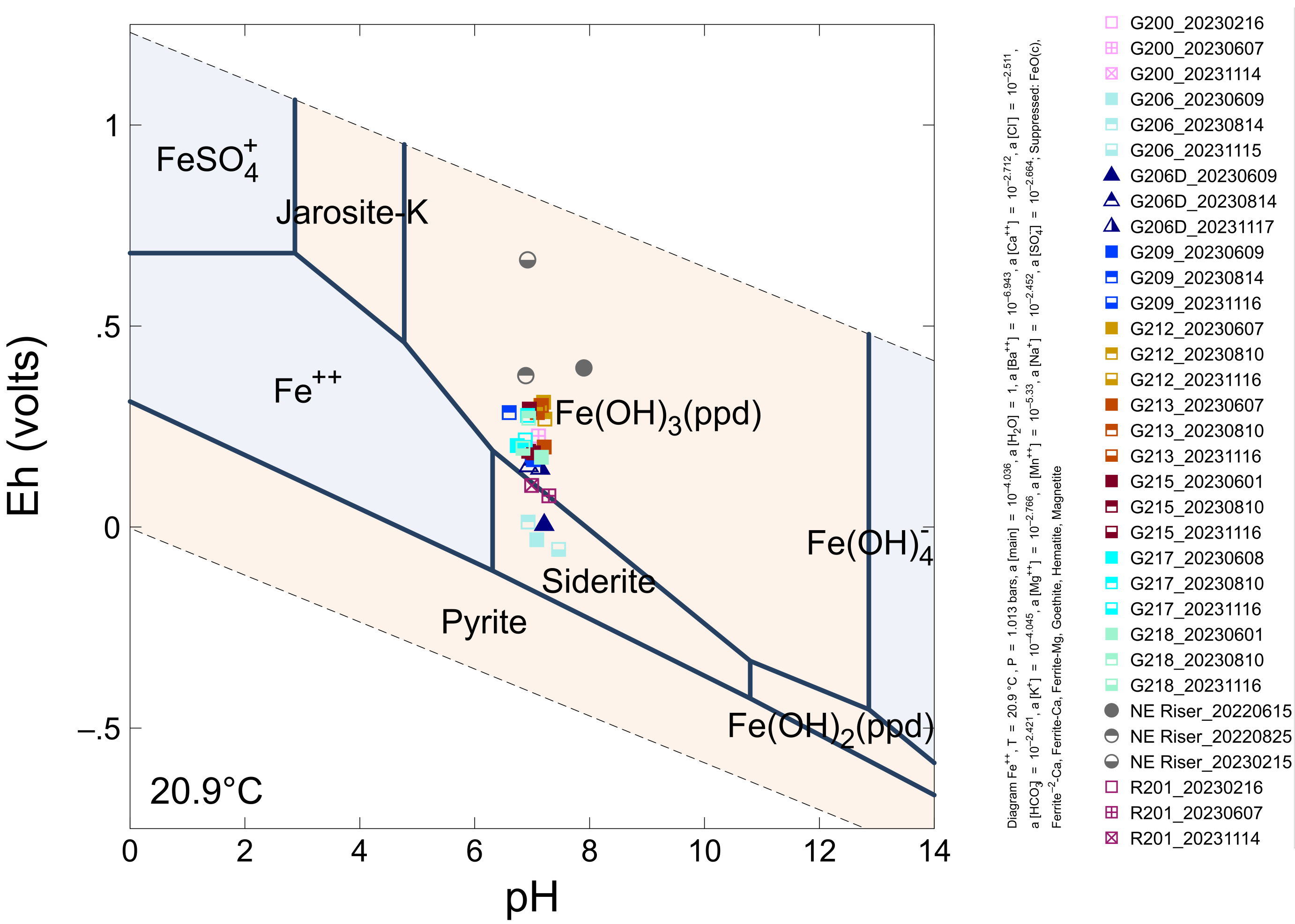
Figure **3b**



Notes:

1. Diagram was generated using conditions observed at G215 on 6/1/2023.
2. Well G215 is screened in the uppermost aquifer.
3. The three most recent available pH and ORP data points for each location are displayed.
4. Ferrite-Ca, ferrite[-2]-Ca, ferrite-Mg, crystalline iron oxide, goethite, hematite, and magnetite were suppressed during model generation.

Iron Pourbaix Diagram

Coffeen Power Plant – Gypsum Management Facility
Gypsum Stack Pond

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Figure 4

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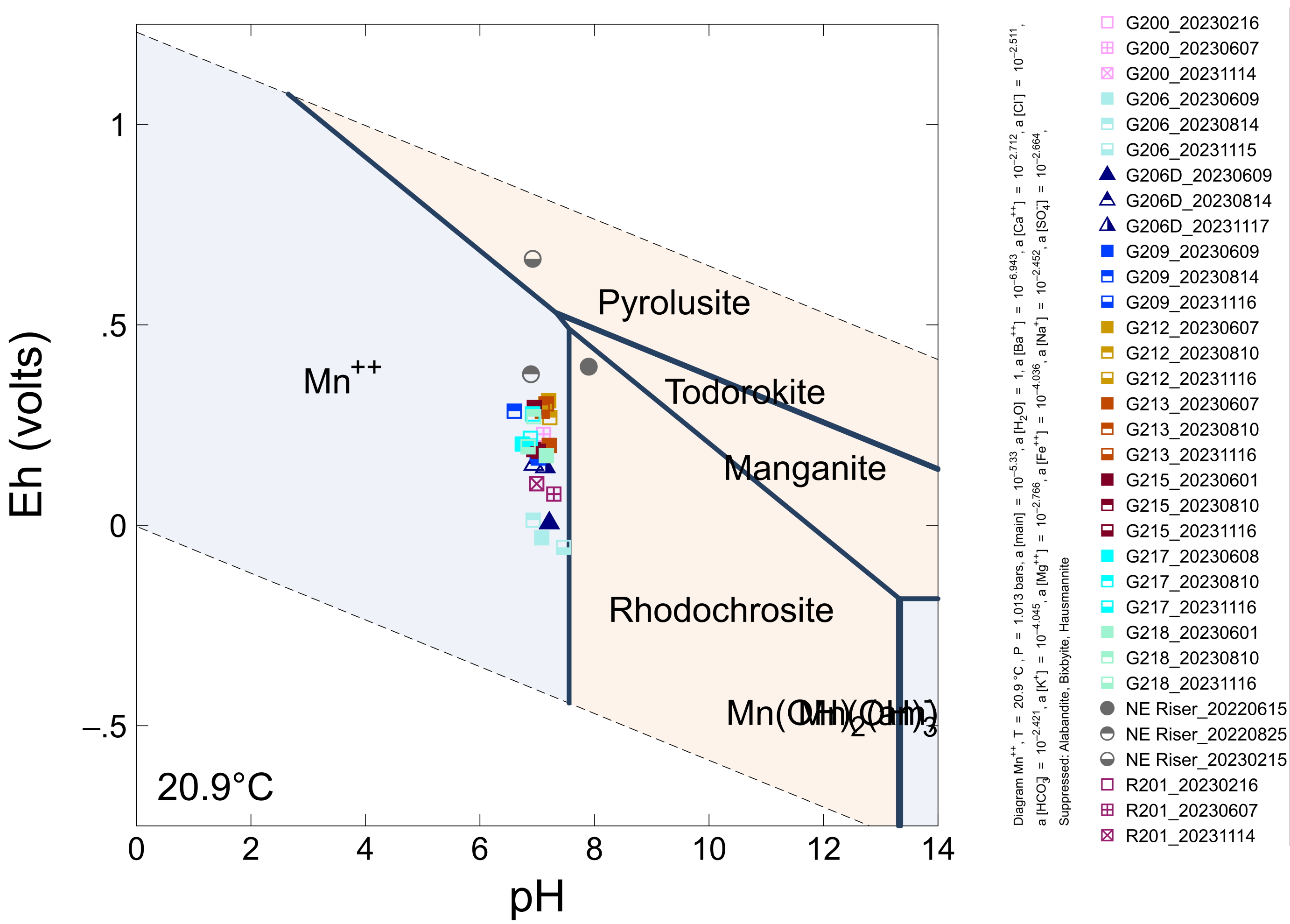

Notes:

1. Diagram was generated using conditions observed at G215 on 6/1/2023.
2. Well G215 is screened in the uppermost aquifer.
3. The three most recent available pH and ORP data points for each location are displayed.
4. Alabandite, bixbyite, and hausmannite were suppressed during model generation.

Manganese Pourbaix Diagram

Coffeen Power Plant – Gypsum Management Facility
Gypsum Stack Pond

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Figure **5**

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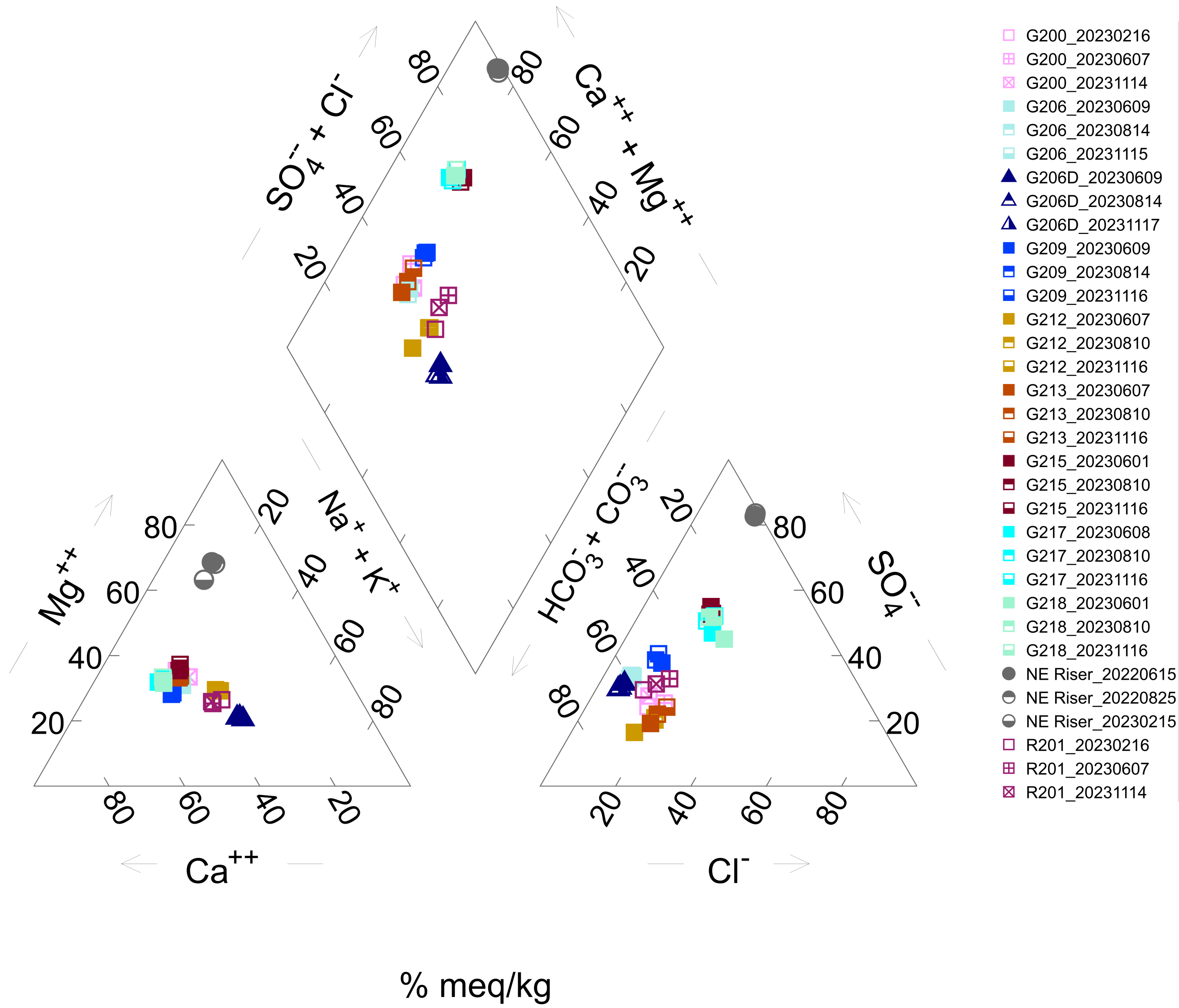

Notes:

1. The three most recent available data points for each location are displayed.

% meq/kg: percent milliequivalents per kilogram

Piper Diagram

Coffeen Power Plant – Gypsum Management Facility
Gypsum Stack Pond

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Figure **6**

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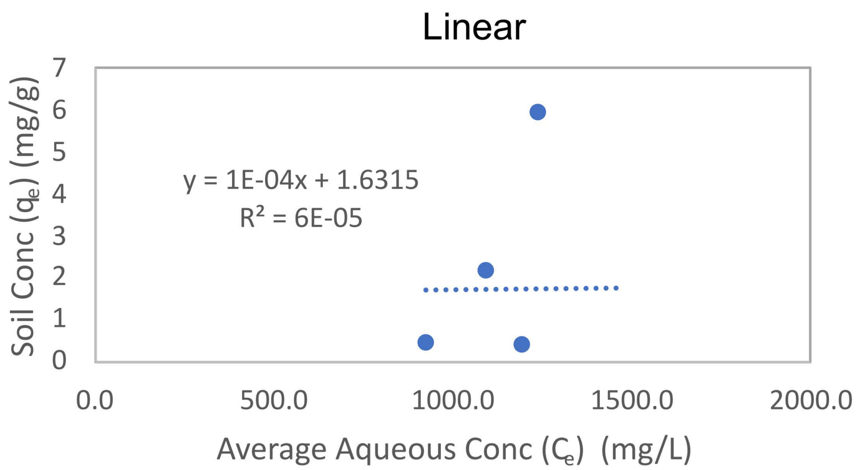

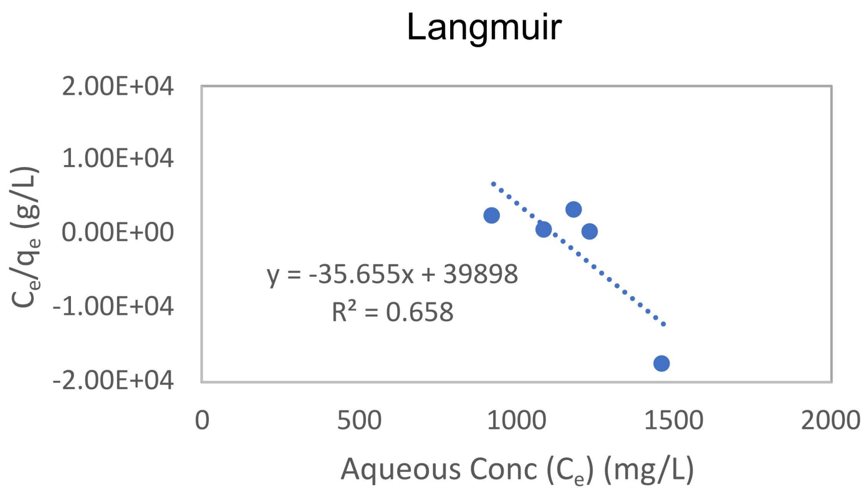

Notes:

The Freundlich isotherm was not calculated because the data were not conducive to log transformation.

q_e - mass of constituent adsorbed to the solid phase
C_e - remaining aqueous constituent concentration
mg/L - milligrams per liter
mg/g - milligrams per gram
g/L - grams per liter

G215 Sulfate Partition Coefficients
Coffeen Power Plant - GMF Gypsum Stack Pond

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Figure 7

TABLES

Table 1. Bulk Characterization of Site Solids
Geochemical Conceptual Site Model
Coffeen Power Plant - Gypsum Stack Pond

Field Boring Location	SB-200	SB-215	GSP Gypsum 1	GSP Gypsum 2	G206D	G206D	G206D	G206D	G206D	SB289	SB289	SB289	SB289	SB289	SB289
Sample Depth (ft bgs)	**(14-15, 15-18)**	**(23-24, 24-24.5)**	**0-0**	**0-0**	**4-16**	**18.8-20**	**20-31.8**	**34-52**	**54-58**	**0-0**	**4-16**	**18-22**	**22-32.9**	**34-52**	**54-60**
Sampled Aquifer Unit	**UA**	**UA**	**CCR**	**CCR**	**UCU**	**UCU/UA**	**LCU**	**LCU**	**DA/DCU**	**UCU**	**UCU**	**UCU/UA**	**LCU**	**LCU**	**DA**
Analyte	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**	**Concentration**
Aluminum	21000	22000	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	< 0.8	< 0.8	<1.5	<3	<3.6	<3.6	<3.3	<3.6	<3.6	--	<2.8	<2.8	<3	<3	<3
Arsenic	3.1	7.9	<0.51	<1	9.1	3.1	1.3	3.8	1.9	--	<0.95	1.3	1.8	2.6	2.8
Barium	205	219	6.6	13	65	110	33	89	160	--	30	29	12	34	110
Beryllium	0.42	0.45	<0.51	<1	<1.2	<1.2	<1.1	<1.2	<1.2	--	<0.95	<0.95	<1	<1	<1
Bismuth	< 0.09	< 0.09	--	--	--	--	--	--	--	--	--	--	--	--	--
Boron	--	--	13	<10	<12	<12	<11	<12	<12	--	<9.5	<9.5	<10	<10	<10
Cadmium	0.17	0.17	<0.51	<0.51	<1.2	<12	<1.1	<1.2	<1.2	--	<0.95	<0.95	<1	<1	<1
Calcium	59000	63000	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloride	--	--	25	260	46	14	<11	<12	<12	--	14	17	<10	<10	<10
Chromium	144	124	<2	<4	10	6.2	9.4	11	11	--	4.9	6.7	4.8	7.6	11
Cobalt	4	4	<1	<2	7.7	3	4	5.3	6.4	--	<1.9	6.8	2.5	3.5	4.7
Copper	10	8	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoride	--	--	13	7.6	4.7	<3	2.8	3.6	7.6	--	3.9	0.47	<2.5	3.4	5.7
Iron	16000	16000	--	--	18000	6800	10000	13000	8100	13000	2900	21000	8200	10000	12000
Lead	10	11	0.67	<1	4.9	4.8	5.9	8	12	--	3.8	5.4	2.8	6.3	13
Lithium	8.8	7.1	<2.6	<5	6.8	<6.1	13	11	8.4	--	<4.7	6.8	5.9	8.9	7.1
Magnesium	26000	25000	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	403	364	--	--	230	650	300	450	110	470	12	270	750	310	39
Mercury	--	--	<0.1	--	<0.24	<0.24	<0.22	<0.24	<0.24	--	<0.19	<0.19	<0.2	<0.2	<0.2
Molybdenum	1.5	1.1	1.2	<1	<1.2	<1.2	<1.1	1.4	<1.2	--	<0.95	<0.95	<1	<1	<1
Nickel	14	10	--	--	--	--	--	--	--	--	--	--	--	--	--
Phosphorus	320	320	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	11000	12000	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	0.7	< 0.7	<0.51	<1	<1.2	<1.2	<1.1	<1.2	<1.2	--	<0.95	<0.95	<1	<1	<1
Silver	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--
Sodium	5200	4900	--	--	--	--	--	--	--	--	--	--	--	--	--
Strontium	102	90	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfate	--	--	19000	15000	300	26	<11	<12	<12	--	23	61	16	<10	<10
Tin	< 6	< 6	--	--	--	--	--	--	--	--	--	--	--	--	--
Titanium	955	374	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	0.18	0.2	<0.51	<1	<1.2	<1.2	<1.1	<1.2	<1.2	--	<0.95	<0.95	<1	<1	<1
Uranium	0.65	0.52	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	20	19	--	--	--	--	--	--	--	--	--	--	--	--	--
Yttrium	8.76	8.52	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	31	30	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon (%)	3.17	2.84	--	--	--	--	--	--	--	--	--	--	--	--	--
Sulfur	950	60	--	--	26	17	210	1100	200	130	11	22	600	1500	77
Sulfide (%)	0.08	< 0.04	--	--	--	--	--	--	--		--	--	--	--	--
TOC (%)	0.531	0.566	--	--	0.0655	<0.221	1.23	1.43	0.227	0.18	0.0654	1.79	1.28	1.02	0.0796
Cation Exchange Capacity (meq/100g)	--	--	--	--	13.75	4.68	3.91	9.98	19.98	19.81	18.42	3.38	4	9.34	21.02
AVS	0.17	< 0.19	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes
Sample depth is shown in feet below ground surface (ft bgs)
All results shown in mg/kg (milligrams per kilogram) unless otherwise noted
Non-detect values are shown as less than the reporting limit
Dashes indicate sample was not analyzed for analyte
meq/100g - milliequivalents per 100 grams
UA - uppermost aquifer
CCR - coal combustion residuals
UCU - upper confining unit
LCU - lower confining unit
DA - deep aquifer
DCU - deep confining unit
TOC - total organic carbon
AVS - acid volatile sulfide

Table 2. XRD Analysis of Site Solids
Geochemical Conceptual Site Model
Coffeen Power Plant - Gypsum Stack Pond

Field Boring Location			**SB-200**	**SB-215**
Sample Depth (ft bgs)			**(14-15, 15-18)**	**(23-24, 24-24.5)**
Aquifer Unit			**UA**	**UA**
Mineral/compound	**Formula**	**Mineral type**	**(wt %)**	**(wt %)**
Quartz	SiO_2	Silicate	53.1	58.3
Microcline	$KAlSi_3O_8$	Feldspar	6.4	6.2
Albite	$NaAlSi_3O_8$	Feldspar	8.0	9.0
Calcite	$CaCO_3$	Carbonate	3.3	4.5
Dolomite	$CaMg(CO_3)_2$	Carbonate	18.2	12.9
Ankerite	$CaFe(CO3)_2$	Carbonate	5.2	4.3
Diopside	$CaMgSi_2O_6$	Pyroxene	3.8	4.1
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$	Phyllosilicate/clay	2.1	0.8
Clay minerals total			2.1	0.8

Notes
Sample depth is shown in feet below ground surface (ft bgs)
UA - uppermost aquifer
wt % - percentage by weight

Table 3. Eh-pH Diagram Inputs
Geochemical Conceptual Site Model
Coffeen Power Plant - Gypsum Stack Pond

Well ID		**G215**
Sample Date		**6/1/2023**
Aquifer Unit		**UA**
Input Parameter	**Unit**	
Temperature	°C	20.9
pH	SU	7.02
Calcium	mg/L	180
Chloride	mg/L	130
Bicarbonate Alkalinity	mg/L	340
Magnesium	mg/L	88
Sodium	mg/L	96
Potassium	mg/L	4.2
Sulfate	mg/L	540
Total Manganese	mg/L	0.58
Total Iron	mg/L	12

Notes
°C - degrees Celsius
mg/L - milligrams per liter
SU - standard units
UA - uppermost aquifer

Table 4. Total and Dissolved Aqueous Iron and Manganese Results
Geochemical Conceptual Site Model
Coffeen Power Plant - Gypsum Stack Pond

Well ID	Well Characterization	Sampled Aquifer Unit	Sample Date	Dissolved Iron (mg/L)	Total Iron (mg/L)	Dissolved Manganese (mg/L)	Total Manganese (mg/L)
G200	Background	UA	2023/06/07	<0.01	18	0.1	1.2
			2023/11/14	<0.0115	2.49	0.147	0.399
G206	Compliance	UA	2023/06/09	0.84	1.2	0.25	0.16
			2023/08/14	0.285	0.301	0.164	0.169
			2023/11/15	0.309	0.462	0.156	0.23
G206D	Compliance	DA	2023/06/09	3.4	4.5	0.2	0.22
			2023/08/14	3.12	3.38	0.176	0.194
G209	Compliance	UA	2023/06/09	0.88	1.9	0.5	0.85
			2023/08/14	0.798	0.96	0.276	0.272
			2023/11/16	0.704	1.06	0.237	0.282
G212	Compliance	UA	2023/06/07	<0.01	0.076	<0.001	0.0044
			2023/08/10	<0.0115	0.0643	0.0024	0.0077
			2023/11/16	<0.0115	0.0852	0.0024	0.0044
G213	Compliance	UA	2023/06/07	0.021	0.47	0.021	0.046
			2023/08/10	0.022	0.487	0.0059	0.0285
			2023/11/16	<0.0115	0.195	0.0047	0.0089
G215	Compliance	UA	2023/06/01	0.72	12	0.52	0.58
			2023/08/10	0.882	1.88	0.605	0.582
			2023/11/16	0.7	7.62	0.489	0.759
G217	Compliance	UA	2023/06/08	0.27	3.7	0.38	0.8
			2023/08/10	0.32	0.699	0.444	0.438
			2023/11/16	0.256	0.985	0.384	0.41
G218	Compliance	UA	2023/06/01	1	3.2	0.45	0.72
			2023/08/10	0.95	1.86	0.429	0.465
			2023/11/16	0.905	3.36	0.436	0.797
NE Riser	Compliance	GSP Porewater	2023/06/08	0.038	0.046	6.3	6.3
R201	Background	UA	2023/06/07	3.3	5.6	0.24	0.24
			2023/11/14	2.66	5.74	0.378	0.424

Notes
Non-detect values are shown as less than the reporting limit
mg/L - milligrams per liter
UA - uppermost aquifer
DA - deep aquifer

Table 5 - Microcosm Amendment and Target Concentrations
Geochemical Conceptual Site Model
Coffeen Power Plant - Gypsum Stack Pond

Groundwater Sample ID	Soil Sample ID	Compound	Amendment	Target Concentration (mg/L)
G215	SB-215 (19-24.5 ft bgs)	Sulfate	3.41 g of Na_2SO_4	1500

Notes:
ft bgs - feet below ground surface
mg/L - milligrams per liter
Na_2SO_4 - sodium sulfate

Table 6 - Batch Attenuation Testing Results, G215
Geochemical Conceptual Site Model
Coffeen Power Plant - Gypsum Stack Pond

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Soil: Water Ratio	Date	Day	Replicate	Dissolved Sulfate	pH	ORP
							mg/L	SU	mV
G215	--	Groundwater Only Control	--	25-Jan-22	0	G215-1a (SO_4^{2-})	1,589	6.98	83
						G215-2a (SO_4^{2-})	1,826	6.99	79
						Average Concentration (mg/L)	**1,708**	**6.99**	**81**
				7-Feb-22	7	G215-1 (SO_4^{2-})	1,617	6.8	26
						G215-2 (SO_4^{2-})	1,478	6.81	13
						Average Concentration (mg/L)	**1,548**	**6.81**	**20**
	G215 SB-215 Geologic Material	2:1 Soil:Water Ratio	2:1.5	31-Jan-22	0				
				7-Feb-22	7	SB-215-(19-24.5) :G215 2:1-1 (SO_4^{2-})	1,321	6.92	57
						SB-215-(19-24.5) :G215 2:1-2 (SO_4^{2-})	1,302	6.94	103
						Average Concentration (mg/L)	**1,311**	**6.93**	**80**
		1:1 Soil:Water Ratio	1:1.3	31-Jan-22	0				
				7-Feb-22	7	SB-215-(19-24.5) :G215 1:1-1 (SO_4^{2-})	1,727	6.89	85
						SB-215-(19-24.5) :G215 1:1-2 (SO_4^{2-})	860	6.91	91
						Average Concentration (mg/L)	**1,294**	**6.90**	**88**
		1:5 Soil:Water Ratio	1:5.8	31-Jan-22	0				
				7-Feb-22	7	SB-215-(19-24.5) :G215 1:5-1 (SO_4^{2-})	1,326	6.92	29
						SB-215-(19-24.5) :G215 1:5-2 (SO_4^{2-})	1,516	6.87	15
						Average Concentration (mg/L)	**1,421**	**6.90**	**22**
		1:10 Soil:Water Ratio	1:11.5	31-Jan-22	0				
				7-Feb-22	7	SB-215-(19-24.5) :G215 1:10-1 (SO_4^{2-})	1,570	6.87	23
						SB-215-(19-24.5) :G215 1:10-2 (SO_4^{2-})	1,551	6.85	30
						Average Concentration (mg/L)	**1,560**	**6.86**	**27**
		1:20 Soil:Water Ratio	1:27.2	31-Jan-22	0				
				7-Feb-22	7	SB-215-(19-24.5) :G215 1:20-1 (SO_4^{2-})	1,511	6.83	32
						SB-215-(19-24.5) :G215 1:20-2 (SO_4^{2-})	1,588	6.84	79
						Average Concentration (mg/L)	**1,550**	**6.84**	**56**

Notes:
mg/L - milligrams per liter
mV - millivolts
SU - Standard Units
ORP - oxidation/reduction potential

Table 7 - Partition Coefficient Results, G215
Geochemical Conceptual Site Model
Coffeen Power Plant - Gypsum Stack Pond

Analyte	Amendment	Isotherm	Variable	Value
Sulfate	Sodium Sulfate	Linear	R^2	0.0
			K_D (L/kg)	0.10
		Langmuir	R^2	0.66
			q_m (mg/g)	-0.028
			K_L (L/kg)	-8.94E+02
		Freundlich	R^2	--
			1/n	--
			K_F (L/kg)	--

Notes:

The Freundlich isotherm was not calculated for sulfate because the data were not conducive to log transformation

K_D - linear partition coefficient

K_L - Langmuir partition coefficient

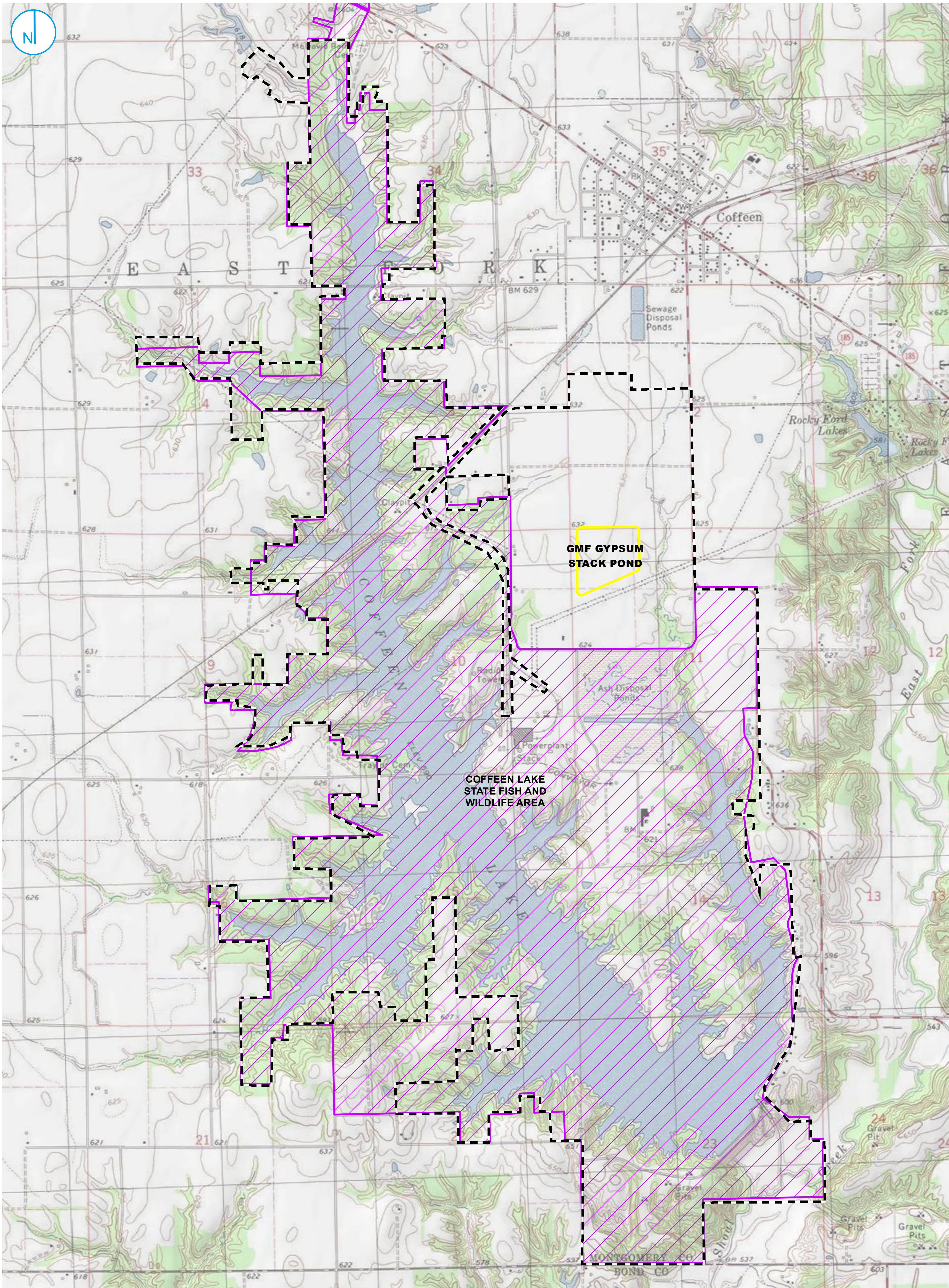
K_F - Freundlich partition coefficient

q_m - inverse of the slope of the linearized Langmuir isotherm

n - non-linearity constant of the Freundlich isotherm

L/kg - liters per kilogram

Attachment A
Site Layout Figure



PART 845 REGULATED UNIT (SUBJECT UNIT)
PROPERTY BOUNDARY
COFFEEN LAKE STATE FISH AND WILDLIFE AREA

0 1,000 2,000 Feet

SITE LOCATION MAP

FIGURE 2-1

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND

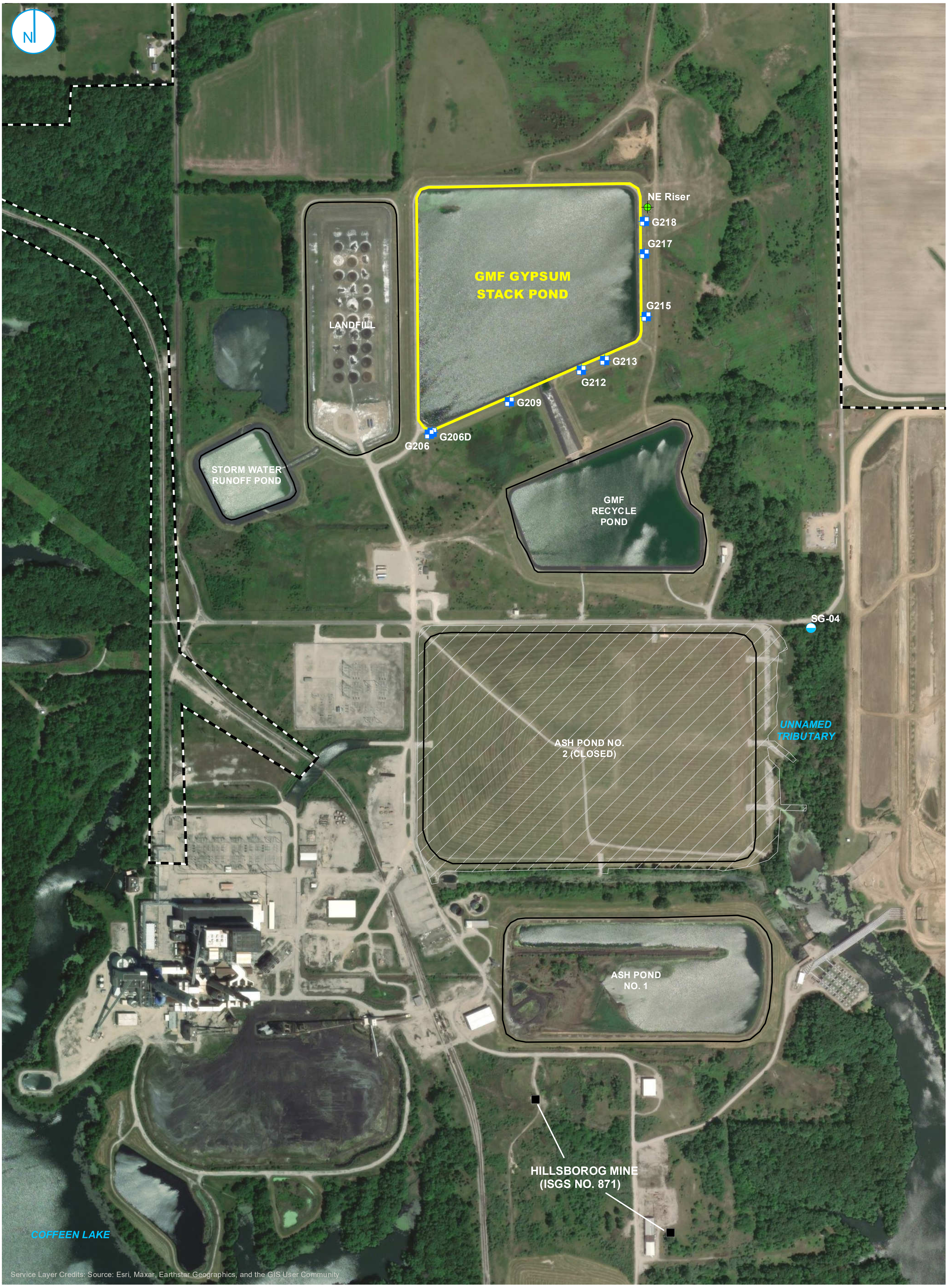
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Attachment B

Proposed Part 845 Groundwater Monitoring Network



COMPLIANCE MONITORING WELL
LEACHATE WELL
STAFF GAGE, RIVER
COAL MINE SHAFT
REGULATED UNIT (SUBJECT UNIT)
SITE FEATURE
LIMITS OF FINAL COVER
PROPERTY BOUNDARY

0 275 550 Feet

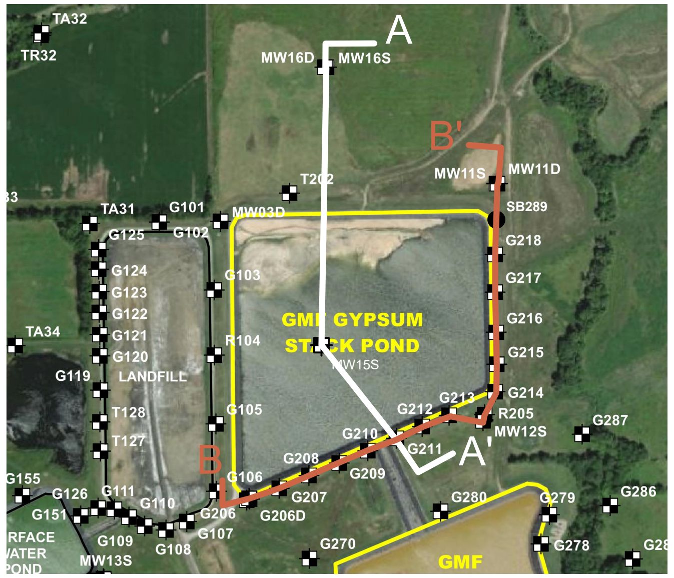
MONITORING WELL LOCATION MAP

FIGURE 2-2

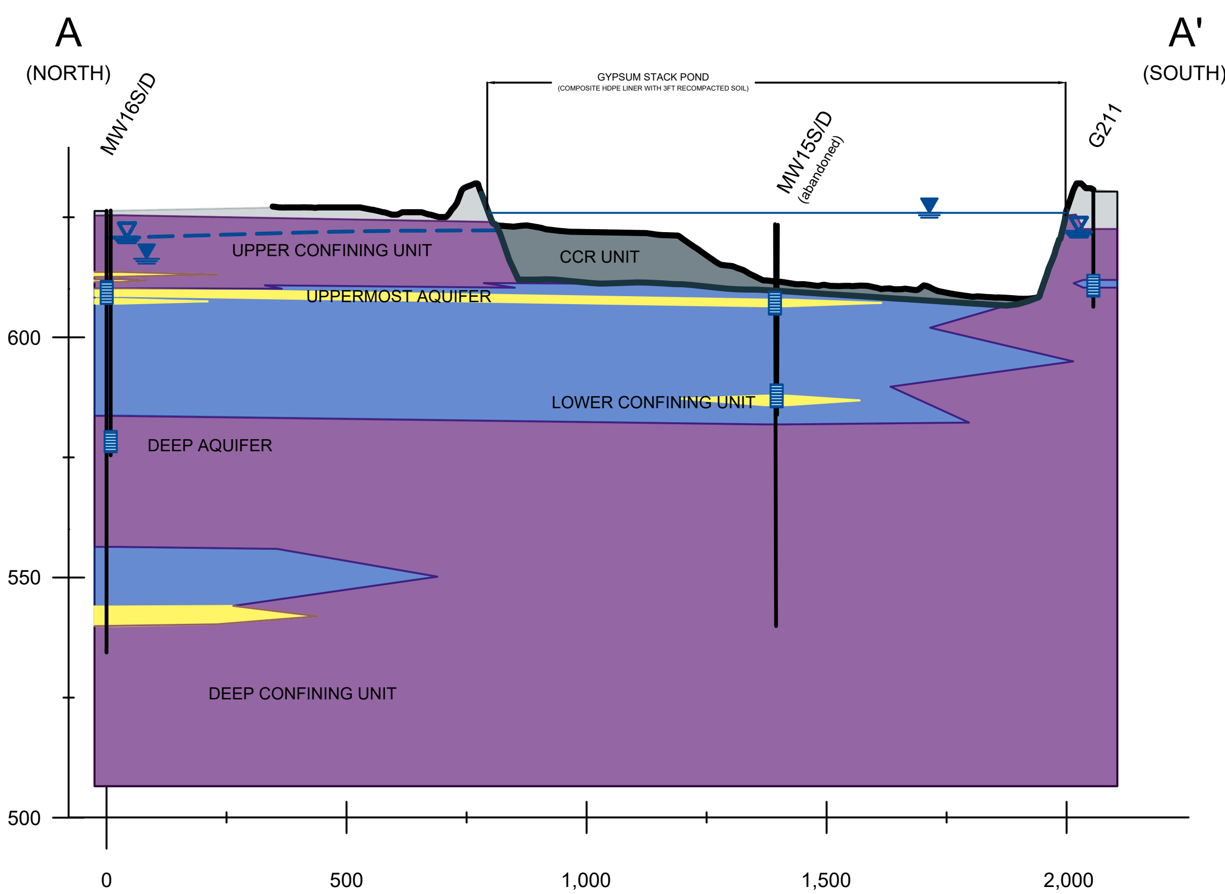
NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

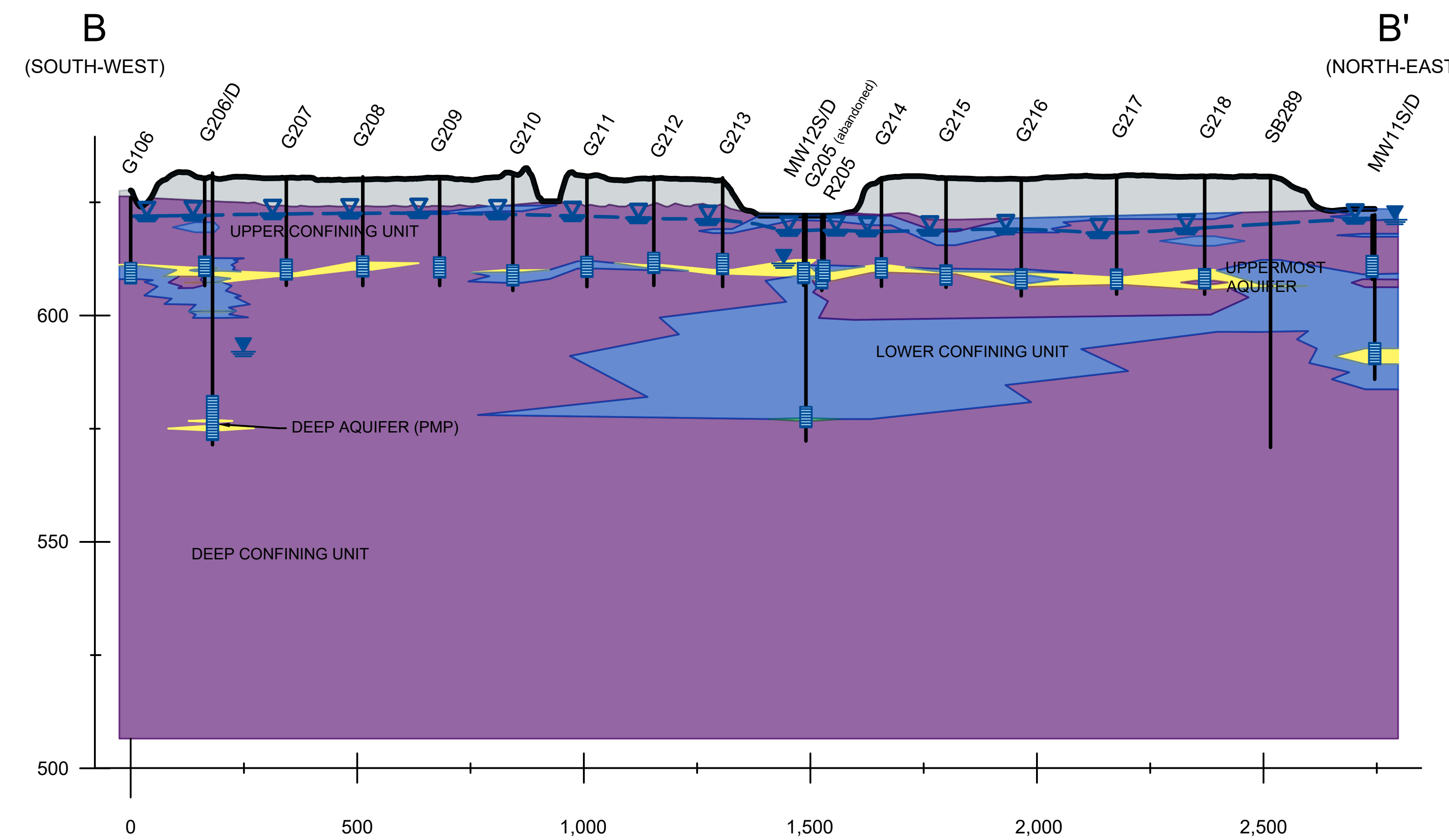
RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL



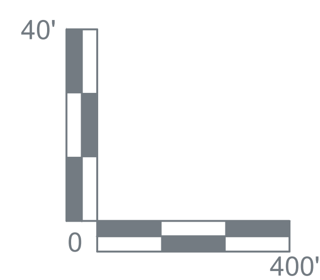
NOTES
1. This profile was developed by interpolation between widely spaced boreholes. Only at the borehole location should it be considered as an approximately accurate representation and then only to the degree implied by the notes on the borehole logs.
2. Scale is approximate.
3. Vertical scale is exaggerated 10X.
4. Groundwater elevations measured on July 26, 2021.





LEGEND

- COAL COMBUSTION RESIDUALS (CCR)
- FILL
- CLAY (CL/CH)
- SILT (ML)
- SAND (SP/SM/SW)
- PEAT
- WELL SCREEN INTERVAL
- UPPERMOST AQUIFER POTENTIOMETRIC SURFACE
- UPPERMOST AQUIFER GROUNDWATER ELEVATION
- BEDROCK GROUNDWATER / OTHER GROUNDWATER / SURFACE WATER ELEVATION(S)
- SURFACE WATER



GEOLOGIC CROSS SECTIONS
A-A' & B-B'

NATURE AND EXTENT REPORT
GMF GYPSUM STACK POND
COFFEEN POWER PLANT
COFFEEN, ILLINOIS

FIGURE 2-7

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.

RAMBOLL

Attachment C

Monitoring Well Construction Information

Attachment C. Monitoring Well Construction Information
Geochemical Conceptual Site Model
Coffeen GMF Gypsum Stack Pond
Coffeen Power Plant
Coffeen, IL

Location	HSU	Date Constructed	Top of PVC Elevation (ft)	Measuring Point Elevation (ft)	Measuring Point Description	Ground Elevation (ft)	Screen Top Depth (ft bgs)	Screen Bottom Depth (ft bgs)	Screen Top Elevation (ft)	Screen Bottom Elevation (ft)	Well Depth (ft bgs)	Bottom of Boring Elevation (ft)	Screen Length (ft)	Screen Diameter (inches)	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
G200	UA	2008-02-25	--	625.71	Top of Disk	623.27	12.19	16.98	611.08	606.29	17.36	605.30	4.8	2	39.0751386	-89.3950088
G206	UA	2010-10-14	--	632.73	Top of Disk	630.53	17.51	21.92	613.02	608.61	22.42	606.50	4.4	2	39.0673987	-89.3985475
G206D	DA	2021-01-25	634.14	633.85	Top of PVC	631.41	49.2	59	582.21	572.41	59.39	571.41	9.8	2	39.067428	-89.398493
G209	UA	2010-10-07	--	632.68	Top of Disk	630.57	17.74	22.28	612.83	608.29	22.81	606.60	4.5	2	39.0679228	-89.3968503
G212	UA	2010-10-11	--	632.77	Top of Disk	630.59	16.74	21.29	613.85	609.30	21.81	606.60	4.6	2	39.0684296	-89.395318
G213	UA	2010-10-12	--	632.80	Top of Disk	630.34	16.75	21.29	613.59	609.05	21.82	606.30	4.5	2	39.0685852	-89.3948216
G215	UA	2010-10-13	--	632.96	Top of Disk	630.48	19.41	23.8	611.07	606.68	24.31	606.20	4.4	2	39.0693092	-89.39394
G217	UA	2010-10-12	--	633.04	Top of Disk	630.67	20.49	24.88	610.18	605.79	25.38	604.70	4.4	2	39.07034	-89.3939589
G218	UA	2010-10-12	--	632.91	Top of Disk	630.64	20.33	24.77	610.31	605.87	25.27	604.60	4.4	2	39.0708763	-89.393956
R201	UA	2010-10-08	--	626.12	Top of Disk	624.02	14.59	19.32	609.43	604.70	19.85	604.20	4.7	2	39.0751423	-89.3978553
NE Riser	S	--	--	--	--	--	--	--	--	--	--	--	--	--	39.07111111	-89.39388889

Notes:
All elevation data are presented relative to the North American Vertical Datum 1988 (NAVD88), GEOID 12A
bgs = below ground surface
ft = foot or feet
HSU = Hydrostratigraphic Unit
UA = Uppermost Aquifer
S = Source Water
DA = Deep Aquifer
PVC = polyvinyl chloride

Attachment D
Boring Logs

FIELD BORING LOG

HANSON

CLIENT: AEG Coffeen Power Station
Site: CCB Management Facility
Location: Coffeen, Illinois
Project: 05S3004A
DATES: Start: 2/25/2008
Finish: 2/25/2008
WEATHER: Overcast, cold

CONTRACTOR: Testing Service Corp.
Rig mfg/model: CME-650 Track Drill
Drilling Method: 3¼" HSA w/SS & CME samplers
FIELD STAFF: Driller: B. Williamson
Helper: R. Keedy
Eng/Geo: .

BOREHOLE ID: G200
Well ID: G200
Surface Elev: 624.20 ft. MSL
Completion: 18.00 ft. BGS
Station: 877,930.59N
2,515,649.96E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork
Section 2, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▼ = 13.50 - While drilling
▼ = 2.75 - 3/12/08
▽ =

SAMPLE / TESTING

Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Moisture (%)	Dry Den. (lb/ft³)	Qu (tsf) *Qp (tsf)* Failure Type
	24/24 *100%*	SS	*3-2 3-3* N=5			
1A				31		1.36 B
2A				26		1.94 BSh
	19/24 *79%*	SS	*3-3 6-6* N=9			
2B				26		2.33 Sh
3A	19/24 *79%*	SS	*3-3 4-5* N=7	26		1.59 B
3B				23		1.55 B
4A	22/24 *92%*	SS	*5-5 5-5* N=10	29		0.31 B
5A	20/24 *83%*	SS	*2-2 3-5* N=5	25		1.09 B
	22/24 *92%*	SS	*1-3 2-3* N=5			
6A				22		1.01
	24/24 *100%*	SS	*3-3 5-6* N=8			
7A				15		0.50 B
7B				18		
8A				24		0.27 B
	19/24 *79%*	SS	*0-3 5-8* N=8			
8B				17		
9A				13		
	24/24 *100%*	SS	*8-15 30-50* N=45			
9B				8		

Lithologic Description
Very dark grayish brown (10YR3/2), moist, firm, friable, clayey SILT
Dark gray (10YR4/1) with 5% yellowish brown (10YR5/6) mottles, moist, firm, silty CLAY
Dark gray (10YR4/1) with 70% yellowish brown (10YR5/8) mottles, moist, firm, silty CLAY
Dark gray (10YR4/1) with 70% yellowish brown (10YR5/8) mottles, moist, firm, silty CLAY, slight trace sand
Very dark gray (10YR3/1), moist, firm, silty CLAY, slight trace sand
Dark gray (10YR4/1) with 10% yellowish brown (10YR5/8) mottles, moist, firm, silty CLAY, trace coarse sand
Dark gray (10YR4/1) with 10% yellowish brown (10YR5/8) mottles, moist, firm, silty CLAY, sand and slight trace gravel
Yellowish brown (10YR5/8), moist, soft, sandy CLAY
Gray (10YR5/1), wet, soft, fine- to coarse-grained SAND
Gray (10YR5/1), wet, soft, silty CLAY, trace sand and gravel
Yellowish brown (10YR5/4), wet, soft, fine- to coarse-grained SAND, trace gravel
Gray (10YR5/1), moist, hard, silty CLAY, trace sand and gravel

End of Boring = 18.0 ft. BGS

NOTE(S):

FIELD BORING LOG

HANSON

CLIENT: AEG Coffeen Power Station
Site: CCB Management Facility
Location: Coffeen, Illinois
Project: 05S3004A
DATES: Start: 10/14/2010
Finish: 10/14/2010
WEATHER: Sunny, warm, breezy (lo-70's)

CONTRACTOR: Layne-Western Co
Rig mfg/model: CME-750 ATV Drill
Drilling Method: 4¼" HSA w/SS samplers
FIELD STAFF: Driller: D. Mahurin
Helper: J. Litsch/D. Smail
Eng/Geo: .

BOREHOLE ID: G206
Well ID: G206
Surface Elev: 630.54 ft. MSL
Completion: 24.00 ft. BGS
Station: 875,103.91N
2,514,669.16E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▼ = 22.00 - While drilling
▼ = 21.54 - Upon completion
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Moisture (%)	Dry Den. (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Elevation ft. MSL	Remarks
1A	12/24 *50%*	SS	*2-2 3-2* N=5	18			0–3.2	FILL - Grayish brown (10YR5/2), moist, firm, silty CLAY with trace sand and gravel.	630	
2A	20/24 *83%*	SS	*2-2 3-5* N=5	16					628	
3A	20/24 *83%*	SS	*4-9 6-8* N=15	19			3.2–8	FILL - Dark gray (10YR4/1) with 30% dark yellowish brown (10YR4/6) mottles, moist, firm, silty CLAY with trace sand and gravel.	626	
4A	19/24 *79%*	SS	*2-4 5-6* N=9	20					624	
5A	17/24 *71%*	SS	*2-3 4-5* N=7	30			8	Very dark gray (10YR3/1) with 20% dark yellowish brown (10YR4/6) mottles, moist, firm, silty CLAY with trace sand, trace roots.	622	
								Dark grayish brown (10YR4/2) with 35% dark yellowish brown (10YR4/6) mottles, moist, firm, silty CLAY with trace sand.		
6A	22/24 *92%*	SS	*2-3 4-6* N=7	19			10	Gray (10YR5/1) with 20% dark yellowish brown (10YR4/6) mottles, moist, firm, clayey SILT with trace sand and gravel.	620	
7A	23/24 *96%*	SS	*1-2 3-4* N=5	23			12	Gray (10YR5/1) with 15% dark yellowish brown (10YR4/6) mottles, moist, firm, silty CLAY with trace sand and gravel.	618	
8A	22/24 *92%*	SS	*1-1 3-3* N=4	22			14	Gray (10YR5/1) with 15% dark yellowish brown (10YR4/6) mottles, moist, soft, silty CLAY with trace sand and gravel.	616	
9A	24/24 *100%*	SS	*1-1 2-2* N=3	21			16	Dark yellowish brown (10YR4/6) with 30% gray (10YR5/1) mottles, moist, soft, silty CLAY with trace sand and gravel.	614	
								Gray (10YR5/1) with 15% dark yellowish brown (10YR4/6) mottles, moist, soft, silty CLAY with trace sand and gravel.		
10A	24/24 *100%*	SS	*woh-woh 1-5*	25			18	Gray (10YR5/1) with 15% dark yellowish brown (10YR4/6) mottles, moist, very soft, silty CLAY with trace sand and gravel.	612	
								Gray (10YR5/1), moist, very soft, very fine- to fine-grained sandy CLAY with trace gravel.		
							20	Gray (10YR5/1), moist, firm, very fine- to fine-grained		

NOTE(S): G206 installed in borehole.

FIELD BORING LOG

HANSON

CLIENT: AEG Coffeen Power Station
Site: CCB Management Facility
Location: Coffeen, Illinois
Project: 05S3004A
DATES: Start: 10/14/2010
Finish: 10/14/2010
WEATHER: Sunny, warm, breezy (lo-70's)

CONTRACTOR: Layne-Western Co
Rig mfg/model: CME-750 ATV Drill
Drilling Method: 4¼" HSA w/SS samplers
FIELD STAFF: Driller: D. Mahurin
Helper: J. Litsch/D. Smail
Eng/Geo: .

BOREHOLE ID: G206
Well ID: G206
Surface Elev: 630.54 ft. MSL
Completion: 24.00 ft. BGS
Station: 875,103.91N
2,514,669.16E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▼ = 22.00 - While drilling
▼ = 21.54 - Upon completion
▽ =

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Moisture (%)	Dry Den. (lb/ft³)	Qu (tsf) *Qp (tsf)* Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
								sandy CLAY with trace gravel.			
11A	22/24 *92%*	SS	*19-6 13-19* N=19	13				Dark yellowish brown (10YR4/6), wet dense, silty, fine- to coarse-grained SAND with trace gravel.		610	
11B				16				Dark yellowish brown (10YR4/6), moist, hard, clayey SILT with sand and gravel.			
							22	Grayish brown (10YR5/2), moist, dense, silty, very fine- to fine-grained SAND.			
12A	20/24 *83%*	SS	*11-20 19-13* N=39	10				Dark gray (10YR4/1), slightly moist, hard, very silty CLAY with sand and gravel.		608	
12B				10				Dark gray (10YR4/1), wet, dense, silty, fine- to coarse-grained SAND with gravel.			
							24	Dark gray (10YR4/1), slightly moist, hard, very silty CLAY with sand and gravel.			

End of Boring = 24.0 ft. BGS

NOTE(S): G206 installed in borehole.

Installed near G206.
Re-identified as G206D.

FIELD BORING LOG

CLIENT: Illinois Power Generating Co.
Site: Coffeen Part 845 Groundwater
Location: Coffeen, Illinois
Project: 20E0111A
DATES: Start: 1/25/2021
Finish: 1/25/2021
WEATHER: Rain, cold (30s)

CONTRACTOR: Roberts
Rig mfg/model: CME-75 Track Rig
Drilling Method: 4.25" HSA w/SS sampler

FIELD STAFF: Driller: Matt
Helper: Corey
Eng/Geo: C. Colin Winter

HANSON

BOREHOLE ID: G206D
Well ID: G206D
Surface Elev: ft. MSL
Completion: 60.00 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork Township
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▽ = 18.80 - During Drilling
▼ = 55.90 - During Drilling
▼ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
1A	15/24 63%	SS	3-3 3-4 N=6				0–0.7	Gray (10YR6/1), wet, loose, GRAVEL, with some sand. [FILL]			
							0.7–2	Brown (10YR5/3), moist, stiff, lean CLAY, with some silt, trace very fine- to fine-grained sand. [FILL]			
2A	17/24 71%	SS	3-4 4-5 N=8				2–4.9	Yellowish brown (10YR5/4) with 10% gray (10YR6/1) mottles, moist, stiff, lean CLAY, with some silt, trace very fine- to fine-grained sand and small gravel. [FILL]			
3A	22/24 92%	SS	2-3 5-6 N=8				4.9–6.5	Grayish brown (10YR5/2), moist, stiff, lean CLAY, with some silt, trace small gravel.			
4A	20/24 83%	SS	3-4 4-5 N=8				6.5–8	Grayish brown (10YR5/2) with 10% yellowish brown (10YR5/4) mottles, moist, stiff, lean CLAY, with some silt, trace small gravel.			
5A	22/24 92%	SS	2-3 5-7 N=8				8–10.3	Grayish brown (10YR5/2) with 10% yellowish brown (10YR5/4) and 5% gray (10YR5/1) mottles, moist, stiff, lean CLAY, with some silt, trace small gravel.			
6A	20/24 83%	SS	3-4 4-7 N=8				10.3–12.4	Grayish brown (10YR5/2) with 20% yellowish brown (10YR5/4) and 5% gray (10YR5/1) mottles, moist, stiff, lean CLAY, with some silt, trace small gravel.			
7A	20/24 83%	SS	2-3 4-5 N=7				12.4–14.5	Gray (10YR6/1) with 20% yellowish brown (10YR5/6) mottles, moist, stiff, lean CLAY, with some silt, little very fine- to fine-grained sand, trace small gravel.			
8A	20/24 83%	SS	1-2 3-4 N=5				14.5–14.8	Dark gray (10YR4/1), moist, stiff, lean CLAY, with some silt.			
							14.8–16.5	Gray (10YR6/1) with 20% yellowish brown (10YR5/6) mottles, moist, stiff, lean CLAY, with some silt, little very fine- to fine-grained sand, trace small gravel.			
9A	21/24 88%	SS	1-2 2-3 N=4				16.5–18.8	Gray (10YR6/1) with 30% yellowish brown (10YR5/6) mottles, moist, stiff, lean CLAY, with some silt, little very fine- to fine-grained sand, trace small gravel.			
10A											
10B	24/24 100%	SS	0-1 1-0 N=2				18.8–20 ▽	Yellowish brown (10YR5/6) with 10% gray (10YR6/1) mottles, wet, very loose, SILT, with some very fine- to fine-grained sand, few small gravel, trace clay.			

NOTE(S): G282D installed in borehole.

FIELD BORING LOG

HANSON

CLIENT: Illinois Power Generating Co.
Site: Coffeen Part 845 Groundwater
Location: Coffeen, Illinois
Project: 20E0111A
DATES: Start: 1/25/2021
Finish: 1/25/2021
WEATHER: Rain, cold (30s)

CONTRACTOR: Roberts
Rig mfg/model: CME-75 Track Rig
Drilling Method: 4.25" HSA w/SS sampler

FIELD STAFF: Driller: Matt
Helper: Corey
Eng/Geo: C. Colin Winter

BOREHOLE ID: G206D
Well ID: G206D
Surface Elev: ft. MSL
Completion: 60.00 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork Township
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▽ = 18.80 - During Drilling
▼ = 55.90 - During Drilling
▼ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value **RQD**	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type
11A	24/24 100%	SS	3-7 11-16 N=18			
12A	24/24 100%	SS	7-12 17-24 N=29			
13A	24/24 100%	SS	9-15 22-22 N=37			
14A	22/24 92%	SS	8-17 16-22 N=33			
15A	21/24 88%	SS	5-11 15-19 N=26			
16A	22/22 100%	SS	5-25 33-50/4" N=58			
17A	22/24 92%	SS	7-10 15-20 N=25			
18A	24/24 100%	SS	4-8 10-16 N=18			
19A	24/24 100%	SS	5-8 13-15 N=21			
20A	21/24 88%	SS	2-4 8-11 N=12			

Depth ft. BGS | Lithologic Description | Borehole Detail | Elevation ft. MSL | Remarks

Yellowish brown (10YR5/4) with 20% yellowish brown (10YR5/6) and 5% yellowish red (5YR4/6) mottles, moist, hard, SILT, with some very fine- to fine-grained sand, little clay, few small gravel.

Yellowish brown (10YR5/4), wet, fine- to medium-grained SAND.

22

Yellowish brown (10YR5/4) with 20% yellowish brown (10YR5/6) and 5% yellowish red (5YR4/6) mottles, moist, hard, SILT, with some very fine- to fine-grained sand, little clay, few small gravel, trace medium gravel.

24

26

Dark gray (10YR4/1), moist, hard, SILT, with some very fine- to fine-grained sand, little clay, few small gravel, trace medium gravel.

28

30

Dark gray (10YR4/1), moist, SAND, little silt and clay.

Dark gray (10YR4/1), moist, hard, SILT, with some very fine- to fine-grained sand, little clay, few small gravel, trace medium gravel.

32

34

36

Dark gray (10YR4/1), moist, hard, lean CLAY, with some silt, few very fine- to fine-grained sand, little small gravel.

38

40

NOTE(S): G282D installed in borehole.

FIELD BORING LOG

HANSON

CLIENT: Illinois Power Generating Co.
Site: Coffeen Part 845 Groundwater
Location: Coffeen, Illinois
Project: 20E0111A
DATES: Start: 1/25/2021
Finish: 1/25/2021
WEATHER: Rain, cold (30s)

CONTRACTOR: Roberts
Rig mfg/model: CME-75 Track Rig
Drilling Method: 4.25" HSA w/SS sampler
FIELD STAFF: Driller: Matt
Helper: Corey
Eng/Geo: C. Colin Winter

BOREHOLE ID: G206D
Well ID: G206D
Surface Elev: ft. MSL
Completion: 60.00 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork Township
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▽ = 18.80 - During Drilling
▼ = 55.90 - During Drilling
▼ =

Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft³)	Qu (tsf) Qp (tsf) Failure Type
21A	24/24 100%	SS	4-8 11-14 N=19			
22A	22/24 92%	SS	3-7 8-12 N=15			
23A	24/24 100%	SS	3-6 9-13 N=15			
24A	24/24 100%	SS	4-6 9-12 N=15			
25A	24/24 100%	SS	4-6 12-13 N=18			
26A	24/24 100%	SS	2-7 9-13 N=16			
27A	24/24 100%	SS	4-7 11-14 N=18			
28A / 28B	24/24 100%	SS	6-12 9-18 N=21			
29A	24/24 100%	SS	6-10 11-11 N=21			
30A	24/24 100%	SS	4-5 8-9 N=13			

Depth ft. BGS	Lithologic Description	Elevation ft. MSL	Remarks
40–54.6	Dark gray (10YR4/1), moist, hard, lean CLAY, with some silt, few very fine- to fine-grained sand, little small gravel. *[Continued from previous page]*		Trace wood fragments below 45.7 ft. 0.5" gravel seam at 48.5 ft.
54.6–55.1	Light yellowish brown (10YR6/5), moist, very fine- to medium-grained SAND, with some silt, little small to medium gravel.		
55.1–56.1	Dark gray (10YR4/1), moist, hard, lean CLAY, with some silt, few very fine- to fine-grained sand, little small gravel, trace wood fragments.		
56.1–57.0	Light yellowish brown (10YR6/5), wet, medium dense, very fine- to coarse-grained SAND, little small gravel, few silt.		
57.0–60	Dark gray (10YR4/1) with 5% dark yellowish brown (10YR3/6) mottles, moist, stiff, lean CLAY, with some silt.		

NOTE(S): G282D installed in borehole.

FIELD BORING LOG

HANSON

CLIENT: Illinois Power Generating Co.
Site: Coffeen Part 845 Groundwater
Location: Coffeen, Illinois
Project: 20E0111A
DATES: Start: 1/25/2021
Finish: 1/25/2021
WEATHER: Rain, cold (30s)

CONTRACTOR: Roberts
Rig mfg/model: CME-75 Track Rig
Drilling Method: 4.25" HSA w/SS sampler
FIELD STAFF: Driller: Matt
Helper: Corey
Eng/Geo: C. Colin Winter

BOREHOLE ID: G206D
Well ID: G206D
Surface Elev: ft. MSL
Completion: 60.00 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork Township
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▽ = 18.80 - During Drilling
▼ = 55.90 - During Drilling
▼ =

SAMPLE			TESTING								
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp* (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
								End of boring = 60.0 feet			

NOTE(S): G282D installed in borehole.

FIELD BORING LOG

HANSON

CLIENT: AEG Coffeen Power Station
Site: CCB Management Facility
Location: Coffeen, Illinois
Project: 05S3004A
DATES: Start: 10/13/2010
Finish: 10/13/2010
WEATHER: Sunny, warm, windy (hi-60's)

CONTRACTOR: Layne-Western Co
Rig mfg/model: CME-750 ATV Drill
Drilling Method: 4¼" HSA w/SS samplers
FIELD STAFF: Driller: D. Mahurin
Helper: J. Litsch/D. Smail
Eng/Geo: .

BOREHOLE ID: G215
Well ID: G215
Surface Elev: 630.48 ft. MSL
Completion: 24.31 ft. BGS
Station: 875,810.19N
2,515,971.55E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▼ = Dry - While drilling
▼ = Dry - Upon completion
▽ = 22.52 - 10/14/10

SAMPLE Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Moisture (%)	Dry Den. (lb/ft³)	Qu (tsf) *Qp* (tsf) Failure Type
1A	23/24 *96%*	SS	*5-3 3-5* N=6	18		
2A	19/24 *79%*	SS	*3-3 5-6* N=8	17		
3A	20/24 *83%*	SS	*2-3 7-7* N=10	13		
4A	23/24 *96%*	SS	*3-6 6-7* N=12	16		
4B				27		
5A	20/24 *83%*	SS	*3-3 3-5* N=6	20		
6A	13/24 *54%*	SS	*2-2 3-5* N=5	24		
7A	19/24 *79%*	SS	*2-3 4-6* N=7	17		
8A	20/24 *83%*	SS	*2-3 4-5* N=7	19		
9A	22/24 *92%*	SS	*1-3 3-4* N=6	19		
10A	24/24 *100%*	SS	*woh-1 2-2* N=3	17		

Depth ft. BGS	Lithologic Description
0–6	FILL - Brown (10YR4/3) with 30% dark gray (10YR4/1) and 10% dark yellowish brown (10YR4/6) mottles, moist, firm, silty CLAY with trace sand and gravel.
6–7.5	FILL - Dark grayish brown (10YR4/2), moist, firm, silty CLAY with trace sand and gravel.
7.5–8.4	FILL - Gray (10YR5/1) with 15% dark yellowish brown (10YR4/6) mottles, moist, firm, silty CLAY with trace sand.
8.4–9	Very dark gray (10YR3/1), moist, firm, silty CLAY with trace sand, trace roots.
9–12	Dark gray (10YR4/1) with 30% dark yellowish brown (10YR4/6) moist, firm, silty CLAY with trace sand.
12–13.3	Gray (10YR5/1) with 30% dark yellowish brown (10YR4/6) mottles, moist, firm, clayey SILT with trace sand.
13.3–15	Dark gray (10YR4/1), moist, firm, clayey SILT with trace sand.
15–18.6	Dark gray (10YR4/1) with 30% Dark yellowish brown (10YR4/6) mottles, moist, firm, silty CLAY with trace sand and gravel.
18.6–20	Dark gray (10YR4/1) with 30% Dark yellowish brown (10YR4/6) mottles, moist, soft, sandy CLAY with trace gravel.

Borehole Detail | Elevation ft. MSL: 630, 628, 626, 624, 622, 620, 618, 616, 614, 612 | Remarks

NOTE(S): G215 installed in borehole.

FIELD BORING LOG

HANSON

CLIENT: AEG Coffeen Power Station
Site: CCB Management Facility
Location: Coffeen, Illinois
Project: 05S3004A
DATES: Start: 10/13/2010
Finish: 10/13/2010
WEATHER: Sunny, warm, windy (hi-60's)

CONTRACTOR: Layne-Western Co
Rig mfg/model: CME-750 ATV Drill
Drilling Method: 4¼" HSA w/SS samplers
FIELD STAFF: Driller: D. Mahurin
Helper: J. Litsch/D. Smail
Eng/Geo: .

BOREHOLE ID: G215
Well ID: G215
Surface Elev: 630.48 ft. MSL
Completion: 24.31 ft. BGS
Station: 875,810.19N
2,515,971.55E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▼ = Dry - While drilling
▼ = Dry - Upon completion
▽ = 22.52 - 10/14/10

SAMPLE: Number	Recov / Total (in) / *% Recovery*	Type	TESTING: *Blows / 6 in* / N - Value / **RQD**	Moisture (%)	Dry Den. (lb/ft^3)	Qu (tsf) *Qp* (tsf) / Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
11A	20/24 *83%*	SS	*2-4 4-4* N=8	17				Dark yellowish brown (10YR4/6), moist, medium dense, clayey SILT with sand and trace gravel.		610	
								Yellowish brown (10YR5/6), moist, medium dense, silty, very fine- to fine-grained SAND.			
							22	Dark yellowish brown (10YR4/6) with 30% dark gray (10YR4/1) mottles, moist, firm, sandy CLAY with trace gravel.			
12A	24/24 *100%*	SS	*7-11 17-19* N=28	11			▽	Grayish brown (10YR5/2), slightly moist, very firm, very silty CLAY with sand and gravel.		608	
12B	0/4 *0%*	BD		9			24	Dark gray (10YR4/1), slightly moist, hard, very silty CLAY with sand and gravel.			

End of Boring = 24.3 ft. BGS

NOTE(S): G215 installed in borehole.

FIELD BORING LOG

HANSON

CLIENT: Illinois Power Generating Co.
Site: Coffeen Part 845 Groundwater
Location: Coffeen, Illinois
Project: 20E0111A
DATES: Start: 1/26/2021
Finish: 1/27/2021
WEATHER: Overcast, cold (30s)

CONTRACTOR: Roberts
Rig mfg/model: GeoProbe 8040DT
Drilling Method: 4.25" HSA w/SS sampler
FIELD STAFF: Driller: Matt
Helper: Corey
Eng/Geo: C. Colin Winter

BOREHOLE ID: G289
Well ID: n/a
Surface Elev: ft. MSL
Completion: 60.0 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork Township
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▽ = 18.60 - During Drilling
▼ = 8.00 - 1/27/2021 8am
▼ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	TESTING Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
1A	17/24 71%	SS	2-2 4-4 N=6				0–2.3	Brown (10YR4/3) with 10% gray (10YR6/1) and 10% yellowish brown (10YR5/6) mottles, moist, stiff, SILT, with some clay, trace very fine- to fine-grained sand.			
2A	19/24 79%	SS	3-5 6-8 N=11				2.3–5.5	Dark gray (10YR4/1) with 20% yellowish brown (10YR5/6) mottles, moist, stiff, lean CLAY, with some silt, few very fine- to fine-grained sand, trace small gravel.			
3A	19/24 79%	SS	3-4 4-10 N=8								
4A	21/24 88%	SS	2-2 4-6 N=6				5.5–7	Dark gray (10YR4/1) with 20% yellowish brown (10YR5/6) mottles, moist, stiff, lean CLAY, with some silt, little very fine- to fine-grained sand, trace small gravel.			
							7–7.3	Dark gray (10YR4/1), SILT, with some clay.			
5A	18/24 75%	SH					7.3–10 (▼ 8)	Dark gray (10YR4/1) with 20% yellowish brown (10YR5/6) and 5% very pale brown (10YR7/3) mottles, moist, stiff, lean CLAY, with some silt, little very fine- to fine-grained sand, trace small gravel.			
6A	22/24 92%	SS	3-4 4-6 N=8				10–11.2	Dark grayish brown (10YR4/3), moist, stiff, lean CLAY, with some silt.			
6B							11.2–12.3	Gray (10YR6/1) with 20% dark grayish brown (10YR4/2) and 10% yellowish brown (10YR5/6) mottles, moist, stiff, lean CLAY, with some silt, few very fine- to fine-grained sand, trace small gravel.			
7A	19/24 79%	SS	3-4 6-6 N=10				12.3–14	Gray (10YR6/1) with 30% dark yellowish brown (10YR4/6) and 20% dark grayish brown (10YR4/2) mottles, moist, stiff, lean CLAY, with some silt, few very fine- to fine-grained sand, trace small gravel.			
8A	22/24 92%	SS	3-4 5-6 N=9				14–16	Very dark gray (10YR3/1), moist, stiff, lean CLAY, with some silt, few very fine- to fine-grained sand, trace small gravel.			
9A	24/24 100%	SS	2-3 4-4 N=7				16–18.6	Gray (10YR6/1) with 10% yellowish brown (10YR5/6) mottles, moist, medium stiff, lean CLAY, with some silt and very fine- to fine-grained sand, few small gravel.			
10A	24/24 100%	SS	2-2 1-2 N=3				18.6–19.3 (▽ 18.6)	Gray (10YR6/1) with 10% yellowish brown (10YR5/6) mottles, moist to wet, SILT, with some very fine- to fine-grained sand and clay, few small gravel.			
10B							19.3–20	Strong brown (7.5YR5/8), moist to wet, SILT, with some very			

NOTE(S):

FIELD BORING LOG

HANSON

CLIENT: Illinois Power Generating Co.
Site: Coffeen Part 845 Groundwater
Location: Coffeen, Illinois
Project: 20E0111A
DATES: Start: 1/26/2021
Finish: 1/27/2021
WEATHER: Overcast, cold (30s)

CONTRACTOR: Roberts
Rig mfg/model: GeoProbe 8040DT
Drilling Method: 4.25" HSA w/SS sampler
FIELD STAFF: Driller: Matt
Helper: Corey
Eng/Geo: C. Colin Winter

BOREHOLE ID: G289
Well ID: n/a
Surface Elev: ft. MSL
Completion: 60.0 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork Township
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▽ = 18.60 - During Drilling
▼ = 8.00 - 1/27/2021 8am
▼ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value RQD	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
								fine- to fine-grained sand and clay, few small gravel.			
11A	22/24 92%	SS	2-2 4-7 N=6					Strong brown (7.5YR5/8) with 20% gray (10YR6/1) mottles, moist to wet, SILT, with some very fine- to fine-grained sand and clay, few small gravel.			1" wet, fine- to coarse-grained SAND, with little small gravel.
							22	Gray (10YR6/1), moist, hard, SILT, with some very fine- to fine-grained sand, little clay, few small gravel.			
12A	21/24 88%	SS	6-20 17-26 N=37					Gray (10YR6/1), wet, SILT, with some sand, little small to medium gravel.			
								Gray (10YR6/1), moist, hard, SILT, with some very fine- to fine-grained sand, little clay, few small gravel.			
13A							24	Gray (10YR6/1), wet, loose, very fine- to medium-grained SAND, with some silt, little small to medium gravel.			
13B	23/24 96%	SS	4-23 32-41 N=55								
							26				
14A	22/24 92%	SS	23-25 24-27 N=49								Trace large gravel from 27 to 28 ft.
							28				
15A	23/23 100%	SS	14-22 32-50/5" N=54					Gray (10YR6/1), moist, hard, SILT, with some very fine- to fine-grained sand, little clay, few small gravel.			
							30				
16A	14/17 82%	SS	4-6 50/5"								Trace large gravel from 31 to 31.5 ft.
							32				
17A	11/11 100%	SS	27-50/5"								
							34				
18A	19/24 79%	SS	20-17 15-19 N=32								
							36				
19A	24/24 100%	SS	7-14 16-16 N=30					Dark gray (10YR4/1), moist, hard, lean CLAY, with some silt, few very fine- to fine- grained sand, few small gravel.			
							38				
20A	24/24 100%	SS	7-12 15-18 N=27								
							40				

NOTE(S):

FIELD BORING LOG

HANSON

CLIENT: Illinois Power Generating Co.
Site: Coffeen Part 845 Groundwater
Location: Coffeen, Illinois
Project: 20E0111A
DATES: Start: 1/26/2021
Finish: 1/27/2021
WEATHER: Overcast, cold (30s)

CONTRACTOR: Roberts
Rig mfg/model: GeoProbe 8040DT
Drilling Method: 4.25" HSA w/SS sampler
FIELD STAFF: Driller: Matt
Helper: Corey
Eng/Geo: C. Colin Winter

BOREHOLE ID: G289
Well ID: n/a
Surface Elev: ft. MSL
Completion: 60.0 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork Township
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▽ = 18.60 - During Drilling
▼ = 8.00 - 1/27/2021 8am
▼ =

SAMPLE Number	Recov / Total (in) % Recovery	Type	Blows / 6 in N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) Qp (tsf) Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
21A	24/24 100%	SH						Dark gray (10YR4/1), moist, hard, lean CLAY, with some silt, few very fine- to fine- grained sand, few small gravel. *[Continued from previous page]*			
							42				Trace wood fragments below 42 ft.
22A	24/24 100%	SS	5-13 20-22 N=33								
							44				
23A	22/24 92%	SS	3-7 11-14 N=18								
							46				
24A	24/24 100%	SS	4-9 10-14 N=19								
							48				
25A	23/24 96%	SS	2-5 7-10 N=12								
							50				
26A	24/24 100%	SS	4-10 12-18 N=22								
							52				
27A	24/24 100%	SS	5-9 11-15 N=20								
							54				
28A	24/24 100%	SS	3-5 7-8 N=12					Gray (10YR5/1) with 15% dark brown (10YR3/6) mottles, moist, stiff, lean CLAY, with some silt.			
							56				
29A	24/24 100%	SS	3-5 9-9 N=14					Gray (10YR5/1) with 20% dark brown (10YR3/6) and 10% dark gray (10YR4/1) mottles, moist, stiff, lean CLAY, with some silt.			
							58				
30A	24/24 100%	SS	0-4 8-9 N=12								Few fine- to medium-grained sand below 59 ft.
							60				

NOTE(S):

FIELD BORING LOG

HANSON

CLIENT: Illinois Power Generating Co.
Site: Coffeen Part 845 Groundwater
Location: Coffeen, Illinois
Project: 20E0111A
DATES: Start: 1/26/2021
Finish: 1/27/2021
WEATHER: Overcast, cold (30s)

CONTRACTOR: Roberts
Rig mfg/model: GeoProbe 8040DT
Drilling Method: 4.25" HSA w/SS sampler
FIELD STAFF: Driller: Matt
Helper: Corey
Eng/Geo: C. Colin Winter

BOREHOLE ID: G289
Well ID: n/a
Surface Elev: ft. MSL
Completion: 60.0 ft. BGS
Station: N
E

TOPOGRAPHIC MAP INFORMATION:
Quadrangle: Coffeen, IL
Township: East Fork Township
Section 11, **Tier** 7N; **Range** 3W

WATER LEVEL INFORMATION:
▽ = 18.60 - During Drilling
▼ = 8.00 - 1/27/2021 8am
▼ =

SAMPLE			TESTING								
Number	Recov / Total (in) *% Recovery*	Type	*Blows / 6 in* N - Value **RQD**	Water Content (%)	Dry Density (lb/ft^3)	Qu (tsf) *Qp (tsf)* Failure Type	Depth ft. BGS	Lithologic Description	Borehole Detail	Elevation ft. MSL	Remarks
								End of boring = 60.0 feet			

NOTE(S):

Attachment E

Site Solids Bulk Characterization Analytical Data

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

16-November-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. : 31 August 2021
LR Report: **CA19059-AUG21**
Reference: Project Name: Coffeen GMF MNA, PO# 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: SB-200-(14-15,15-18)	6: SB-215-(23-24,24-24.5)
Sample Date & Time					30-Aug-21 14:30	30-Aug-21 14:45
Ag [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	< 0.5	< 0.5
Al [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	21000	22000
As [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	3.1	7.9
Ba [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	205	219
Be [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	0.42	0.45
Bi [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	< 0.09	< 0.09
Ca [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	59000	63000
Cd [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	0.17	0.17
Co [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	4	4
Cr [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	144	124
Cu [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	10	8.0
Fe [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	16000	16000
K [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	11000	12000
Li [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	8.8	7.1
Mg [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	26000	25000
Mn [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	403	364
Mo [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	1.5	1.1
Na [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	5200	4900
Ni [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	14	10
P [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	320	320
Pb [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	10	11
Sb [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	< 0.8	< 0.8
Se [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	< 0.7	< 0.7
Sn [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	< 6	< 6
Sr [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	102	90

OnLine LIMS

0002713594

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

LR Report : CA19059-AUG21

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: SB-200-(14-15,15-18)	6: SB-215-(23-24,24-24.5)
Ti [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	955	374
Tl [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	0.18	0.20
U [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	0.65	0.52
V [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	20	19
Y [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	8.76	8.52
Zn [µg/g]	29-Sep-21	13:16	16-Nov-21	08:46	31	30
C [%]	14-Sep-21	19:33	15-Sep-21	09:28	3.17	2.84
S [%]	14-Sep-21	19:33	15-Sep-21	09:28	0.095	0.006
TOC [%]	15-Sep-21	09:51	16-Sep-21	15:24	0.531	0.566
Sulphide [%]	16-Sep-21	17:28	17-Sep-21	09:35	0.08	< 0.04

Catharine Arnold

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
CATHARINE ARNOLD
CHEMIST

Catharine Arnold, B.Sc., C.Chem
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0002713594

September 15, 2021

Michael Healy
SiREM
130 Stone Road West
Guelph, Ontario, Canada N1G 3Z2

RE: Report of Findings, Measurement of AVS
Client ID: Coffeen GMF MNA
PRIMA ID: Sirem 08312021-Coffeen GMF

Dear Mr. Healy:

This letter report describes the results of analyses conducted on two soil samples. Each soil was analyzed for acid volatile sulfide (AVS). Results are reported herein.

Sample Receipt and Preparation

Samples were received on August 31, 2021. The samples were placed in an anaerobic glovebox upon receipt. All sample preparation was conducted in the glove box.

Procedures

AVS was measured via sequential extraction of soil based on methods provided by Microseeps, Inc. In order to minimize exposure of the soil or extraction fluid to oxygen, the soil samples were transferred to the extraction vessel while in the glove box and the extractions were carried out on the bench top under a flow of nitrogen. A brief description of the extraction procedure is provided below.

WAS-Fe. Approximately 10 g of soil is extracted with 1 N hydrochloric acid (HCl) for 30 minutes at room temperature (approximately 20° C), after which an aliquot of the HCl is withdrawn and analyzed for ferrous iron and total iron colorimetrically using a Hach DR2800 spectrophotometer and appropriate Hach test kit reagents. Dilutions are made as needed using deoxygenated, deionized (DO/DI) water.

AVS. Hydrogen sulfide generated during the WAS extraction step is collected in a trap filled with 1.25 N sodium hydroxide (NaOH). After collection of the WAS Fe sample, concentrated HCl is added to the soil and the mixture is heated for 30 minutes. The concentration of sulfide in trap is then measured using the methylene blue method via a

Hach DR2800 spectrophotometer and appropriate Hach test kit reagents. Dilutions are made as needed using DO/DI water.

Results

The amount of AVS in each sample is shown in **Table 1** (attached). QC results are given in **Table 2** (attached).

If you have any questions regarding these results, please give me a call at 916-939-7300. Thank you for the opportunity to be of service.

Sincerely,
PRIMA Environmental, Inc.

Cindy G. Schreier, Ph.D.
President

Attachments

Table 1. AVS Results.

Sample	AVS, mg/kg
SB-200-(14-15, 15-18)	0.17
SB-215-(23-24, 24-24.5)	< 0.19

Table 2. QC Results for AVS.

Sample ID	Result	Units
Blank *		
AVS	< 0.025	mg/L
FeS standard		
Sulfide concentration	365	g/kg
AVS	378	g/kg
% Recovered as AVS	104	%

* A blank was run in the absence of a solid material. Therefore, values are concentrations in the extraction fluids or traps.

5070 Robert J Mathews Parkway, Suite 300
El Dorado Hills, CA 95762
916-939-7300
www.primaenvironmental.com

Sample Receipt Summary

Date/Time: 8/31/21 10:40 AM

Client/Company: SiRem - AVS 08312021

Project: Coffeen GMF

	Yes	No	N/A
Custody seals intact?	☐	☐	☒
Chain of custody Present?	☒	☐	☐

If no, list number of samples and Sample ID

	Yes	No	N/A
Ice present?	☒ Blue ice	☐	☐

If no, what is temperature? ______

	Yes	No	N/A
Samples in good condition?	☐	☐	☐

If no, explain:
jars in tact, but no tape around lids.
Lid for SB-215(23-24, 24-24.5) was loose.

	Yes	No	N/A
Do sample IDs on containers match IDs on COC?	☒	☐	☐

If no, explain:

Other Comments:
store in glove box

PRIMA ENVIRONMENTAL INC.
Mathews Parkway, Suite 300 El Dorado Hills, CA 95762
(916) 939-7300; (916) 939-7398 Fax
www.primaenvironmental.com

CHAIN of CUSTODY

Project Manager: Michael Healey
Project Name: Coffeen GMF MNA
Job Number:
Sampler Signature:

Phone: (519) 822-2265
Fax: (519) 822-3151
Email: mhealey@siremlab.com
TAT: 1 week

SAMPLE ID	Date	Time	Matrix	# Containers	Acid Volatile Sulfide										Comments
SB-200-(14-15,15-18)	30-Aug-21	2:30	S	1	X										
SB-215-(23-24,24-24.5)	30-Aug-21	2:45	S	1	X										

Special Instructions:

Relinquished by:		Received by:
Company: SiREM	Date: 30Aug21	Company:
Printed Name: Rachel Hallman	Time: 3:00 pm.	Printed Name:
Signature: [signature]		Signature:

Relinquished by:		Received by:
Company:	Date: 8/31/21	Company: PRIMA
Printed Name:	Time: 10:40	Printed Name: Molly Scott
Signature:		Signature: [signature]

Matrix key: S - soil/sediment; W - water; OT - other

February 23, 2021

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

RE: HANSON VISTRA SOIL

Dear Rhonald Hasenyager:

Please find enclosed the analytical results for the **6** sample(s) the laboratory received on **1/29/21 4:12 pm** and logged in under work order **EA04870**. 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 g Schindler

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

SAMPLE RECEIPT CHECK LIST

Items not applicable will be marked as in compliance

Work Order EA04870

YES	Samples received within temperature compliance when applicable
YES	COC present upon sample receipt
YES	COC completed & legible
YES	Sampler name & signature present
YES	Unique sample IDs assigned
YES	Sample collection location recorded
YES	Date & time collected recorded on COC
YES	Relinquished by client signature on COC
YES	COC & labels match
YES	Sample labels are legible
YES	Appropriate bottle(s) received
YES	Sufficient sample volume received
YES	Sample containers recieved undamaged
NO	Zero headspace, <6 mm present in VOA vials
NO	Trip blank(s) received
YES	All non-field analyses received within holding times
NO	Short hold time analysis
YES	Current PDC COC submitted
NO	Case narrative provided

ANALYTICAL RESULTS

Sample: EA04870-01
Name: G275D - S1
Matrix: Soil - Composite

Sampled: 01/28/21 16:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - A & L Great Lakes Laboratory									
Cation Exchange Capacity - subcontracted	22.95	meq/100g			1	1			Subcontracted

Sample: EA04870-02
Name: G275D - S2
Matrix: Soil - Composite

Sampled: 01/28/21 16:30
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - A & L Great Lakes Laboratory									
Cation Exchange Capacity - subcontracted	7.93	meq/100g			1	1			Subcontracted

Sample: EA04870-03
Name: G275D - S3
Matrix: Soil - Composite

Sampled: 01/29/21 11:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - A & L Great Lakes Laboratory									
Cation Exchange Capacity - subcontracted	9.25	meq/100g			1	1			Subcontracted

Sample: EA04870-04
Name: G275D - S3
Matrix: Soil - Composite

Sampled: 01/29/21 11:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - A & L Great Lakes Laboratory									
Cation Exchange Capacity - subcontracted	9.63	meq/100g			1	1			Subcontracted

ANALYTICAL RESULTS

Sample: EA04870-06
Name: GYPSUM
Matrix: Soil - Composite

Sampled: 01/29/21 11:15
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - A & L Great Lakes Laboratory									
Cation Exchange Capacity - subcontracted	0.41	meq/100g			1	1			Subcontracted

ANALYTICAL RESULTS

Sample: EA04870-01
Name: G275D - S1
Matrix: Soil - Composite

Sampled: 01/28/21 16:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - Eurofins Eaton Analytical, Inc. - Lancaster, PA									
Total Organic Carbon (TOC)	603	mg/kg			1.37	411	02/10/21 15:53		SM 5310C 2000

Sample: EA04870-02
Name: G275D - S2
Matrix: Soil - Composite

Sampled: 01/28/21 16:30
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - Eurofins Eaton Analytical, Inc. - Lancaster, PA									
Total Organic Carbon (TOC)	11200	mg/kg			6.62	1990	02/11/21 18:38		SM 5310C 2000

Sample: EA04870-03
Name: G275D - S3
Matrix: Soil - Composite

Sampled: 01/29/21 11:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - Eurofins Eaton Analytical, Inc. - Lancaster, PA									
Total Organic Carbon (TOC)	10900	mg/kg			10.08	3020	02/11/21 18:51		SM 5310C 2000

ANALYTICAL RESULTS

Sample: EA04870-04
Name: G275D - S3
Matrix: Soil - Composite

Sampled: 01/29/21 11:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - Eurofins Eaton Analytical, Inc. - Lancaster, PA									
Total Organic Carbon (TOC)	13500	mg/kg			9.12	2740	02/11/21 19:04		SM 5310C 2000

Sample: EA04870-06
Name: GYPSUM
Matrix: Soil - Composite

Sampled: 01/29/21 11:15
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
General Chemistry - Eurofins Eaton Analytical, Inc. - Lancaster, PA									
Total Organic Carbon (TOC)	184 J	mg/kg	J		1.33	399	02/10/21 17:47		SM 5310C 2000

ANALYTICAL RESULTS

Sample: EA04870-01
Name: G275D - S1
Matrix: Soil - Composite

Sampled: 01/28/21 16:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Radium 226 - subcontracted	0.376	pCi/g dry wt			1	0.0478	02/20/21 11:20		Subcontracted
Radium 228 - subcontracted	0.653	pCi/g dry wt			1	0.401	02/17/21 10:35		Subcontracted

Sample: EA04870-02
Name: G275D - S2
Matrix: Soil - Composite

Sampled: 01/28/21 16:30
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Radium 226 - subcontracted	0.402	pCi/g dry wt			1	0.0888	02/20/21 11:20		Subcontracted
Radium 228 - subcontracted	1.34	pCi/g dry wt			1	0.383	02/17/21 10:35		Subcontracted

ANALYTICAL RESULTS

Sample: EA04870-03
Name: G275D - S3
Matrix: Soil - Composite

Sampled: 01/29/21 11:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Radium 226 - subcontracted	0.445	pCi/g dry wt			1	0.074	02/20/21 11:20		Subcontracted
Radium 228 - subcontracted	0.807	pCi/g dry wt			1	0.402	02/17/21 10:35		Subcontracted

Sample: EA04870-04
Name: G275D - S3
Matrix: Soil - Composite

Sampled: 01/29/21 11:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Radium 226 - subcontracted	0.606	pCi/g dry wt			1	0.0671	02/20/21 11:20		Subcontracted
Radium 228 - subcontracted	0.726	pCi/g dry wt			1	0.422	02/17/21 10:35		Subcontracted

Sample: EA04870-06
Name: GYPSUM
Matrix: Soil - Composite

Sampled: 01/29/21 11:15
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Miscellaneous - Pace Analytical - Mt Juliet, Tn									
Radium 226 - subcontracted	0.212	pCi/g dry wt			1	0.0682	02/20/21 11:20		Subcontracted
Radium 228 - subcontracted	-0.226	pCi/g dry wt	U		1	0.388	02/17/21 10:35		Subcontracted

ANALYTICAL RESULTS

ANALYTICAL RESULTS

Sample: EA04870-01
Name: G275D - S1
Matrix: Soil - Composite

Sampled: 01/28/21 16:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 10	mg/kg		02/04/21 17:23	1	10	02/04/21 17:23	CRD	EPA 9056A
Sulfate	50	mg/kg		02/04/21 17:23	1	10	02/04/21 17:23	CRD	EPA 9056A
General Chemistry - PIA									
Fluoride	< 2.5	mg/kg		02/04/21 16:42	1	2.5	02/04/21 16:42	TTH	SM 4500F C 1997
Total Nitrogen	300	mg/kg dry		02/04/21 08:00	1	58	02/05/21 10:23	CRS1	(calc)
Metals by ICP-MS - PIA									
Iron as Fe2O3	22000	mg/kg		02/04/21 07:36	10	41	02/05/21 15:03	JMW	calculated
Manganese as MnO2	180	mg/kg		02/04/21 07:36	10	1.5	02/05/21 15:03	JMW	calculated
Nutrients - PIA									
Nitrate/Nitrite-N	1.4	mg/kg		02/03/21 13:42	1	0.20	02/03/21 13:42	CJP	EPA 353.2 REV 2
Total Kjeldahl Nitrogen (TKN)	260	mg/kg		02/04/21 08:00	1	50	02/05/21 10:23	CRS1	EPA 351.2 REV 2*
Total Metals - PIA									
Antimony	< 2.9	mg/kg		02/04/21 07:36	10	2.9	02/05/21 15:03	JMW	EPA 6020A
Arsenic	4.3	mg/kg		02/04/21 07:36	10	0.95	02/05/21 15:03	JMW	EPA 6020A
Barium	47	mg/kg		02/04/21 07:36	10	0.95	02/05/21 15:03	JMW	EPA 6020A
Beryllium	< 0.95	mg/kg		02/04/21 07:36	10	0.95	02/05/21 15:03	JMW	EPA 6020A
Boron	< 9.5	mg/kg		02/04/21 07:36	10	9.5	02/05/21 15:03	JMW	EPA 6020A*
Cadmium	< 0.95	mg/kg		02/04/21 07:36	10	0.95	02/05/21 15:03	JMW	EPA 6020A
Chromium	14	mg/kg		02/04/21 07:36	10	3.8	02/05/21 15:03	JMW	EPA 6020A
Cobalt	6.3	mg/kg		02/04/21 07:36	10	1.9	02/05/21 15:03	JMW	EPA 6020A
Iron	16000	mg/kg		02/04/21 07:36	10	29	02/05/21 15:03	JMW	EPA 6020A*
Lead	13	mg/kg		02/04/21 07:36	10	0.95	02/05/21 15:03	JMW	EPA 6020A
Manganese	110	mg/kg		02/04/21 07:36	10	0.95	02/05/21 15:03	JMW	EPA 6020A
Molybdenum	< 0.95	mg/kg		02/04/21 07:36	10	0.95	02/05/21 15:03	JMW	EPA 6020A
Selenium	0.96	mg/kg		02/04/21 07:36	10	0.95	02/05/21 15:03	JMW	EPA 6020A
Thallium	< 0.95	mg/kg		02/04/21 07:36	10	0.95	02/05/21 15:03	JMW	EPA 6020A
Mercury	< 0.19	mg/kg		02/04/21 07:36	10	0.19	02/05/21 15:03	JMW	EPA 6020A
Lithium	6.7	mg/kg		02/04/21 07:36	1	4.8	02/05/21 13:50	TJJ	EPA 6010B*
Sulfur	24	mg/kg		02/04/21 07:36	1	9.5	02/04/21 11:48	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EA04870-02 **Sampled:** 01/28/21 16:30
Name: G275D - S2 **Received:** 01/29/21 16:12
Matrix: Soil - Composite

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 10	mg/kg		02/04/21 18:00	1	10	02/04/21 18:00	CRD	EPA 9056A
Sulfate	20	mg/kg		02/04/21 18:00	1	10	02/04/21 18:00	CRD	EPA 9056A
General Chemistry - PIA									
Fluoride	< 2.5	mg/kg		02/04/21 16:53	1	2.5	02/04/21 16:53	TTH	SM 4500F C 1997
Total Nitrogen	270	mg/kg dry		02/04/21 08:00	1	56	02/05/21 10:24	CRS1	(calc)
Metals by ICP-MS - PIA									
Iron as Fe2O3	14000	mg/kg		02/04/21 07:36	10	43	02/05/21 15:06	JMW	calculated
Manganese as MnO2	310	mg/kg		02/04/21 07:36	10	1.6	02/05/21 15:06	JMW	calculated
Nutrients - PIA									
Nitrate/Nitrite-N	< 0.20	mg/kg		02/03/21 13:41	1	0.20	02/03/21 13:41	CJP	EPA 353.2 REV 2
Total Kjeldahl Nitrogen (TKN)	240	mg/kg		02/04/21 08:00	1	50	02/05/21 10:24	CRS1	EPA 351.2 REV 2*
Total Metals - PIA									
Antimony	< 3.0	mg/kg		02/04/21 07:36	10	3.0	02/05/21 15:06	JMW	EPA 6020A
Arsenic	2.1	mg/kg		02/04/21 07:36	10	1.0	02/05/21 15:06	JMW	EPA 6020A
Barium	63	mg/kg		02/04/21 07:36	10	1.0	02/05/21 15:06	JMW	EPA 6020A
Beryllium	< 1.0	mg/kg		02/04/21 07:36	10	1.0	02/05/21 15:06	JMW	EPA 6020A
Boron	< 10	mg/kg		02/04/21 07:36	10	10	02/05/21 15:06	JMW	EPA 6020A*
Cadmium	< 1.0	mg/kg		02/04/21 07:36	10	1.0	02/05/21 15:06	JMW	EPA 6020A
Chromium	11	mg/kg		02/04/21 07:36	10	4.0	02/05/21 15:06	JMW	EPA 6020A
Cobalt	4.2	mg/kg		02/04/21 07:36	10	2.0	02/05/21 15:06	JMW	EPA 6020A
Iron	9900	mg/kg		02/04/21 07:36	10	30	02/05/21 15:06	JMW	EPA 6020A*
Lead	7.2	mg/kg		02/04/21 07:36	10	1.0	02/05/21 15:06	JMW	EPA 6020A
Manganese	190	mg/kg		02/04/21 07:36	10	1.0	02/05/21 15:06	JMW	EPA 6020A
Molybdenum	< 1.0	mg/kg		02/04/21 07:36	10	1.0	02/05/21 15:06	JMW	EPA 6020A
Selenium	< 1.0	mg/kg		02/04/21 07:36	10	1.0	02/05/21 15:06	JMW	EPA 6020A
Thallium	< 1.0	mg/kg		02/04/21 07:36	10	1.0	02/05/21 15:06	JMW	EPA 6020A
Mercury	< 0.20	mg/kg		02/04/21 07:36	10	0.20	02/05/21 15:06	JMW	EPA 6020A
Lithium	12	mg/kg		02/04/21 07:36	1	5.0	02/05/21 13:51	TJJ	EPA 6010B*
Sulfur	66	mg/kg		02/04/21 07:36	1	10	02/04/21 11:50	TJJ	EPA 6010B*

ANALYTICAL RESULTS

Sample: EA04870-03
Name: G275D - S3
Matrix: Soil - Composite

Sampled: 01/29/21 11:00
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 10	mg/kg		02/04/21 18:18	1	10	02/04/21 18:18	CRD	EPA 9056A
Sulfate	48	mg/kg		02/04/21 18:18	1	10	02/04/21 18:18	CRD	EPA 9056A
General Chemistry - PIA									
Fluoride	< 2.5	mg/kg		02/04/21 16:55	1	2.5	02/04/21 16:55	TTH	SM 4500F C 1997
Total Nitrogen	370	mg/kg dry		02/04/21 08:00	1	57	02/05/21 10:25	CRS1	(calc)
Metals by ICP-MS - PIA									
Iron as Fe2O3	12000	mg/kg		02/09/21 14:58	10	43	02/10/21 10:06	wjm	calculated
Manganese as MnO2	370	mg/kg		02/09/21 14:58	10	1.6	02/10/21 10:06	wjm	calculated
Nutrients - PIA									
Nitrate/Nitrite-N	0.29	mg/kg		02/03/21 13:43	1	0.20	02/03/21 13:43	CJP	EPA 353.2 REV 2
Total Kjeldahl Nitrogen (TKN)	330	mg/kg		02/04/21 08:00	1	50	02/05/21 10:25	CRS1	EPA 351.2 REV 2*
Total Metals - PIA									
Antimony	< 3.0	mg/kg		02/09/21 14:58	10	3.0	02/10/21 10:06	wjm	EPA 6020A
Arsenic	2.6	mg/kg		02/09/21 14:58	10	1.0	02/10/21 10:06	wjm	EPA 6020A
Barium	53	mg/kg		02/09/21 14:58	10	1.0	02/10/21 10:06	wjm	EPA 6020A
Beryllium	< 1.0	mg/kg		02/09/21 14:58	10	1.0	02/10/21 12:18	KMC	EPA 6020A
Boron	< 10	mg/kg		02/09/21 14:58	10	10	02/10/21 12:18	KMC	EPA 6020A*
Cadmium	< 1.0	mg/kg		02/09/21 14:58	10	1.0	02/10/21 10:06	wjm	EPA 6020A
Chromium	9.1	mg/kg		02/09/21 14:58	10	4.0	02/10/21 10:06	wjm	EPA 6020A
Cobalt	4.3	mg/kg		02/09/21 14:58	10	2.0	02/10/21 10:06	wjm	EPA 6020A
Iron	8200	mg/kg		02/09/21 14:58	10	30	02/10/21 10:06	wjm	EPA 6020A*
Lead	6.7	mg/kg		02/09/21 14:58	10	1.0	02/10/21 12:18	KMC	EPA 6020A
Manganese	240	mg/kg		02/09/21 14:58	10	1.0	02/10/21 10:06	wjm	EPA 6020A
Molybdenum	1.0	mg/kg		02/09/21 14:58	10	1.0	02/10/21 10:06	wjm	EPA 6020A
Selenium	< 1.0	mg/kg		02/09/21 14:58	10	1.0	02/10/21 10:06	wjm	EPA 6020A
Thallium	< 1.0	mg/kg		02/09/21 14:58	10	1.0	02/10/21 10:06	wjm	EPA 6020A
Mercury	< 0.20	mg/kg		02/09/21 14:58	10	0.20	02/10/21 10:06	wjm	EPA 6020A
Lithium	7.7	mg/kg		02/09/21 14:58	1	5.0	02/10/21 09:48	TJJ	EPA 6010B*
Sulfur	640	mg/kg		02/09/21 14:58	1	10	02/11/21 14:46	tjj	EPA 6010B*

ANALYTICAL RESULTS

Sample: EA04870-04 **Sampled:** 01/29/21 11:00
Name: G275D - S3 **Received:** 01/29/21 16:12
Matrix: Soil - Composite

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	< 10	mg/kg		02/04/21 19:30	1	10	02/04/21 19:30	CRD	EPA 9056A
Sulfate	42	mg/kg	Q4	02/04/21 19:30	1	10	02/04/21 19:30	CRD	EPA 9056A
General Chemistry - PIA									
Fluoride	3.1	mg/kg		02/04/21 16:56	1	2.5	02/04/21 16:56	TTH	SM 4500F C 1997
Total Nitrogen	410	mg/kg dry		02/04/21 08:00	1	56	02/05/21 10:26	CRS1	(calc)
Metals by ICP-MS - PIA									
Iron as Fe2O3	7400	mg/kg		02/09/21 14:58	10	43	02/10/21 10:10	wjm	calculated
Manganese as MnO2	400	mg/kg		02/09/21 14:58	10	1.6	02/10/21 10:10	wjm	calculated
Nutrients - PIA									
Nitrate/Nitrite-N	0.23	mg/kg		02/03/21 13:32	1	0.20	02/03/21 13:32	CJP	EPA 353.2 REV 2
Total Kjeldahl Nitrogen (TKN)	360	mg/kg	Q3	02/04/21 08:00	1	50	02/05/21 10:26	CRS1	EPA 351.2 REV 2*
Total Metals - PIA									
Antimony	< 3.0	mg/kg		02/09/21 14:58	10	3.0	02/10/21 10:10	wjm	EPA 6020A
Arsenic	< 1.0	mg/kg	Q3	02/09/21 14:58	10	1.0	02/10/21 10:10	wjm	EPA 6020A
Barium	16	mg/kg		02/09/21 14:58	10	1.0	02/10/21 10:10	wjm	EPA 6020A
Beryllium	< 1.0	mg/kg		02/09/21 14:58	10	1.0	02/10/21 12:22	KMC	EPA 6020A
Boron	< 10	mg/kg	R	02/09/21 14:58	10	10	02/10/21 12:22	KMC	EPA 6020A*
Cadmium	< 1.0	mg/kg	R	02/09/21 14:58	10	1.0	02/10/21 10:10	wjm	EPA 6020A
Chromium	5.6	mg/kg	R	02/09/21 14:58	10	4.0	02/10/21 10:10	wjm	EPA 6020A
Cobalt	3.9	mg/kg		02/09/21 14:58	10	2.0	02/10/21 10:10	wjm	EPA 6020A
Iron	5200	mg/kg	Q4	02/09/21 14:58	10	30	02/10/21 10:10	wjm	EPA 6020A*
Lead	6.7	mg/kg		02/09/21 14:58	10	1.0	02/10/21 12:22	KMC	EPA 6020A
Manganese	250	mg/kg	Q4	02/09/21 14:58	10	1.0	02/10/21 10:10	wjm	EPA 6020A
Molybdenum	< 1.0	mg/kg		02/09/21 14:58	10	1.0	02/10/21 10:10	wjm	EPA 6020A
Selenium	< 1.0	mg/kg	Q3	02/09/21 14:58	10	1.0	02/10/21 10:10	wjm	EPA 6020A
Thallium	< 1.0	mg/kg	R	02/09/21 14:58	10	1.0	02/10/21 10:10	wjm	EPA 6020A
Mercury	< 0.20	mg/kg		02/09/21 14:58	10	0.20	02/10/21 10:10	wjm	EPA 6020A
Lithium	5.1	mg/kg		02/09/21 14:58	1	5.0	02/10/21 09:50	TJJ	EPA 6010B*
Sulfur	390	mg/kg		02/09/21 14:58	1	10	02/11/21 14:48	tjj	EPA 6010B*

ANALYTICAL RESULTS

Sample: EA04870-06
Name: GYPSUM
Matrix: Soil - Composite

Sampled: 01/29/21 11:15
Received: 01/29/21 16:12

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	25	mg/kg		02/08/21 17:23	10	10	02/08/21 17:23	CRD	EPA 9056A
Sulfate	19000	mg/kg		02/12/21 14:49	250	2500	02/12/21 14:49	CRD	EPA 9056A
General Chemistry - PIA									
Fluoride	13	mg/kg	Q3	02/04/21 16:44	1	2.5	02/04/21 16:44	TTH	SM 4500F C 1997
Total Nitrogen	1400	mg/kg dry		02/04/21 08:00	1	87	02/05/21 10:29	CRS1	(calc)
Metals by ICP-MS - PIA									
Iron as Fe2O3	370	mg/kg		02/09/21 14:58	10	22	02/10/21 10:47	wjm	calculated
Manganese as MnO2	43	mg/kg		02/09/21 14:58	10	0.81	02/10/21 10:47	wjm	calculated
Nutrients - PIA									
Nitrate/Nitrite-N	6.3	mg/kg		02/03/21 13:44	1	0.20	02/03/21 13:44	CJP	EPA 353.2 REV 2
Total Kjeldahl Nitrogen (TKN)	820	mg/kg		02/04/21 08:00	1	50	02/05/21 10:29	CRS1	EPA 351.2 REV 2*
Total Metals - PIA									
Antimony	< 1.5	mg/kg		02/09/21 14:58	10	1.5	02/10/21 10:47	wjm	EPA 6020A
Arsenic	< 0.51	mg/kg		02/09/21 14:58	10	0.51	02/10/21 10:47	wjm	EPA 6020A
Barium	6.6	mg/kg		02/09/21 14:58	10	0.51	02/10/21 10:47	wjm	EPA 6020A
Beryllium	< 0.51	mg/kg		02/09/21 14:58	10	0.51	02/10/21 13:13	KMC	EPA 6020A
Boron	13	mg/kg		02/09/21 14:58	10	5.1	02/10/21 13:13	KMC	EPA 6020A*
Cadmium	< 0.51	mg/kg		02/09/21 14:58	10	0.51	02/10/21 10:47	wjm	EPA 6020A
Chromium	< 2.0	mg/kg		02/09/21 14:58	10	2.0	02/10/21 10:47	wjm	EPA 6020A
Cobalt	< 1.0	mg/kg		02/09/21 14:58	10	1.0	02/10/21 10:47	wjm	EPA 6020A
Iron	260	mg/kg		02/09/21 14:58	10	15	02/10/21 10:47	wjm	EPA 6020A*
Lead	0.67	mg/kg		02/09/21 14:58	10	0.51	02/10/21 13:13	KMC	EPA 6020A
Manganese	27	mg/kg		02/09/21 14:58	10	0.51	02/10/21 10:47	wjm	EPA 6020A
Molybdenum	1.2	mg/kg		02/09/21 14:58	10	0.51	02/10/21 10:47	wjm	EPA 6020A
Selenium	< 0.51	mg/kg		02/09/21 14:58	10	0.51	02/10/21 10:47	wjm	EPA 6020A
Thallium	< 0.51	mg/kg		02/09/21 14:58	10	0.51	02/10/21 13:13	KMC	EPA 6020A
Mercury	< 0.10	mg/kg		02/09/21 14:58	10	0.10	02/10/21 13:13	KMC	EPA 6020A
Lithium	< 2.6	mg/kg		02/09/21 14:58	1	2.6	02/10/21 09:51	TJJ	EPA 6010B*
Sulfur	30000	mg/kg		02/09/21 14:58	100	510	02/15/21 15:36	AMB	EPA 6010B*

NOTES

Specifications regarding method revisions and method modifications used for analysis are available upon request. Please contact your project manager.

* Not a TNI accredited analyte

Certifications

CHI - McHenry, IL - 4314-A W. Crystal Lake Road, McHenry, IL 60050
TNI Accreditation for Drinking Water and Wastewater Fields of Testing through IL EPA Accreditation No. 100279
Illinois Department of Public Health Bacterial 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, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. 100230
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory Registry No. 17553
Drinking Water Certifications/Accreditations: Iowa (240); Kansas (E-10338); Missouri (870)
Wastewater Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)
Solid and Hazardous Material Certifications/Accreditations: Arkansas (88-0677); Iowa (240); Kansas (E-10338)

SPMO - Springfield, MO - 1805 W Sunset Street, Springfield, MO 65807
USEPA DMR-QA Program

STL - Hazelwood, MO - 944 Anglum Rd, Hazelwood, MO 63042
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through KS KDHE Certification No. E-10389
TNI Accreditation for Wastewater, Solid and Hazardous Material Fields of Testing through IL EPA Accreditation No. - 200080
Illinois Department of Public Health Bacterial Analysis in Drinking Water Approved Laboratory, Registry No. 171050
Missouri Department of Natural Resources - Certificate of Approval for Microbiological Laboratory Service - No. 1050

Qualifiers

Q3 Matrix Spike/Matrix Spike Duplicate both failed % recovery acceptance limits. The associated blank spike recovery was acceptable.
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.
R Matrix Spike/Matrix Spike Duplicate Failed %Relative Percent Difference criterion.

Gail g Schindler

Certified by: Gail Schindler, Project Manager eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-28227-1
Client Project/Site: EA04870

For:
PDC Laboratories, Inc.
2231 W. Altorfer Drive
Peoria, Illinois 61615

Attn: Gail Schindler

Authorized for release by:
2/12/2021 10:07:09 AM

Marrissa Williams, Project Manager
(717)556-7246
Marrissa.Williams@eurofinset.com

LINKS

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Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.
· QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
· Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
· Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.
Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

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Marrissa Williams

Marrissa Williams
Project Manager
2/12/2021 10:07:10 AM

Table of Contents

Definitions/Glossary

Client: PDC Laboratories, Inc.
Project/Site: EA04870

Job ID: 410-28227-1

3

Qualifiers

General Chemistry

Qualifier	Qualifier Description
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.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
1C	Result is from the primary column on a dual-column method.
2C	Result is from the confirmation column on a dual-column method.
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

Job ID: 410-28227-1

Laboratory: Eurofins Lancaster Laboratories Env, LLC

Narrative

Job Narrative
410-28227-1

Receipt

The samples were received on 2/2/2021 11:46 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.3°C

General Chemistry

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

Detection Summary

Client: PDC Laboratories, Inc.
Project/Site: EA04870

Job ID: 410-28227-1

Client Sample ID: EA04870-1 G275D-S1

Lab Sample ID: 410-28227-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	603		411	137	mg/Kg	1.37		Lloyd Kahn	Total/NA

Client Sample ID: EA04870-2 G275D-S2

Lab Sample ID: 410-28227-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	11200		1990	662	mg/Kg	6.62		Lloyd Kahn	Total/NA

Client Sample ID: EA04870-3 G275D-S3

Lab Sample ID: 410-28227-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	10900		3020	1010	mg/Kg	10.08		Lloyd Kahn	Total/NA

Client Sample ID: EA04870-4 G275D-S1

Lab Sample ID: 410-28227-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	13500		2740	912	mg/Kg	9.12		Lloyd Kahn	Total/NA

Client Sample ID: EA04870-6 GYPSUM

Lab Sample ID: 410-28227-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	184	J	399	133	mg/Kg	1.33		Lloyd Kahn	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: EA04870-1 G275D-S1

Lab Sample ID: 410-28227-1
Date Collected: 01/28/21 16:00
Matrix: Solid
Date Received: 02/02/21 11:46

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	603		411	137	mg/Kg			02/10/21 15:53	1.37
Percent Moisture	16.9		1.0	1.0	%			02/03/21 10:39	1
Percent Solids	83.1		1.0	1.0	%			02/03/21 10:39	1

Client Sample ID: EA04870-2 G275D-S2

Lab Sample ID: 410-28227-2
Date Collected: 01/28/21 16:30
Matrix: Solid
Date Received: 02/02/21 11:46

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	11200		1990	662	mg/Kg			02/11/21 18:38	6.62
Percent Moisture	18.6		1.0	1.0	%			02/03/21 10:39	1
Percent Solids	81.4		1.0	1.0	%			02/03/21 10:39	1

Client Sample ID: EA04870-3 G275D-S3

Lab Sample ID: 410-28227-3
Date Collected: 01/28/21 11:00
Matrix: Solid
Date Received: 02/02/21 11:46

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	10900		3020	1010	mg/Kg			02/11/21 18:51	10.08
Percent Moisture	18.3		1.0	1.0	%			02/03/21 10:39	1
Percent Solids	81.7		1.0	1.0	%			02/03/21 10:39	1

Client Sample ID: EA04870-4 G275D-S1

Lab Sample ID: 410-28227-4
Date Collected: 01/28/21 11:00
Matrix: Solid
Date Received: 02/02/21 11:46

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	13500		2740	912	mg/Kg			02/11/21 19:04	9.12
Percent Moisture	19.7		1.0	1.0	%			02/03/21 10:44	1
Percent Solids	80.3		1.0	1.0	%			02/03/21 10:44	1

Client Sample ID: EA04870-6 GYPSUM

Lab Sample ID: 410-28227-5
Date Collected: 01/28/21 11:15
Matrix: Solid
Date Received: 02/02/21 11:46

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	184	J	399	133	mg/Kg			02/10/21 17:47	1.33
Percent Moisture	39.4		1.0	1.0	%			02/03/21 10:39	1
Percent Solids	60.6		1.0	1.0	%			02/03/21 10:39	1

Client: PDC Laboratories, Inc.
Project/Site: EA04870

Job ID: 410-28227-1

Method: Lloyd Kahn - Organic Carbon, Total (TOC)

Lab Sample ID: MB 410-93317/22
Matrix: Solid
Analysis Batch: 93317

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		300	100	mg/Kg			02/10/21 19:03	1

Lab Sample ID: MB 410-93317/3
Matrix: Solid
Analysis Batch: 93317

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		300	100	mg/Kg			02/10/21 15:02	1

Lab Sample ID: LCS 410-93317/23
Matrix: Solid
Analysis Batch: 93317

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	4300	4595		mg/Kg		107	47 - 143

Lab Sample ID: LCS 410-93317/4
Matrix: Solid
Analysis Batch: 93317

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	4300	3708		mg/Kg		86	47 - 143

Lab Sample ID: MB 410-93774/3
Matrix: Solid
Analysis Batch: 93774

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		300	100	mg/Kg			02/11/21 17:35	1

Lab Sample ID: MB 410-93774/31
Matrix: Solid
Analysis Batch: 93774

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		300	100	mg/Kg			02/11/21 23:30	1

Lab Sample ID: LCS 410-93774/32
Matrix: Solid
Analysis Batch: 93774

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	4300	3789		mg/Kg		88	47 - 143

Lab Sample ID: LCS 410-93774/4
Matrix: Solid
Analysis Batch: 93774

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	4300	3038		mg/Kg		71	47 - 143

QC Association Summary

General Chemistry

Analysis Batch: 90493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-28227-1	EA04870-1 G275D-S1	Total/NA	Solid	Moisture	
410-28227-2	EA04870-2 G275D-S2	Total/NA	Solid	Moisture	
410-28227-3	EA04870-3 G275D-S3	Total/NA	Solid	Moisture	
410-28227-5	EA04870-6 GYPSUM	Total/NA	Solid	Moisture	

Analysis Batch: 90496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-28227-4	EA04870-4 G275D-S1	Total/NA	Solid	Moisture	

Analysis Batch: 93317

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-28227-1	EA04870-1 G275D-S1	Total/NA	Solid	Lloyd Kahn	
410-28227-1	EA04870-1 G275D-S1	Total/NA	Solid	Lloyd Kahn	
410-28227-1	EA04870-1 G275D-S1	Total/NA	Solid	Lloyd Kahn	
410-28227-1	EA04870-1 G275D-S1	Total/NA	Solid	Lloyd Kahn	
410-28227-5	EA04870-6 GYPSUM	Total/NA	Solid	Lloyd Kahn	
MB 410-93317/22	Method Blank	Total/NA	Solid	Lloyd Kahn	
MB 410-93317/3	Method Blank	Total/NA	Solid	Lloyd Kahn	
LCS 410-93317/23	Lab Control Sample	Total/NA	Solid	Lloyd Kahn	
LCS 410-93317/4	Lab Control Sample	Total/NA	Solid	Lloyd Kahn	

Analysis Batch: 93774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-28227-2	EA04870-2 G275D-S2	Total/NA	Solid	Lloyd Kahn	
410-28227-3	EA04870-3 G275D-S3	Total/NA	Solid	Lloyd Kahn	
410-28227-4	EA04870-4 G275D-S1	Total/NA	Solid	Lloyd Kahn	
MB 410-93774/3	Method Blank	Total/NA	Solid	Lloyd Kahn	
MB 410-93774/31	Method Blank	Total/NA	Solid	Lloyd Kahn	
LCS 410-93774/32	Lab Control Sample	Total/NA	Solid	Lloyd Kahn	
LCS 410-93774/4	Lab Control Sample	Total/NA	Solid	Lloyd Kahn	

Lab Chronicle

Client: PDC Laboratories, Inc.
Project/Site: EA04870

Job ID: 410-28227-1

Client Sample ID: EA04870-1 G275D-S1
Date Collected: 01/28/21 16:00
Date Received: 02/02/21 11:46

Lab Sample ID: 410-28227-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		1.38	93317	02/10/21 15:27	NKL9	ELLE
Total/NA	Analysis	Lloyd Kahn		1.38	93317	02/10/21 15:40	NKL9	ELLE
Total/NA	Analysis	Lloyd Kahn		1.37	93317	02/10/21 15:53	NKL9	ELLE
Total/NA	Analysis	Lloyd Kahn		1.37	93317	02/10/21 16:05	NKL9	ELLE
Total/NA	Analysis	Moisture		1	90493	02/03/21 10:39	UVJN	ELLE

Client Sample ID: EA04870-2 G275D-S2
Date Collected: 01/28/21 16:30
Date Received: 02/02/21 11:46

Lab Sample ID: 410-28227-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		6.62	93774	02/11/21 18:38	NKL9	ELLE
Total/NA	Analysis	Moisture		1	90493	02/03/21 10:39	UVJN	ELLE

Client Sample ID: EA04870-3 G275D-S3
Date Collected: 01/28/21 11:00
Date Received: 02/02/21 11:46

Lab Sample ID: 410-28227-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		10.08	93774	02/11/21 18:51	NKL9	ELLE
Total/NA	Analysis	Moisture		1	90493	02/03/21 10:39	UVJN	ELLE

Client Sample ID: EA04870-4 G275D-S1
Date Collected: 01/28/21 11:00
Date Received: 02/02/21 11:46

Lab Sample ID: 410-28227-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		9.12	93774	02/11/21 19:04	NKL9	ELLE
Total/NA	Analysis	Moisture		1	90496	02/03/21 10:44	USA6	ELLE

Client Sample ID: EA04870-6 GYPSUM
Date Collected: 01/28/21 11:15
Date Received: 02/02/21 11:46

Lab Sample ID: 410-28227-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Lloyd Kahn		1.33	93317	02/10/21 17:47	NKL9	ELLE
Total/NA	Analysis	Moisture		1	90493	02/03/21 10:39	UVJN	ELLE

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Laboratory: Eurofins Lancaster Laboratories Env, LLC

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

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	1.01	11-30-22
Alaska	State	PA00009	06-30-21
Alaska (UST)	State	17-027	01-31-21 *
Arizona	State	AZ0780	03-12-21
Arkansas DEQ	State	19-053-0	08-09-21
California	State	2792	02-01-22
Colorado	State	PA00009	06-30-21
Connecticut	State	PH-0746	06-30-21
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-22
Delaware (DW)	State	N/A	02-01-22
Florida	NELAP	E87997	07-01-21
Hawaii	State	N/A	01-31-22
Iowa	State	361	03-02-22
Kansas	NELAP	E-10151	10-31-21
Kentucky (DW)	State	KY90088	01-01-22
Kentucky (WW)	State	KY90088	12-31-21
Louisiana	NELAP	02055	06-30-21
Maine	State	2019012	03-12-21
Maryland	State	100	06-30-21
Massachusetts	State	M-PA009	06-30-21
Minnesota	NELAP	042-999-487	12-31-21
Missouri	State	450	01-31-22
Montana (DW)	State	0098	01-01-22
Montana (UST)	State	0098	01-01-22
Nebraska	State	NE-OS-32-17	01-31-20 *
Nevada	State	PA000092019-3	07-31-21
New Hampshire	NELAP	273019	01-10-22
New Jersey	NELAP	PA011	06-30-21
New York	NELAP	10670	04-01-21
North Carolina (DW)	State	42705	07-31-21
North Carolina (WW/SW)	State	521	12-31-21
North Dakota	State	R-205	01-31-20 *
Oklahoma	NELAP	R-205	08-31-21
Oregon	NELAP	PA200001-018	09-12-21
PALA	Canada	1978	05-08-21
Pennsylvania	NELAP	36-00037	01-31-22
Tennessee	State	02838	01-31-22
Texas	NELAP	T104704194-20-38	08-31-21
Utah	NELAP	PA000092019-16	02-28-21
Vermont	State	VT - 36037	10-29-21
Virginia	NELAP	10561	06-14-21
Washington	State	C457	04-11-21
West Virginia DEP	State	055	06-30-21
Wyoming	State	8TMS-L	01-31-22
Wyoming (UST)	A2LA	1.01	11-30-22

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Method	Method Description	Protocol	Laboratory
Lloyd Kahn	Organic Carbon, Total (TOC)	EPA	ELLE
Moisture	Percent Moisture	EPA	ELLE

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: PDC Laboratories, Inc.
Project/Site: EA04870

Job ID: 410-28227-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
410-28227-1	EA04870-1 G275D-S1	Solid	01/28/21 16:00	02/02/21 11:46	
410-28227-2	EA04870-2 G275D-S2	Solid	01/28/21 16:30	02/02/21 11:46	
410-28227-3	EA04870-3 G275D-S3	Solid	01/28/21 11:00	02/02/21 11:46	
410-28227-4	EA04870-4 G275D-S1	Solid	01/28/21 11:00	02/02/21 11:46	
410-28227-5	EA04870-6 GYPSUM	Solid	01/28/21 11:15	02/02/21 11:46	

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EA04870

410-28227 Chain of Custody

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

Eurofins Eaton Analytical, Inc. - Lancaster, PA
2425 New Holland Pike
Lancaster, PA 17601
(717) 656-2300

Sample: EA04870-01
Name: G275D - S1

Sampled: 01/28/21 16:00
Matrix: Soil
Preservative: H2SO4, cool <6

Analysis	Due	Expires	Comments
01-TOC-STL	02/09/21 16:00	02/25/21 16:00	

Sample: EA04870-02
Name: G275D - S2

Sampled: 01/28/21 16:30
Matrix: Soil
Preservative: H2SO4, cool <6

Analysis	Due	Expires	Comments
01-TOC-STL	02/09/21 16:00	02/25/21 16:30	

Sample: EA04870-03
Name: G275D - S3

Sampled: 01/29/21 11:00
Matrix: Soil
Preservative: H2SO4, cool <6

Analysis	Due	Expires	Comments
01-TOC-STL	02/09/21 16:00	02/26/21 11:00	

Sample: EA04870-04
Name: G275D - S3

Sampled: 01/29/21 11:00
Matrix: Soil
Preservative: H2SO4, cool <6

Analysis	Due	Expires	Comments
01-TOC-STL	02/09/21 16:00	02/26/21 11:00	

Sample: EA04870-06
Name: GYPSUM

Sampled: 01/29/21 11:15
Matrix: Soil
Preservative: H2SO4, cool <6

Analysis	Due	Expires	Comments
01-TOC-STL	02/09/21 16:00	02/26/21 11:15	

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EA04870

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13
14

Please email results to Gail Schindler at gschindler@pdclab.com

Date Shipped: 2/1/21 Total # of Containers: 5 Sample Origin (State): IL PO #: 11506

Turn-Around Time Requested ☒ NORMAL ☐ RUSH Date Results Needed: ____________

Relinquished By	Date/Time	Received By	Date/Time		
[signature]	2/1/21 1434			Sample Temperature Upon Receipt	____ °C
				Sample(s) Received on Ice	Y or N
				Proper Bottles Received in Good Condition	Y or N
Relinquished By	Date/Time	Received By	Date/Time	Bottles Filled with Adequate Volume	Y or N
		[signature]	2/2/21 1146	Samples Received Within Hold Time	Y or N
				Date/Time Taken From Sample Bottle	Y or N

Login Sample Receipt Checklist

Client: PDC Laboratories, Inc.

Job Number: 410-28227-1

Login Number: 28227
List Number: 1
Creator: Jeremiah, Cory T

List Source: Eurofins Lancaster Laboratories Env

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable (</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample Preservation Verified.	N/A	
Residual Chlorine Checked.	N/A	
Sample custody seals are intact.	N/A	

Report Number
F21034-0049
Account Number
67045

a&lgreatlakes LABORATORIES
Scientists who don't mind getting dirty.™

3505 Conestoga Dr.
Fort Wayne, IN 46808
260.483.4759
algreatlakes.com

To: PDC LABORATORIES, INC.
2231 W ALTORFER DR
PEORIA, IL 61615-1807

For: EA04870

Attn: JANET CLUTTERS

Date Received: 02/03/2021
Date Reported: 02/18/2021 **Page:** 1 of 1

REPORT OF ANALYSIS

Lab Number	Sample ID	Analysis	Result	Unit	Method
19134	01	Cation Exchange Capacity (NH4-Sat.)	22.95	meq/100g	MSA Part 3 (1996) pp 1220-1221
19135	02	Cation Exchange Capacity (NH4-Sat.)	7.93	meq/100g	MSA Part 3 (1996) pp 1220-1221
19136	03	Cation Exchange Capacity (NH4-Sat.)	9.25	meq/100g	MSA Part 3 (1996) pp 1220-1221
19137	04	Cation Exchange Capacity (NH4-Sat.)	9.63	meq/100g	MSA Part 3 (1996) pp 1220-1221
19138	06	Cation Exchange Capacity (NH4-Sat.)	0.41	meq/100g	MSA Part 3 (1996) pp 1220-1221

Report reviewed and approved by our professional agronomy staff.

3505 Conestoga Dr.
Fort Wayne, IN 46808
260.483.4759
algreatlakes.com

Report Number
F21034-0049
Account Number
67045

a&l greatlakes LABORATORIES
Scientists who don't mind getting dirty.™

To: PDC LABORATORIES, INC.
2231 W ALTORFER DR
PEORIA, IL 61615-1807

For: EA04870

Attn: JANET CLUTTERS

Date Received: 02/03/2021
Date Reported: 02/18/2021 **Page:** 1 of 1

REPORT OF ANALYSIS

Lab Number	Sample ID	Analysis	Result	Unit	Method
19134	01	Cation Exchange Capacity (NH4-Sat.)	22.95	meq/100g	MSA Part 3 (1996) pp 1220-1221
19135	02	Cation Exchange Capacity (NH4-Sat.)	7.93	meq/100g	MSA Part 3 (1996) pp 1220-1221
19136	03	Cation Exchange Capacity (NH4-Sat.)	9.25	meq/100g	MSA Part 3 (1996) pp 1220-1221
19137	04	Cation Exchange Capacity (NH4-Sat.)	9.63	meq/100g	MSA Part 3 (1996) pp 1220-1221
19138	06	Cation Exchange Capacity (NH4-Sat.)	0.41	meq/100g	MSA Part 3 (1996) pp 1220-1221

Report reviewed and approved by our professional agronomy staff.

National Center for Testing & Innovation

ANALYTICAL REPORT

February 22, 2021

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

PDC Laboratory, Inc.

Sample Delivery Group:	L1313806
Samples Received:	02/04/2021
Project Number:	EA04863
Description:	
Report To:	Gail Schindler 2231 W. Altorfer Drive Peoria, IL 61615

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

EA04870-01 L1313806-01 Solids and Chemical Materials

Collected by	Collected date/time	Received date/time
	01/28/21 16:00	02/04/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 9320	WG1617956	1	02/08/21 11:32	02/17/21 10:35	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1617957	1	02/11/21 09:30	02/20/21 11:20	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1617957	1	02/11/21 09:30	02/20/21 11:20	RGT	Mt. Juliet, TN

EA04870-02 L1313806-02 Solids and Chemical Materials

Collected by	Collected date/time	Received date/time
	01/28/21 16:30	02/04/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 9320	WG1617956	1	02/08/21 11:32	02/17/21 10:35	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1617957	1	02/11/21 09:30	02/20/21 11:20	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1617957	1	02/11/21 09:30	02/20/21 11:20	RGT	Mt. Juliet, TN

EA04870-03 L1313806-03 Solids and Chemical Materials

Collected by	Collected date/time	Received date/time
	01/29/21 11:00	02/04/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 9320	WG1617956	1	02/08/21 11:32	02/17/21 10:35	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1617957	1	02/11/21 09:30	02/20/21 11:20	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1617957	1	02/11/21 09:30	02/20/21 11:20	RGT	Mt. Juliet, TN

EA04870-04 L1313806-04 Solids and Chemical Materials

Collected by	Collected date/time	Received date/time
	01/29/21 11:00	02/04/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 9320	WG1617956	1	02/08/21 11:32	02/17/21 10:35	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1617957	1	02/11/21 09:30	02/20/21 11:20	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1617957	1	02/11/21 09:30	02/20/21 11:20	RGT	Mt. Juliet, TN

EA04870-06 L1313806-05 Solids and Chemical Materials

Collected by	Collected date/time	Received date/time
	01/29/21 11:15	02/04/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Radiochemistry by Method 9320	WG1617956	1	02/08/21 11:32	02/17/21 10:35	SNR	Mt. Juliet, TN
Radiochemistry by Method Calculation	WG1617957	1	02/11/21 09:30	02/20/21 11:20	RGT	Mt. Juliet, TN
Radiochemistry by Method SM7500Ra B M	WG1617957	1	02/11/21 09:30	02/20/21 11:20	RGT	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

Radiochemistry by Method 9320

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
RADIUM-228	0.653		0.231	0.401	02/17/2021 10:35	WG1617956
(T) Barium	*103*			*62.0-143*	*02/17/2021 10:35*	WG1617956
(T) Yttrium	*99.0*			*79.0-136*	*02/17/2021 10:35*	WG1617956

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	1.03		0.346	0.449	02/20/2021 11:20	WG1617957

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
RADIUM-226	0.376		0.115	0.0478	02/20/2021 11:20	WG1617957
(T) Barium-133	*97.0*			*30.0-143*	*02/20/2021 11:20*	WG1617957

Radiochemistry by Method 9320

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
RADIUM-228	1.34		0.232	0.383	02/17/2021 10:35	WG1617956
(T) Barium	*112*			*62.0-143*	*02/17/2021 10:35*	WG1617956
(T) Yttrium	*97.6*			*79.0-136*	*02/17/2021 10:35*	WG1617956

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	1.74		0.367	0.472	02/20/2021 11:20	WG1617957

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
RADIUM-226	0.402		0.135	0.0888	02/20/2021 11:20	WG1617957
(T) Barium-133	*92.0*			*30.0-143*	*02/20/2021 11:20*	WG1617957

Radiochemistry by Method 9320

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
RADIUM-228	0.807		0.234	0.402	02/17/2021 10:35	WG1617956
(T) Barium	*114*			*62.0-143*	*02/17/2021 10:35*	WG1617956
(T) Yttrium	*95.4*			*79.0-136*	*02/17/2021 10:35*	WG1617956

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	1.25		0.373	0.476	02/20/2021 11:20	WG1617957

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
RADIUM-226	0.445		0.139	0.074	02/20/2021 11:20	WG1617957
(T) Barium-133	*92.0*			*30.0-143*	*02/20/2021 11:20*	WG1617957

Radiochemistry by Method 9320

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
RADIUM-228	0.726		0.244	0.422	02/17/2021 10:35	WG1617956
(T) Barium	*113*			*62.0-143*	*02/17/2021 10:35*	WG1617956
(T) Yttrium	*99.7*			*79.0-136*	*02/17/2021 10:35*	WG1617956

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	1.33		0.405	0.489	02/20/2021 11:20	WG1617957

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
RADIUM-226	0.606		0.161	0.0671	02/20/2021 11:20	WG1617957
(T) Barium-133	*91.0*			*30.0-143*	*02/20/2021 11:20*	WG1617957

Radiochemistry by Method 9320

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
RADIUM-228	-0.226	U	0.210	0.388	02/17/2021 10:35	WG1617956
(T) Barium	*97.9*			*62.0-143*	*02/17/2021 10:35*	WG1617956
(T) Yttrium	*99.3*			*79.0-136*	*02/17/2021 10:35*	WG1617956

Radiochemistry by Method Calculation

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
Combined Radium	0.202	J	0.299	0.456	02/20/2021 11:20	WG1617957

Radiochemistry by Method SM7500Ra B M

Analyte	Result pCi/g	Qualifier	Uncertainty +/-	MDA pCi/g	Analysis Date date / time	Batch
RADIUM-226	0.202		0.0894	0.0682	02/20/2021 11:20	WG1617957
(T) Barium-133	*99.2*			*30.0-143*	*02/20/2021 11:20*	WG1617957

Method Blank (MB)

(MB) R3623477-1 02/17/21 10:35

Analyte	MB Result pCi/g	MB Qualifier	MB MDA pCi/g
Radium-228	-0.305	U	0.492
(T) Barium	*106*		
(T) Yttrium	*90.3*		

Original Sample (OS) • Duplicate (DUP)

(OS) • (DUP) R3623477-5 02/17/21 10:35

Analyte	Original Result	DUP Result pCi/g	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-228		0.756	1	37.2	0.918		20	3
(T) Barium		*103*						
(T) Yttrium		*99.2*						

Laboratory Control Sample (LCS)

(LCS) R3623477-2 02/17/21 10:35

Analyte	Spike Amount pCi/g	LCS Result pCi/g	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-228	5.00	4.42	88.4	80.0-120	
(T) Barium			*105*		
(T) Yttrium			*94.8*		

Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) • (MS) R3623477-3 02/17/21 10:35 • (MSD) R3623477-4 02/17/21 10:35

Analyte	Spike Amount pCi/g	Original Result	MS Result pCi/g	MSD Result pCi/g	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-228	4.75		4.90	4.96	91.5	92.9	1	70.0-130			1.32		20
(T) Barium					*101*	*103*							
(T) Yttrium					*105*	*101*							

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3623849-1 02/20/21 11:20

Analyte	MB Result pCi/g	MB Qualifier	MB MDA pCi/g
Radium-226	0.0275	J	0.0453
(T) Barium-133	*91.5*		

L1313806-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1313806-05 02/20/21 11:20 • (DUP) R3623849-5 02/20/21 11:20

Analyte	Original Result pCi/g	DUP Result pCi/g	Dilution	DUP RPD %	DUP RER	DUP Qualifier	DUP RPD Limits %	DUP RER Limit
Radium-226	0.202	0.138	1	37.8	0.564		20	3
(T) Barium-133	*99.2*	*103*						

Laboratory Control Sample (LCS)

(LCS) R3623849-2 02/20/21 11:20

Analyte	Spike Amount pCi/g	LCS Result pCi/g	LCS Rec. %	Rec. Limits %	LCS Qualifier
Radium-226	5.02	5.51	110	60.0-144	
(T) Barium-133			*94.7*		

L1313791-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1313791-01 02/20/21 11:20 • (MS) R3623849-3 02/20/21 11:20 • (MSD) R3623849-4 02/20/21 11:20

Analyte	Spike Amount pCi/g	Original Result pCi/g	MS Result pCi/g	MSD Result pCi/g	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	MS RER	RPD Limits %
Radium-226	5.01	0.619	5.53	5.79	98.0	103	1	65.0-135			4.61		20
(T) Barium-133		*99.4*			*99.7*	*102*							

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDA	Minimum Detectable Activity.
Rec.	Recovery.
RER	Replicate Error Ratio.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(T)	Tracer - A radioisotope of known concentration added to a solution of chemically equivalent radioisotopes at a known concentration to assist in monitoring the yield of the chemical separation.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
U	Below Detectable Limits: Indicates that the analyte was not detected.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN, 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

Pace Analytical National 1313 Point Mallard Parkway SE Suite B Decatur, AL, 35601

Alabama	40160
ANSI National Accreditation Board	L2239

Pace Analytical National 660 Bercut Dr. Ste. C Sacramento, CA, 95811

California	2961	Oregon	CA300002
Minnesota	006-999-465	Washington	C926
North Dakota	R-214		

Pace Analytical National 6000 South Eastern Avenue Ste 9A Las Vegas, NV, 89119

Nevada	NV009412021-1

Pace Analytical National 1606 E. Brazos Street Suite D Victoria, TX, 77901

Texas	T104704328-20-18

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

H044

13 13806

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EA04870

SENDING LABORATORY

PDC Laboratories, Inc.
2231 W Altorfer Dr
Peoria, IL 61615
(800) 752-6651

RECEIVING LABORATORY

Pace Analytical - Mt Juliet, Tn
12065 Lebanon Rd
Mt Juliet, TN 37122
(615) 758-5858

Sample: EA04870-01 **Name:** G275D - S1 — **Sampled:** 01/28/21 16:00 **Matrix:** Soil **Preservative:** Cool <6 -01

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	02/09/21 16:00	07/27/21 16:00	

Sample: EA04870-02 **Name:** G275D - S2 — **Sampled:** 01/28/21 16:30 **Matrix:** Soil **Preservative:** Cool <6 02

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	02/09/21 16:00	07/27/21 16:30	

Sample: EA04870-03 **Name:** G275D - S3 — **Sampled:** 01/29/21 11:00 **Matrix:** Soil **Preservative:** Cool <6 03

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	02/09/21 16:00	07/28/21 11:00	

Sample: EA04870-04 **Name:** G275D - S3 — **Sampled:** 01/29/21 11:00 **Matrix:** Soil **Preservative:** Cool <6 04

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	02/09/21 16:00	07/28/21 11:00	

Sample: EA04870-06 **Name:** GYPSUM — **Sampled:** 01/29/21 11:15 **Matrix:** Soil **Preservative:** Cool <6 05

Analysis	Due	Expires	Comments
01-Radium 226/228 combined	02/09/21 16:00	07/28/21 11:15	

1313806

SUBCONTRACT ORDER
Transfer Chain of Custody

PDC Laboratories, Inc.

EA04870

5 total

7727 9603 7950

Sample Receipt Checklist

COC Seal Present/Intact: Y X N
COC Signed/Accurate: X Y N
Bottles arrive intact: X Y N
Correct bottles used: X Y N
Sufficient volume sent: X Y N
RAD Screen <0.5 mR/hr: X Y N

If Applicable
VOA Zero Headspace: __Y__N
Pres.Correct/Check: __Y__N

All Cont <500 CPM

Please email results to Gail Schindler at gschindler@pdclab.com

Date Shipped: 2-2-21 Total # of Containers: 5 Sample Origin (State): IL PO #: 11508

Turn-Around Time Requested [x] NORMAL [ ] RUSH Date Results Needed: ______

Relinquished By	Date/Time	Received By	Date/Time
[signature]	2-2-21 11:00	NPappas	2-4-21 900

Sample Temperature Upon Receipt	5.2, 2.2, 5.2 °C
Sample(s) Received on Ice	Y or N
Proper Bottles Received in Good Condition	Y or N
Bottles Filled with Adequate Volume	Y or N
Samples Received Within Hold Time	Y or N
Date/Time Taken From Sample Bottle	Y or N

PDC LABORATORIES, INC.
WWW.PDCLAB.COM

REGULATORY PROGRAM (CIRCLE):	NPDES
MORBCA	RCRA
CCDD	TACO: RES OR IND/COMM

CHAIN OF CUSTODY RECORD

STATE WHERE SAMPLE COLLECTED IL

EA04870-07

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

(1) CLIENT: **HANSON PROFESSIONAL SERVICES**
PROJECT NUMBER: **COFFEEN GMF**
PROJECT LOCATION:
PURCHASE ORDER #:
ADDRESS: **1525 S 6TH STREET**
PHONE NUMBER:
E-MAIL:
DATE SHIPPED:
CITY STATE ZIP: **SPRINGFIELD IL 62703-6801**
SAMPLER (PLEASE PRINT): Colin Winter
CONTACT PERSON: **MR RHON HASENYAGER**
SAMPLER'S SIGNATURE: [signature]

MATRIX TYPES: WW- WASTEWATER; DW- DRINKING WATER; GW- GROUND WATER; WWSL- SLUDGE; NAS- NON AQUEOUS SOLID; LCHT-LEACHATE; OIL-OIL; SO-SOIL; SOL-SOLID

(3) ANALYSIS REQUESTED: SB, AS, BA, BE, B, CD, CA, CR, | CO, FE, PB, LI, MG, MN, MO, K | SE, NA, S, TL, CL, F, SO4, TN | FE OXIDE, MN OXIDE | RAD 226/228 | TOC | CEC

(4) (FOR LAB USE ONLY)
LOGIN # EA04870-07
LOGGED BY: KEG
CLIENT: HANSON PROFESSIONAL SERVICES
PROJECT: HANSON VISTRA COFFEEN GMF SOIL
PRJ. MGR.: GJ SCHINDLER

(2)

SAMPLE DESCRIPTION (UNIQUE DESCRIPTION AS IT WILL APPEAR ON THE ANALYTICAL REPORT)	DATE COLLECTED	TIME COLLECTED	SAMPLE TYPE GRAB	SAMPLE TYPE COMP	MATRIX TYPE	BOTTLE COUNT	PRES CODE CLIENT PROVIDED	SB, AS, BA, BE, B, CD, CA, CR,	CO, FE, PB, LI, MG, MN, MO, K	SE, NA, S, TL, CL, F, SO4, TN	FE OXIDE, MN OXIDE	RAD 226/228	TOC	CEC	REMARKS
G275D-S1	1/28/21	SEE JARS		X	SO	3									3-4pm 1/29/21 DCW
G275D-S2	⊥	⊥		X	|	3									4-4:30pm 1/29/21 DCW
G275D-S3	1/28+29/21	3-5PM/8-11AM		X	|	4									8-11am 1/29/21 DCW
G275D-S3 (MS/MSD/FIELD DUP ~~EQUIP BLANK~~)	⊥	⊥		X	⊥	3									8-11am 1/29/21 DCW
G275D-S21 (EQUIP BLANK)	1/29/21	9AM ~~SEE JARS~~	X		N/A	8									9am 1/29/21 DCW
															11:15am 1/29/21 DCW
GYPSUM	1/29/21	11AM	X		SOL	4									

CHEMICAL PRESERVATION CODES: 1 – HCL | 2 – H2SO4 | 3 – HNO3 | 4 – NAOH | 5 – NA2S2O3 | 6 – UNPRESERVED | 7 – OTHER

(5) TURNAROUND TIME REQUESTED (PLEASE CIRCLE) NORMAL RUSH
(RUSH TAT IS SUBJECT TO PDC LABS APPROVAL AND SURCHARGE)
DATE RESULTS NEEDED
RUSH RESULTS VIA (PLEASE CIRCLE) EMAIL PHONE
EMAIL IF DIFFERENT FROM ABOVE: PHONE # IF DIFFERENT FROM ABOVE:

(6) *I understand that by initialing this box I give the lab permission to proceed with analysis, even though it may not meet all sample conformance requirements as defined in the receiving facility's Sample Acceptance Policy and the data will be qualified. Qualified data may NOT be acceptable to report to all regulatory authorities.*
PROCEED WITH ANALYSIS AND QUALIFY RESULTS: (INITIALS) ______

(7)

RELINQUISHED BY: (SIGNATURE)	DATE / TIME	RECEIVED BY: (SIGNATURE)	DATE / TIME
[signature]	1/29/21 / 12:30PM	[signature]	1/29/21 / 12:30pm
[signature]	1/29/21 / 16:12		
		[signature]	1/29/21 / 1612

(8) COMMENTS: (FOR LAB USE ONLY)
SAMPLE TEMPERATURE UPON RECEIPT 9.1 °C
CHILL PROCESS STARTED PRIOR TO RECEIPT (Y) OR N
SAMPLE(S) RECEIVED ON ICE (Y) OR N
SAMPLE ACCEPTANCE NONCONFORMANT REPORT IS NEEDED Y OR (N)
DATE AND TIME TAKEN FROM SAMPLE BOTTLE ______

ANALYTICAL RESULTS

Sample: EC02226-02
Name: Coffeen Gypsum
Matrix: Soil - Grab

Sampled: 03/09/21 13:15
Received: 03/10/21 17:00

Parameter	Result	Unit	Qualifier	Prepared	Dilution	MRL	Analyzed	Analyst	Method
Anions - PIA									
Chloride	260	mg/kg		03/15/21 22:53	10	100	03/15/21 22:53	CRD	EPA 9056A
Fluoride	7.6	mg/kg		03/17/21 02:20	1	2.5	03/17/21 02:20	CRD	EPA 9056A
Sulfate	15000	mg/kg		03/17/21 02:39	250	2500	03/17/21 02:39	CRD	EPA 9056A
General Chemistry - PIA									
Solids - total solids (TS)	59	%		03/15/21 13:46	1	0.050	03/15/21 14:23	BMA	SM 2540G*
Total Nitrogen	880	mg/kg dry		03/17/21 12:57	1	84	03/17/21 13:28	BMS	(calc)
Nutrients - PIA									
Nitrate/Nitrite-N	8.6	mg/kg		03/17/21 12:57	1	0.20	03/17/21 13:28	CRS1	EPA 353.2 REV 2
Total Kjeldahl Nitrogen (TKN)	510	mg/kg		03/11/21 07:57	1	50	03/12/21 09:11	BMS	EPA 351.2 REV 2*
Total Metals - PIA									
Antimony	< 3.0	mg/kg		03/17/21 13:02	10	3.0	03/18/21 16:07	KMC	EPA 6020A
Arsenic	< 1.0	mg/kg		03/17/21 13:02	10	1.0	03/18/21 16:07	KMC	EPA 6020A
Barium	13	mg/kg		03/17/21 13:02	10	1.0	03/18/21 16:07	KMC	EPA 6020A
Beryllium	< 1.0	mg/kg		03/17/21 13:02	10	1.0	03/19/21 11:10	JMW	EPA 6020A
Boron	< 10	mg/kg		03/17/21 13:02	10	10	03/18/21 16:07	KMC	EPA 6020A*
Cadmium	< 1.0	mg/kg		03/17/21 13:02	10	1.0	03/18/21 16:07	KMC	EPA 6020A
Calcium	130000	mg/kg		03/17/21 13:02	20	200	03/30/21 12:38	JMW	EPA 6020A*
Chromium	< 4.0	mg/kg		03/17/21 13:02	10	4.0	03/18/21 16:07	KMC	EPA 6020A
Cobalt	< 2.0	mg/kg		03/17/21 13:02	10	2.0	03/18/21 16:07	KMC	EPA 6020A
Iron	380	mg/kg		03/17/21 13:02	20	60	03/30/21 12:38	JMW	EPA 6020A*
Lead	< 1.0	mg/kg		03/17/21 13:02	10	1.0	03/18/21 16:07	KMC	EPA 6020A
Magnesium	320	mg/kg		03/17/21 13:02	20	200	03/30/21 12:38	JMW	EPA 6020A*
Manganese	17	mg/kg		03/17/21 13:02	20	2.0	03/30/21 12:38	JMW	EPA 6020A
Molybdenum	< 1.0	mg/kg		03/17/21 13:02	10	1.0	03/18/21 16:07	KMC	EPA 6020A
Potassium	< 200	mg/kg		03/17/21 13:02	20	200	03/30/21 12:38	JMW	EPA 6020A*
Selenium	< 1.0	mg/kg		03/17/21 13:02	10	1.0	03/18/21 16:07	KMC	EPA 6020A
Sodium	240	mg/kg		03/17/21 13:02	20	200	03/31/21 10:23	JMW	EPA 6020A*
Thallium	< 1.0	mg/kg		03/17/21 13:02	10	1.0	03/18/21 16:07	KMC	EPA 6020A
Lithium	< 5.0	mg/kg		03/17/21 13:02	1	5.0	03/18/21 11:38	TJJ	EPA 6010B*
Sulfur	86000	mg/kg		03/17/21 13:02	100	1000	03/18/21 14:24	TJJ	EPA 6010B*

Attachment F

X-Ray Diffraction Analytical Data

Quantitative X-Ray Diffraction by Rietveld Refinement

Report Prepared for:	*Environmental Services*
Project Number/ LIMS No.	*Custom XRD/MI4508-SEP21*
Sample Receipt:	*September 9, 2021*
Sample Analysis:	*September 24, 2021*
Reporting Date:	*October 22, 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.

SGS

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.

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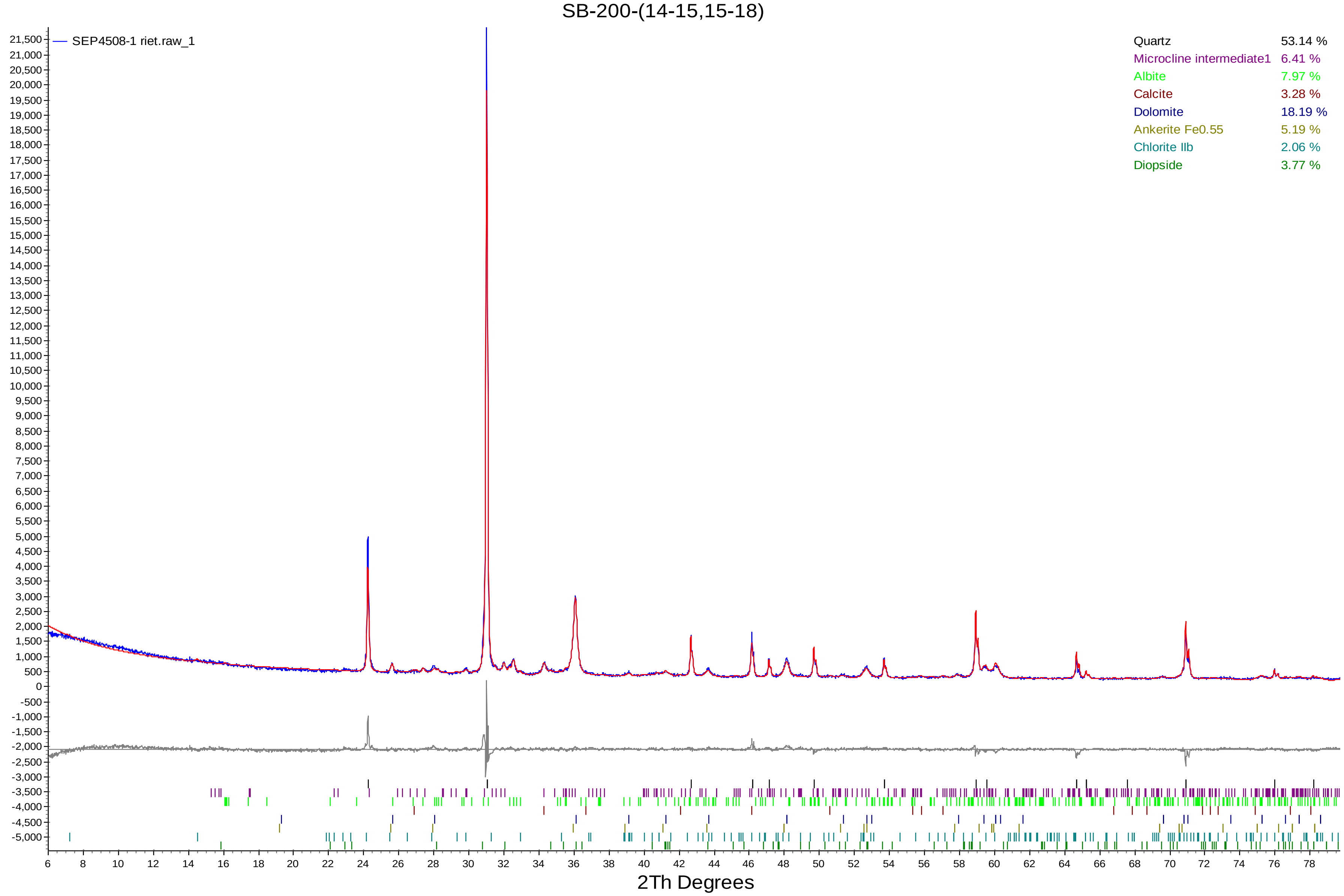
Member of the SGS Group (SGS SA)

Summary of Rietveld Quantitative Analysis X-Ray Diffraction Results

Mineral/Compound	SB-200-(14-15,15-18) SEP4508-01 (wt %)	SB-215-(23-24,24-24.5) SEP4508-02 (wt %)
Quartz	53.1	58.3
Microcline	6.4	6.2
Albite	8.0	9.0
Calcite	3.3	4.5
Dolomite	18.2	12.9
Ankerite	5.2	4.3
Chlorite	2.1	0.8
Diopside	3.8	4.1
TOTAL	100	100

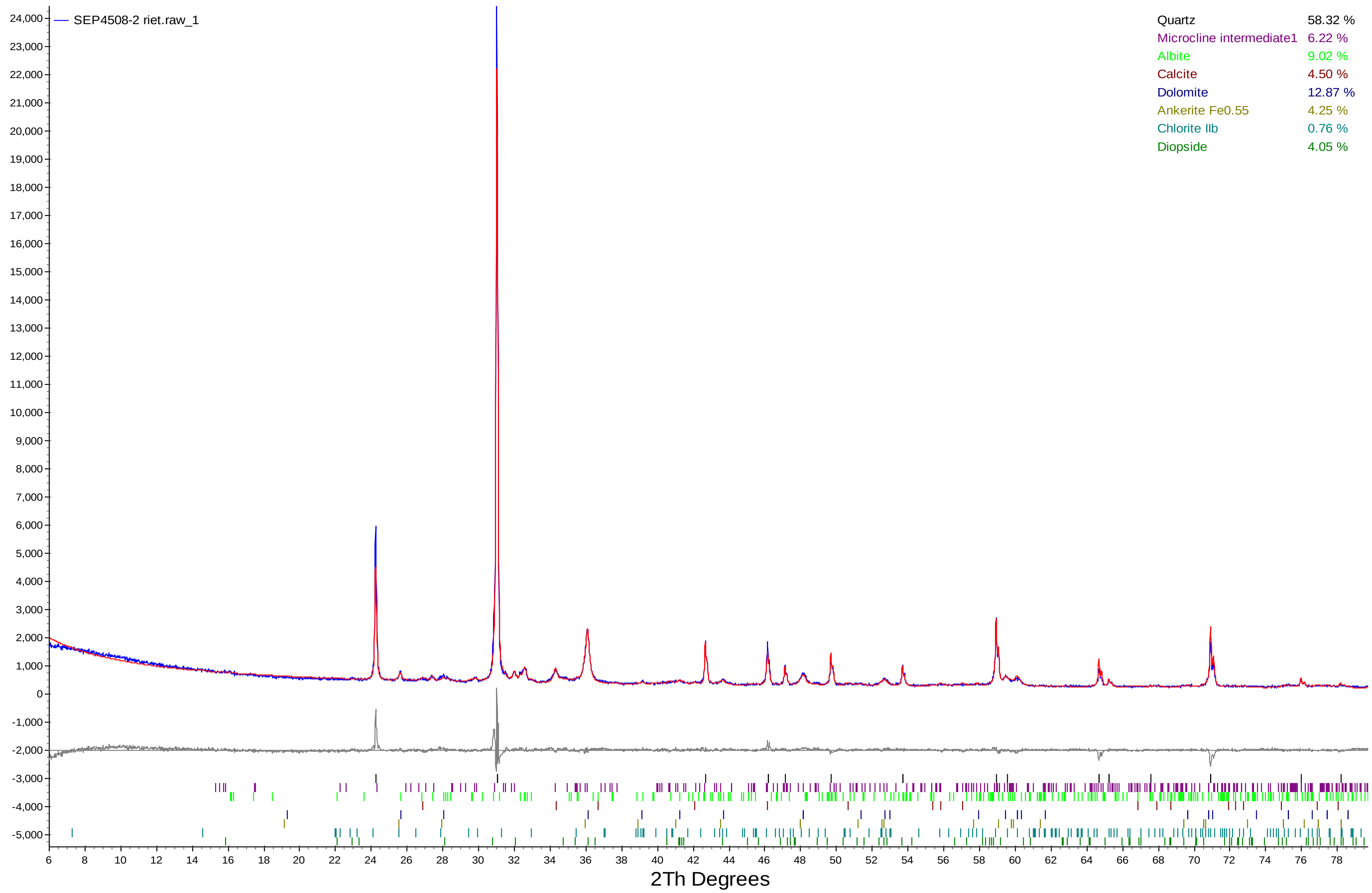
The weight percent quantities indicated have been normalized to a sum of 100%. The quantity of amorphous material has not been determined.

Mineral/Compound	Formula
Quartz	SiO_2
Microcline	$KAlSi_3O_8$
Albite	$NaAlSi_3O_8$
Calcite	$CaCO_3$
Dolomite	$CaMg(CO_3)_2$
Ankerite	$CaFe(CO_3)_2$
Chlorite	$(Fe,(Mg,Mn)_5,Al)(Si_3Al)O_{10}(OH)_8$
Diopside	$CaMgSi_2O_6$


SB-200-(14-15,15-18)
SEP4508-1 riet.raw_1
Quartz 53.14 %
Microcline intermediate1 6.41 %
Albite 7.97 %
Calcite 3.28 %
Dolomite 18.19 %
Ankerite Fe0.55 5.19 %
Chlorite IIb 2.06 %
Diopside 3.77 %
2Th Degrees

Environmental Services
Custom XRD/MI4508-SEP21
22-Oct-21

SB-215-(23-24,24-24.5)



Attachment G
Site Evaluation Aqueous Phase Data

Attachment G. Site Evaluation Aqueous Phase Data
Geochemical Conceptual Site Model
Coffeen GMF Gypsum Stack Pond
Coffeen Power Plant
Coffeen, IL

HSU	Location	Well Type	Date	Parameter	Unit	Result
DA	G206D	C	2021/03/30	pH (field)	SU	7.1
DA	G206D	C	2021/04/22	pH (field)	SU	7.2
DA	G206D	C	2021/05/05	pH (field)	SU	7.1
DA	G206D	C	2021/05/18	pH (field)	SU	7.2
DA	G206D	C	2021/07/27	pH (field)	SU	7.5
DA	G206D	C	2023/02/16	pH (field)	SU	7.5
DA	G206D	C	2023/06/09	pH (field)	SU	7.2
DA	G206D	C	2023/08/14	pH (field)	SU	6.9
DA	G206D	C	2023/11/17	pH (field)	SU	7.1
DA	G206D	C	2021/03/30	Oxidation Reduction Potential	mV	-9.60
DA	G206D	C	2021/04/22	Oxidation Reduction Potential	mV	44.2
DA	G206D	C	2021/05/05	Oxidation Reduction Potential	mV	97.6
DA	G206D	C	2021/05/18	Oxidation Reduction Potential	mV	-48.4
DA	G206D	C	2021/07/27	Oxidation Reduction Potential	mV	78.0
DA	G206D	C	2023/02/16	Oxidation Reduction Potential	mV	-95.0
DA	G206D	C	2023/06/09	Oxidation Reduction Potential	mV	-194
DA	G206D	C	2023/08/14	Oxidation Reduction Potential	mV	-48.0
DA	G206D	C	2023/11/17	Oxidation Reduction Potential	mV	-54.0
DA	G206D	C	2021/03/30	Eh	V	0.19
DA	G206D	C	2021/04/22	Eh	V	0.24
DA	G206D	C	2021/05/05	Eh	V	0.29
DA	G206D	C	2021/05/18	Eh	V	0.15
DA	G206D	C	2021/07/27	Eh	V	0.27
DA	G206D	C	2023/02/16	Eh	V	0.10
DA	G206D	C	2023/06/09	Eh	V	-0.00067
DA	G206D	C	2023/08/14	Eh	V	0.15
DA	G206D	C	2023/11/17	Eh	V	0.14
DA	G206D	C	2021/03/30	Alkalinity, bicarbonate	mg/L CaCO3	380
DA	G206D	C	2021/04/22	Alkalinity, bicarbonate	mg/L CaCO3	420
DA	G206D	C	2021/05/05	Alkalinity, bicarbonate	mg/L CaCO3	380
DA	G206D	C	2021/05/18	Alkalinity, bicarbonate	mg/L CaCO3	390
DA	G206D	C	2021/07/27	Alkalinity, bicarbonate	mg/L CaCO3	400
DA	G206D	C	2023/02/16	Alkalinity, bicarbonate	mg/L CaCO3	410
DA	G206D	C	2023/06/09	Alkalinity, bicarbonate	mg/L CaCO3	400
DA	G206D	C	2023/08/14	Alkalinity, bicarbonate	mg/L CaCO3	414
DA	G206D	C	2023/11/17	Alkalinity, bicarbonate	mg/L CaCO3	420
DA	G206D	C	2021/03/30	Barium, total	mg/L	0.140
DA	G206D	C	2021/04/22	Barium, total	mg/L	0.0890
DA	G206D	C	2021/05/05	Barium, total	mg/L	0.120
DA	G206D	C	2021/05/18	Barium, total	mg/L	0.120
DA	G206D	C	2021/07/27	Barium, total	mg/L	0.0790
DA	G206D	C	2023/02/16	Barium, total	mg/L	0.120
DA	G206D	C	2023/06/09	Barium, total	mg/L	0.170

DA	G206D	C	2023/08/14	Barium, total	mg/L	0.200
DA	G206D	C	2023/11/17	Barium, total	mg/L	0.183
DA	G206D	C	2021/03/30	Calcium, total	mg/L	140
DA	G206D	C	2021/04/22	Calcium, total	mg/L	120
DA	G206D	C	2021/05/05	Calcium, total	mg/L	130
DA	G206D	C	2021/05/18	Calcium, total	mg/L	130
DA	G206D	C	2021/07/27	Calcium, total	mg/L	110
DA	G206D	C	2023/02/16	Calcium, total	mg/L	89.0
DA	G206D	C	2023/06/09	Calcium, total	mg/L	86.0
DA	G206D	C	2023/08/14	Calcium, total	mg/L	84.9
DA	G206D	C	2023/11/17	Calcium, total	mg/L	80.3
DA	G206D	C	2021/03/30	Chloride, total	mg/L	70.0
DA	G206D	C	2021/04/22	Chloride, total	mg/L	67.0
DA	G206D	C	2021/05/05	Chloride, total	mg/L	56.0
DA	G206D	C	2021/05/18	Chloride, total	mg/L	52.0
DA	G206D	C	2021/07/27	Chloride, total	mg/L	42.0
DA	G206D	C	2023/02/16	Chloride, total	mg/L	29.0
DA	G206D	C	2023/06/09	Chloride, total	mg/L	25.0
DA	G206D	C	2023/08/14	Chloride, total	mg/L	23.0
DA	G206D	C	2023/11/17	Chloride, total	mg/L	22.0
DA	G206D	C	2023/06/09	Ferrous Iron, dissolved	mg/L	3.00
DA	G206D	C	2023/06/09	Iron, dissolved	mg/L	3.40
DA	G206D	C	2023/08/14	Iron, dissolved	mg/L	3.12
DA	G206D	C	2021/03/30	Magnesium, total	mg/L	56.0
DA	G206D	C	2021/04/22	Magnesium, total	mg/L	47.0
DA	G206D	C	2021/05/05	Magnesium, total	mg/L	49.0
DA	G206D	C	2021/05/18	Magnesium, total	mg/L	48.0
DA	G206D	C	2021/07/27	Magnesium, total	mg/L	39.0
DA	G206D	C	2023/02/16	Magnesium, total	mg/L	27.0
DA	G206D	C	2023/06/09	Magnesium, total	mg/L	31.0
DA	G206D	C	2023/08/14	Magnesium, total	mg/L	31.0
DA	G206D	C	2023/11/17	Magnesium, total	mg/L	29.7
DA	G206D	C	2023/06/09	Manganese, dissolved	mg/L	0.200
DA	G206D	C	2023/08/14	Manganese, dissolved	mg/L	0.176
DA	G206D	C	2023/08/14	Phosphate, dissolved	mg/L	0.448
DA	G206D	C	2021/03/30	Potassium, total	mg/L	2.70
DA	G206D	C	2021/04/22	Potassium, total	mg/L	1.70
DA	G206D	C	2021/05/05	Potassium, total	mg/L	1.60
DA	G206D	C	2021/05/18	Potassium, total	mg/L	1.50
DA	G206D	C	2021/07/27	Potassium, total	mg/L	1.50
DA	G206D	C	2023/02/16	Potassium, total	mg/L	1.20
DA	G206D	C	2023/06/09	Potassium, total	mg/L	1.10
DA	G206D	C	2023/08/14	Potassium, total	mg/L	1.30
DA	G206D	C	2023/11/17	Potassium, total	mg/L	1.21
DA	G206D	C	2023/06/09	Silicon, dissolved	mg/L	6.90
DA	G206D	C	2023/08/14	Silicon, dissolved	mg/L	5.86
DA	G206D	C	2021/03/30	Sodium, total	mg/L	240
DA	G206D	C	2021/04/22	Sodium, total	mg/L	240
DA	G206D	C	2021/05/05	Sodium, total	mg/L	240
DA	G206D	C	2021/05/18	Sodium, total	mg/L	220

DA	G206D	C	2021/07/27	Sodium, total	mg/L	230
DA	G206D	C	2023/02/16	Sodium, total	mg/L	120
DA	G206D	C	2023/06/09	Sodium, total	mg/L	120
DA	G206D	C	2023/08/14	Sodium, total	mg/L	128
DA	G206D	C	2023/11/17	Sodium, total	mg/L	116
DA	G206D	C	2021/03/30	Sulfate, total	mg/L	590
DA	G206D	C	2021/04/22	Sulfate, total	mg/L	600
DA	G206D	C	2021/05/05	Sulfate, total	mg/L	510
DA	G206D	C	2021/05/18	Sulfate, total	mg/L	250
DA	G206D	C	2021/07/27	Sulfate, total	mg/L	400
DA	G206D	C	2023/02/16	Sulfate, total	mg/L	160
DA	G206D	C	2023/06/09	Sulfate, total	mg/L	160
DA	G206D	C	2023/08/14	Sulfate, total	mg/L	155
DA	G206D	C	2023/11/17	Sulfate, total	mg/L	153
DA	G206D	C	2021/03/30	Temperature (Celsius)	degrees C	15.4
DA	G206D	C	2021/04/22	Temperature (Celsius)	degrees C	15.4
DA	G206D	C	2021/05/05	Temperature (Celsius)	degrees C	18.8
DA	G206D	C	2021/05/18	Temperature (Celsius)	degrees C	14.5
DA	G206D	C	2021/07/27	Temperature (Celsius)	degrees C	20.6
DA	G206D	C	2023/02/16	Temperature (Celsius)	degrees C	9.60
DA	G206D	C	2023/06/09	Temperature (Celsius)	degrees C	18.1
DA	G206D	C	2023/08/14	Temperature (Celsius)	degrees C	15.4
DA	G206D	C	2023/11/17	Temperature (Celsius)	degrees C	15.0
DA	G206D	C	2021/03/30	Total Dissolved Solids	mg/L	1,300
DA	G206D	C	2021/04/22	Total Dissolved Solids	mg/L	1,300
DA	G206D	C	2021/05/05	Total Dissolved Solids	mg/L	1,200
DA	G206D	C	2021/05/18	Total Dissolved Solids	mg/L	1,200
DA	G206D	C	2021/07/27	Total Dissolved Solids	mg/L	1,100
DA	G206D	C	2023/02/16	Total Dissolved Solids	mg/L	670
DA	G206D	C	2023/06/09	Total Dissolved Solids	mg/L	680
DA	G206D	C	2023/08/14	Total Dissolved Solids	mg/L	685
DA	G206D	C	2023/11/17	Total Dissolved Solids	mg/L	755
S	NE Riser	WLO	2021/03/31	pH (field)	SU	7.2
S	NE Riser	WLO	2021/04/21	pH (field)	SU	7.3
S	NE Riser	WLO	2021/05/05	pH (field)	SU	7.2
S	NE Riser	WLO	2021/05/18	pH (field)	SU	7.2
S	NE Riser	WLO	2021/07/27	pH (field)	SU	7.1
S	NE Riser	WLO	2022/03/21	pH (field)	SU	7.2
S	NE Riser	WLO	2022/06/15	pH (field)	SU	7.9
S	NE Riser	WLO	2022/08/25	pH (field)	SU	6.9
S	NE Riser	WLO	2023/02/15	pH (field)	SU	6.9
S	NE Riser	WLO	2021/03/31	Oxidation Reduction Potential	mV	251
S	NE Riser	WLO	2021/04/21	Oxidation Reduction Potential	mV	179
S	NE Riser	WLO	2021/05/05	Oxidation Reduction Potential	mV	211
S	NE Riser	WLO	2021/05/18	Oxidation Reduction Potential	mV	93.1
S	NE Riser	WLO	2021/07/27	Oxidation Reduction Potential	mV	243
S	NE Riser	WLO	2022/03/21	Oxidation Reduction Potential	mV	56.8
S	NE Riser	WLO	2022/06/15	Oxidation Reduction Potential	mV	195
S	NE Riser	WLO	2022/08/25	Oxidation Reduction Potential	mV	176
S	NE Riser	WLO	2023/02/15	Oxidation Reduction Potential	mV	464

S	NE Riser	WLO	2021/03/31	Eh	V	0.45
S	NE Riser	WLO	2021/04/21	Eh	V	0.38
S	NE Riser	WLO	2021/05/05	Eh	V	0.40
S	NE Riser	WLO	2021/05/18	Eh	V	0.29
S	NE Riser	WLO	2021/07/27	Eh	V	0.44
S	NE Riser	WLO	2022/03/21	Eh	V	0.25
S	NE Riser	WLO	2022/06/15	Eh	V	0.38
S	NE Riser	WLO	2022/08/25	Eh	V	0.36
S	NE Riser	WLO	2023/02/15	Eh	V	0.66
S	NE Riser	WLO	2021/03/31	Alkalinity, bicarbonate	mg/L CaCO3	290
S	NE Riser	WLO	2021/04/21	Alkalinity, bicarbonate	mg/L CaCO3	290
S	NE Riser	WLO	2021/05/05	Alkalinity, bicarbonate	mg/L CaCO3	290
S	NE Riser	WLO	2021/05/18	Alkalinity, bicarbonate	mg/L CaCO3	310
S	NE Riser	WLO	2021/07/27	Alkalinity, bicarbonate	mg/L CaCO3	310
S	NE Riser	WLO	2022/03/21	Alkalinity, bicarbonate	mg/L CaCO3	290
S	NE Riser	WLO	2022/06/15	Alkalinity, bicarbonate	mg/L CaCO3	250
S	NE Riser	WLO	2022/08/25	Alkalinity, bicarbonate	mg/L CaCO3	280
S	NE Riser	WLO	2023/02/15	Alkalinity, bicarbonate	mg/L CaCO3	150
S	NE Riser	WLO	2022/08/25	Alkalinity, carbonate	mg/L CaCO3	10.0
S	NE Riser	WLO	2021/03/31	Barium, total	mg/L	0.0460
S	NE Riser	WLO	2021/04/21	Barium, total	mg/L	0.0410
S	NE Riser	WLO	2021/05/05	Barium, total	mg/L	0.0410
S	NE Riser	WLO	2021/05/18	Barium, total	mg/L	0.0410
S	NE Riser	WLO	2021/07/27	Barium, total	mg/L	0.0420
S	NE Riser	WLO	2022/06/15	Barium, total	mg/L	0.0420
S	NE Riser	WLO	2022/08/25	Barium, total	mg/L	0.0410
S	NE Riser	WLO	2021/03/31	Calcium, total	mg/L	490
S	NE Riser	WLO	2021/04/21	Calcium, total	mg/L	530
S	NE Riser	WLO	2021/05/05	Calcium, total	mg/L	530
S	NE Riser	WLO	2021/05/18	Calcium, total	mg/L	550
S	NE Riser	WLO	2021/07/27	Calcium, total	mg/L	540
S	NE Riser	WLO	2022/03/21	Calcium, total	mg/L	520
S	NE Riser	WLO	2022/06/15	Calcium, total	mg/L	490
S	NE Riser	WLO	2022/08/25	Calcium, total	mg/L	520
S	NE Riser	WLO	2023/02/15	Calcium, total	mg/L	560
S	NE Riser	WLO	2021/03/31	Chloride, total	mg/L	1,300
S	NE Riser	WLO	2021/04/21	Chloride, total	mg/L	1,500
S	NE Riser	WLO	2021/05/05	Chloride, total	mg/L	1,600
S	NE Riser	WLO	2021/05/18	Chloride, total	mg/L	1,300
S	NE Riser	WLO	2021/07/27	Chloride, total	mg/L	1,400
S	NE Riser	WLO	2022/03/21	Chloride, total	mg/L	1,300
S	NE Riser	WLO	2022/06/15	Chloride, total	mg/L	1,400
S	NE Riser	WLO	2022/08/25	Chloride, total	mg/L	1,400
S	NE Riser	WLO	2023/02/15	Chloride, total	mg/L	1,200
S	NE Riser	WLO	2023/06/08	Ferrous Iron, dissolved	mg/L	0.180
S	NE Riser	WLO	2023/06/08	Iron, dissolved	mg/L	0.0380
S	NE Riser	WLO	2021/03/31	Magnesium, total	mg/L	910
S	NE Riser	WLO	2021/04/21	Magnesium, total	mg/L	1,200
S	NE Riser	WLO	2021/05/05	Magnesium, total	mg/L	1,200
S	NE Riser	WLO	2021/05/18	Magnesium, total	mg/L	1,200

S	NE Riser	WLO	2021/07/27	Magnesium, total	mg/L	1,300
S	NE Riser	WLO	2022/03/21	Magnesium, total	mg/L	1,200
S	NE Riser	WLO	2022/06/15	Magnesium, total	mg/L	1,100
S	NE Riser	WLO	2022/08/25	Magnesium, total	mg/L	1,200
S	NE Riser	WLO	2023/02/15	Magnesium, total	mg/L	920
S	NE Riser	WLO	2023/06/08	Manganese, dissolved	mg/L	6.30
S	NE Riser	WLO	2021/03/31	Potassium, total	mg/L	110
S	NE Riser	WLO	2021/04/21	Potassium, total	mg/L	120
S	NE Riser	WLO	2021/05/05	Potassium, total	mg/L	120
S	NE Riser	WLO	2021/05/18	Potassium, total	mg/L	130
S	NE Riser	WLO	2021/07/27	Potassium, total	mg/L	130
S	NE Riser	WLO	2022/03/21	Potassium, total	mg/L	120
S	NE Riser	WLO	2022/06/15	Potassium, total	mg/L	110
S	NE Riser	WLO	2022/08/25	Potassium, total	mg/L	120
S	NE Riser	WLO	2023/02/15	Potassium, total	mg/L	110
S	NE Riser	WLO	2023/06/08	Silicon, dissolved	mg/L	7.60
S	NE Riser	WLO	2021/03/31	Sodium, total	mg/L	310
S	NE Riser	WLO	2021/04/21	Sodium, total	mg/L	420
S	NE Riser	WLO	2021/05/05	Sodium, total	mg/L	430
S	NE Riser	WLO	2021/05/18	Sodium, total	mg/L	420
S	NE Riser	WLO	2021/07/27	Sodium, total	mg/L	410
S	NE Riser	WLO	2022/03/21	Sodium, total	mg/L	410
S	NE Riser	WLO	2022/06/15	Sodium, total	mg/L	330
S	NE Riser	WLO	2022/08/25	Sodium, total	mg/L	400
S	NE Riser	WLO	2023/02/15	Sodium, total	mg/L	310
S	NE Riser	WLO	2021/03/31	Sulfate, total	mg/L	10,000
S	NE Riser	WLO	2021/04/21	Sulfate, total	mg/L	10,000
S	NE Riser	WLO	2021/05/05	Sulfate, total	mg/L	12,000
S	NE Riser	WLO	2021/05/18	Sulfate, total	mg/L	12,000
S	NE Riser	WLO	2021/07/27	Sulfate, total	mg/L	11,000
S	NE Riser	WLO	2022/03/21	Sulfate, total	mg/L	11,000
S	NE Riser	WLO	2022/06/15	Sulfate, total	mg/L	10,000
S	NE Riser	WLO	2022/08/25	Sulfate, total	mg/L	10,000
S	NE Riser	WLO	2023/02/15	Sulfate, total	mg/L	8,800
S	NE Riser	WLO	2021/03/31	Temperature (Celsius)	degrees C	8.80
S	NE Riser	WLO	2021/04/21	Temperature (Celsius)	degrees C	13.5
S	NE Riser	WLO	2021/05/05	Temperature (Celsius)	degrees C	20.1
S	NE Riser	WLO	2021/05/18	Temperature (Celsius)	degrees C	16.3
S	NE Riser	WLO	2021/07/27	Temperature (Celsius)	degrees C	19.5
S	NE Riser	WLO	2022/03/21	Temperature (Celsius)	degrees C	16.6
S	NE Riser	WLO	2022/06/15	Temperature (Celsius)	degrees C	27.5
S	NE Riser	WLO	2022/08/25	Temperature (Celsius)	degrees C	24.5
S	NE Riser	WLO	2023/02/15	Temperature (Celsius)	degrees C	11.3
S	NE Riser	WLO	2021/03/31	Total Dissolved Solids	mg/L	13,000
S	NE Riser	WLO	2021/04/21	Total Dissolved Solids	mg/L	14,000
S	NE Riser	WLO	2021/05/05	Total Dissolved Solids	mg/L	9,700
S	NE Riser	WLO	2021/05/18	Total Dissolved Solids	mg/L	9,400
S	NE Riser	WLO	2021/07/27	Total Dissolved Solids	mg/L	14,000
S	NE Riser	WLO	2022/03/21	Total Dissolved Solids	mg/L	13,000
S	NE Riser	WLO	2022/06/15	Total Dissolved Solids	mg/L	13,000

S	NE Riser	WLO	2022/08/25	Total Dissolved Solids	mg/L	5,900
S	NE Riser	WLO	2023/02/15	Total Dissolved Solids	mg/L	10,000
UA	G200	B	2010/07/27	pH (field)	SU	7.7
UA	G200	B	2010/11/15	pH (field)	SU	7.7
UA	G200	B	2011/01/27	pH (field)	SU	7.3
UA	G200	B	2011/05/04	pH (field)	SU	7.0
UA	G200	B	2011/07/25	pH (field)	SU	7.1
UA	G200	B	2011/11/11	pH (field)	SU	7.5
UA	G200	B	2012/01/30	pH (field)	SU	7.5
UA	G200	B	2012/05/22	pH (field)	SU	7.2
UA	G200	B	2012/07/23	pH (field)	SU	7.0
UA	G200	B	2012/11/14	pH (field)	SU	7.4
UA	G200	B	2013/01/31	pH (field)	SU	7.2
UA	G200	B	2013/05/20	pH (field)	SU	7.1
UA	G200	B	2013/07/22	pH (field)	SU	7.1
UA	G200	B	2013/10/14	pH (field)	SU	7.3
UA	G200	B	2014/02/19	pH (field)	SU	7.5
UA	G200	B	2014/05/12	pH (field)	SU	7.6
UA	G200	B	2014/08/11	pH (field)	SU	7.1
UA	G200	B	2014/10/15	pH (field)	SU	7.3
UA	G200	B	2015/01/20	pH (field)	SU	7.4
UA	G200	B	2015/04/10	pH (field)	SU	7.0
UA	G200	B	2015/07/22	pH (field)	SU	7.0
UA	G200	B	2015/10/05	pH (field)	SU	7.1
UA	G200	B	2015/11/23	pH (field)	SU	7.2
UA	G200	B	2016/02/12	pH (field)	SU	7.2
UA	G200	B	2016/05/10	pH (field)	SU	7.1
UA	G200	B	2016/07/30	pH (field)	SU	7.1
UA	G200	B	2016/11/18	pH (field)	SU	7.2
UA	G200	B	2017/02/10	pH (field)	SU	7.1
UA	G200	B	2017/05/18	pH (field)	SU	7.0
UA	G200	B	2017/07/13	pH (field)	SU	7.1
UA	G200	B	2017/10/28	pH (field)	SU	7.2
UA	G200	B	2018/01/25	pH (field)	SU	7.2
UA	G200	B	2018/05/11	pH (field)	SU	7.0
UA	G200	B	2018/11/02	pH (field)	SU	7.0
UA	G200	B	2019/01/16	pH (field)	SU	7.1
UA	G200	B	2019/08/12	pH (field)	SU	7.0
UA	G200	B	2020/01/21	pH (field)	SU	7.2
UA	G200	B	2020/08/11	pH (field)	SU	7.2
UA	G200	B	2020/10/13	pH (field)	SU	7.1
UA	G200	B	2021/01/29	pH (field)	SU	7.3
UA	G200	B	2021/03/29	pH (field)	SU	7.3
UA	G200	B	2021/04/21	pH (field)	SU	7.2
UA	G200	B	2021/05/06	pH (field)	SU	7.1
UA	G200	B	2021/05/17	pH (field)	SU	7.2
UA	G200	B	2021/07/28	pH (field)	SU	7.0
UA	G200	B	2021/08/18	pH (field)	SU	7.2
UA	G200	B	2021/10/27	pH (field)	SU	7.2
UA	G200	B	2022/02/09	pH (field)	SU	7.1

UA	G200	B	2022/05/10	pH (field)	SU	7.1
UA	G200	B	2022/08/23	pH (field)	SU	7.1
UA	G200	B	2022/11/10	pH (field)	SU	7.0
UA	G200	B	2023/02/16	pH (field)	SU	6.7
UA	G200	B	2023/06/07	pH (field)	SU	7.1
UA	G200	B	2023/11/14	pH (field)	SU	7.2
UA	G200	B	2015/11/23	Oxidation Reduction Potential	mV	29.0
UA	G200	B	2016/02/12	Oxidation Reduction Potential	mV	134
UA	G200	B	2016/05/10	Oxidation Reduction Potential	mV	-33.0
UA	G200	B	2016/07/30	Oxidation Reduction Potential	mV	-62.0
UA	G200	B	2016/11/18	Oxidation Reduction Potential	mV	-76.0
UA	G200	B	2017/02/10	Oxidation Reduction Potential	mV	-72.0
UA	G200	B	2017/05/18	Oxidation Reduction Potential	mV	-66.0
UA	G200	B	2017/07/13	Oxidation Reduction Potential	mV	-63.0
UA	G200	B	2017/10/28	Oxidation Reduction Potential	mV	-65.0
UA	G200	B	2018/01/25	Oxidation Reduction Potential	mV	-77.0
UA	G200	B	2018/05/11	Oxidation Reduction Potential	mV	-55.0
UA	G200	B	2018/11/02	Oxidation Reduction Potential	mV	-58.0
UA	G200	B	2019/01/16	Oxidation Reduction Potential	mV	-61.0
UA	G200	B	2019/08/12	Oxidation Reduction Potential	mV	-63.0
UA	G200	B	2020/01/21	Oxidation Reduction Potential	mV	183
UA	G200	B	2020/08/11	Oxidation Reduction Potential	mV	104
UA	G200	B	2021/01/29	Oxidation Reduction Potential	mV	43.6
UA	G200	B	2021/03/29	Oxidation Reduction Potential	mV	28.1
UA	G200	B	2021/04/21	Oxidation Reduction Potential	mV	92.7
UA	G200	B	2021/05/06	Oxidation Reduction Potential	mV	10.8
UA	G200	B	2021/05/17	Oxidation Reduction Potential	mV	34.0
UA	G200	B	2021/07/28	Oxidation Reduction Potential	mV	-23.5
UA	G200	B	2021/08/18	Oxidation Reduction Potential	mV	42.6
UA	G200	B	2022/02/09	Oxidation Reduction Potential	mV	89.7
UA	G200	B	2022/05/10	Oxidation Reduction Potential	mV	40.5
UA	G200	B	2022/08/23	Oxidation Reduction Potential	mV	-146
UA	G200	B	2022/11/10	Oxidation Reduction Potential	mV	-57.4
UA	G200	B	2023/02/16	Oxidation Reduction Potential	mV	126
UA	G200	B	2023/06/07	Oxidation Reduction Potential	mV	26.0
UA	G200	B	2023/11/14	Oxidation Reduction Potential	mV	97.0
UA	G200	B	2015/11/23	Eh	V	0.22
UA	G200	B	2016/02/12	Eh	V	0.33
UA	G200	B	2016/05/10	Eh	V	0.16
UA	G200	B	2016/07/30	Eh	V	0.13
UA	G200	B	2016/11/18	Eh	V	0.12
UA	G200	B	2017/02/10	Eh	V	0.12
UA	G200	B	2017/05/18	Eh	V	0.13
UA	G200	B	2017/07/13	Eh	V	0.13
UA	G200	B	2017/10/28	Eh	V	0.13
UA	G200	B	2018/01/25	Eh	V	0.12
UA	G200	B	2018/05/11	Eh	V	0.14
UA	G200	B	2018/11/02	Eh	V	0.14
UA	G200	B	2019/01/16	Eh	V	0.14
UA	G200	B	2019/08/12	Eh	V	0.13

UA	G200	B	2020/01/21	Eh	V	0.38
UA	G200	B	2020/08/11	Eh	V	0.30
UA	G200	B	2021/01/29	Eh	V	0.24
UA	G200	B	2021/03/29	Eh	V	0.23
UA	G200	B	2021/04/21	Eh	V	0.29
UA	G200	B	2021/05/06	Eh	V	0.21
UA	G200	B	2021/05/17	Eh	V	0.23
UA	G200	B	2021/07/28	Eh	V	0.17
UA	G200	B	2021/08/18	Eh	V	0.23
UA	G200	B	2022/02/09	Eh	V	0.29
UA	G200	B	2022/05/10	Eh	V	0.23
UA	G200	B	2022/08/23	Eh	V	0.046
UA	G200	B	2022/11/10	Eh	V	0.14
UA	G200	B	2023/02/16	Eh	V	0.33
UA	G200	B	2023/06/07	Eh	V	0.21
UA	G200	B	2023/11/14	Eh	V	0.29
UA	G200	B	2008/03/11	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	G200	B	2008/04/22	Alkalinity, bicarbonate	mg/L CaCO3	330
UA	G200	B	2008/06/10	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G200	B	2008/08/14	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G200	B	2008/10/14	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G200	B	2008/12/02	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G200	B	2010/02/11	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G200	B	2011/01/27	Alkalinity, bicarbonate	mg/L CaCO3	330
UA	G200	B	2012/01/30	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G200	B	2013/01/31	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G200	B	2014/02/19	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G200	B	2014/08/11	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G200	B	2014/10/15	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G200	B	2015/01/20	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G200	B	2015/04/10	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G200	B	2017/07/13	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G200	B	2020/01/21	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G200	B	2020/08/11	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G200	B	2021/01/29	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G200	B	2021/03/29	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G200	B	2021/04/21	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G200	B	2021/05/06	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G200	B	2021/05/17	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G200	B	2021/07/28	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G200	B	2021/08/18	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G200	B	2022/02/09	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G200	B	2022/06/15	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G200	B	2022/08/23	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G200	B	2023/02/16	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G200	B	2023/06/07	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G200	B	2023/11/14	Alkalinity, bicarbonate	mg/L CaCO3	281
UA	G200	B	2022/08/23	Alkalinity, carbonate	mg/L CaCO3	2.00
UA	G200	B	2008/03/11	Barium, total	mg/L	0.110
UA	G200	B	2008/04/22	Barium, total	mg/L	0.0850

UA	G200	B	2008/06/10	Barium, total	mg/L	0.0740
UA	G200	B	2008/08/14	Barium, total	mg/L	0.0760
UA	G200	B	2008/10/14	Barium, total	mg/L	0.0750
UA	G200	B	2008/12/02	Barium, total	mg/L	0.0760
UA	G200	B	2010/02/11	Barium, total	mg/L	0.0610
UA	G200	B	2011/01/27	Barium, total	mg/L	0.110
UA	G200	B	2012/01/30	Barium, total	mg/L	0.0730
UA	G200	B	2013/01/31	Barium, total	mg/L	0.0580
UA	G200	B	2014/02/19	Barium, total	mg/L	0.0800
UA	G200	B	2015/04/10	Barium, total	mg/L	0.100
UA	G200	B	2015/07/22	Barium, total	mg/L	0.180
UA	G200	B	2015/10/05	Barium, total	mg/L	0.780
UA	G200	B	2015/11/23	Barium, total	mg/L	0.170
UA	G200	B	2016/02/12	Barium, total	mg/L	0.240
UA	G200	B	2016/05/10	Barium, total	mg/L	0.130
UA	G200	B	2016/07/30	Barium, total	mg/L	0.0590
UA	G200	B	2016/11/18	Barium, total	mg/L	0.0530
UA	G200	B	2017/02/10	Barium, total	mg/L	0.0740
UA	G200	B	2017/05/18	Barium, total	mg/L	0.0630
UA	G200	B	2017/07/13	Barium, total	mg/L	0.0570
UA	G200	B	2020/10/13	Barium, total	mg/L	0.0470
UA	G200	B	2021/01/29	Barium, total	mg/L	0.0430
UA	G200	B	2021/03/29	Barium, total	mg/L	0.0440
UA	G200	B	2021/04/21	Barium, total	mg/L	0.0470
UA	G200	B	2021/05/06	Barium, total	mg/L	0.0800
UA	G200	B	2021/05/17	Barium, total	mg/L	0.0550
UA	G200	B	2021/07/28	Barium, total	mg/L	0.0440
UA	G200	B	2021/08/18	Barium, total	mg/L	0.0400
UA	G200	B	2021/10/27	Barium, total	mg/L	0.0320
UA	G200	B	2022/02/09	Barium, total	mg/L	0.0570
UA	G200	B	2022/05/10	Barium, total	mg/L	0.0520
UA	G200	B	2022/08/23	Barium, total	mg/L	0.0520
UA	G200	B	2022/11/10	Barium, total	mg/L	0.0590
UA	G200	B	2023/02/16	Barium, total	mg/L	0.160
UA	G200	B	2023/06/07	Barium, total	mg/L	0.150
UA	G200	B	2023/11/14	Barium, total	mg/L	0.0818
UA	G200	B	2008/03/11	Calcium, total	mg/L	95.0
UA	G200	B	2008/04/22	Calcium, total	mg/L	80.0
UA	G200	B	2008/06/10	Calcium, total	mg/L	83.0
UA	G200	B	2008/08/14	Calcium, total	mg/L	79.0
UA	G200	B	2008/10/14	Calcium, total	mg/L	84.0
UA	G200	B	2008/12/02	Calcium, total	mg/L	83.0
UA	G200	B	2009/09/24	Calcium, total	mg/L	85.0
UA	G200	B	2009/11/12	Calcium, total	mg/L	82.0
UA	G200	B	2010/01/28	Calcium, total	mg/L	86.0
UA	G200	B	2010/07/27	Calcium, total	mg/L	95.0
UA	G200	B	2010/11/15	Calcium, total	mg/L	88.0
UA	G200	B	2011/01/27	Calcium, total	mg/L	100
UA	G200	B	2011/05/04	Calcium, total	mg/L	<100
UA	G200	B	2011/07/25	Calcium, total	mg/L	93.0

UA	G200	B	2011/11/11	Calcium, total	mg/L	75.0
UA	G200	B	2012/01/30	Calcium, total	mg/L	88.0
UA	G200	B	2012/05/22	Calcium, total	mg/L	90.0
UA	G200	B	2012/07/23	Calcium, total	mg/L	100
UA	G200	B	2012/11/14	Calcium, total	mg/L	73.0
UA	G200	B	2013/01/31	Calcium, total	mg/L	73.0
UA	G200	B	2013/05/20	Calcium, total	mg/L	92.0
UA	G200	B	2013/07/22	Calcium, total	mg/L	95.0
UA	G200	B	2013/10/14	Calcium, total	mg/L	92.0
UA	G200	B	2014/02/19	Calcium, total	mg/L	97.0
UA	G200	B	2014/05/12	Calcium, total	mg/L	98.0
UA	G200	B	2014/08/11	Calcium, total	mg/L	98.0
UA	G200	B	2014/10/15	Calcium, total	mg/L	92.0
UA	G200	B	2015/01/20	Calcium, total	mg/L	100
UA	G200	B	2015/04/10	Calcium, total	mg/L	110
UA	G200	B	2015/11/23	Calcium, total	mg/L	100
UA	G200	B	2016/02/12	Calcium, total	mg/L	150
UA	G200	B	2016/05/10	Calcium, total	mg/L	100
UA	G200	B	2016/07/30	Calcium, total	mg/L	88.0
UA	G200	B	2016/11/18	Calcium, total	mg/L	88.0
UA	G200	B	2017/02/10	Calcium, total	mg/L	85.0
UA	G200	B	2017/05/18	Calcium, total	mg/L	84.0
UA	G200	B	2017/07/13	Calcium, total	mg/L	87.0
UA	G200	B	2017/10/28	Calcium, total	mg/L	81.0
UA	G200	B	2018/05/11	Calcium, total	mg/L	90.0
UA	G200	B	2018/11/02	Calcium, total	mg/L	95.0
UA	G200	B	2019/01/16	Calcium, total	mg/L	350
UA	G200	B	2019/08/12	Calcium, total	mg/L	92.0
UA	G200	B	2020/01/21	Calcium, total	mg/L	110
UA	G200	B	2020/08/11	Calcium, total	mg/L	85.0
UA	G200	B	2021/01/29	Calcium, total	mg/L	81.0
UA	G200	B	2021/03/29	Calcium, total	mg/L	82.0
UA	G200	B	2021/04/21	Calcium, total	mg/L	88.0
UA	G200	B	2021/05/06	Calcium, total	mg/L	140
UA	G200	B	2021/05/17	Calcium, total	mg/L	91.0
UA	G200	B	2021/07/28	Calcium, total	mg/L	83.0
UA	G200	B	2021/08/18	Calcium, total	mg/L	87.0
UA	G200	B	2022/02/09	Calcium, total	mg/L	92.0
UA	G200	B	2022/05/10	Calcium, total	mg/L	94.0
UA	G200	B	2022/08/23	Calcium, total	mg/L	85.0
UA	G200	B	2023/02/16	Calcium, total	mg/L	120
UA	G200	B	2023/06/07	Calcium, total	mg/L	110
UA	G200	B	2023/11/14	Calcium, total	mg/L	80.3
UA	G200	B	2008/03/11	Chloride, total	mg/L	43.0
UA	G200	B	2008/04/22	Chloride, total	mg/L	46.0
UA	G200	B	2008/06/10	Chloride, total	mg/L	44.0
UA	G200	B	2008/08/14	Chloride, total	mg/L	45.0
UA	G200	B	2008/10/14	Chloride, total	mg/L	43.0
UA	G200	B	2008/12/02	Chloride, total	mg/L	49.0
UA	G200	B	2009/09/24	Chloride, total	mg/L	44.0

UA	G200	B	2009/11/12	Chloride, total	mg/L	58.0
UA	G200	B	2010/01/28	Chloride, total	mg/L	49.0
UA	G200	B	2010/07/27	Chloride, total	mg/L	54.0
UA	G200	B	2010/11/15	Chloride, total	mg/L	46.0
UA	G200	B	2011/01/27	Chloride, total	mg/L	48.0
UA	G200	B	2011/05/04	Chloride, total	mg/L	59.0
UA	G200	B	2011/07/25	Chloride, total	mg/L	48.0
UA	G200	B	2011/11/11	Chloride, total	mg/L	51.0
UA	G200	B	2012/01/30	Chloride, total	mg/L	54.0
UA	G200	B	2012/05/22	Chloride, total	mg/L	67.0
UA	G200	B	2012/07/23	Chloride, total	mg/L	64.0
UA	G200	B	2012/11/14	Chloride, total	mg/L	61.0
UA	G200	B	2013/01/31	Chloride, total	mg/L	66.0
UA	G200	B	2013/05/20	Chloride, total	mg/L	79.0
UA	G200	B	2013/07/22	Chloride, total	mg/L	73.0
UA	G200	B	2013/10/14	Chloride, total	mg/L	74.0
UA	G200	B	2014/02/19	Chloride, total	mg/L	68.0
UA	G200	B	2014/05/12	Chloride, total	mg/L	58.0
UA	G200	B	2014/08/11	Chloride, total	mg/L	59.0
UA	G200	B	2014/10/15	Chloride, total	mg/L	59.0
UA	G200	B	2015/01/20	Chloride, total	mg/L	80.0
UA	G200	B	2015/04/10	Chloride, total	mg/L	87.0
UA	G200	B	2015/07/22	Chloride, total	mg/L	96.0
UA	G200	B	2015/10/05	Chloride, total	mg/L	85.0
UA	G200	B	2015/11/23	Chloride, total	mg/L	75.0
UA	G200	B	2016/02/12	Chloride, total	mg/L	93.0
UA	G200	B	2016/05/10	Chloride, total	mg/L	96.0
UA	G200	B	2016/07/30	Chloride, total	mg/L	82.0
UA	G200	B	2016/11/18	Chloride, total	mg/L	75.0
UA	G200	B	2017/02/10	Chloride, total	mg/L	82.0
UA	G200	B	2017/05/18	Chloride, total	mg/L	96.0
UA	G200	B	2017/07/13	Chloride, total	mg/L	88.0
UA	G200	B	2017/10/28	Chloride, total	mg/L	65.0
UA	G200	B	2018/01/25	Chloride, total	mg/L	71.0
UA	G200	B	2018/05/11	Chloride, total	mg/L	85.0
UA	G200	B	2018/11/02	Chloride, total	mg/L	61.0
UA	G200	B	2019/01/16	Chloride, total	mg/L	54.0
UA	G200	B	2019/08/12	Chloride, total	mg/L	58.0
UA	G200	B	2020/01/21	Chloride, total	mg/L	100
UA	G200	B	2020/08/11	Chloride, total	mg/L	63.0
UA	G200	B	2020/10/13	Chloride, total	mg/L	51.0
UA	G200	B	2021/01/29	Chloride, total	mg/L	53.0
UA	G200	B	2021/03/29	Chloride, total	mg/L	50.0
UA	G200	B	2021/04/21	Chloride, total	mg/L	63.0
UA	G200	B	2021/05/06	Chloride, total	mg/L	73.0
UA	G200	B	2021/05/17	Chloride, total	mg/L	78.0
UA	G200	B	2021/07/28	Chloride, total	mg/L	51.0
UA	G200	B	2021/08/18	Chloride, total	mg/L	44.0
UA	G200	B	2021/10/27	Chloride, total	mg/L	63.0
UA	G200	B	2022/02/09	Chloride, total	mg/L	80.0

UA	G200	B	2022/05/10	Chloride, total	mg/L	110
UA	G200	B	2022/08/23	Chloride, total	mg/L	61.0
UA	G200	B	2022/11/10	Chloride, total	mg/L	63.0
UA	G200	B	2023/02/16	Chloride, total	mg/L	50.0
UA	G200	B	2023/06/07	Chloride, total	mg/L	65.0
UA	G200	B	2023/11/14	Chloride, total	mg/L	43.0
UA	G200	B	2023/06/07	Ferrous Iron, dissolved	mg/L	0.240
UA	G200	B	2008/03/11	Iron, dissolved	mg/L	<0.5
UA	G200	B	2008/04/22	Iron, dissolved	mg/L	<0.1
UA	G200	B	2008/06/10	Iron, dissolved	mg/L	<0.1
UA	G200	B	2008/08/14	Iron, dissolved	mg/L	<0.1
UA	G200	B	2008/10/14	Iron, dissolved	mg/L	<0.1
UA	G200	B	2008/12/02	Iron, dissolved	mg/L	<0.1
UA	G200	B	2009/09/24	Iron, dissolved	mg/L	<0.1
UA	G200	B	2009/11/12	Iron, dissolved	mg/L	<0.1
UA	G200	B	2010/01/28	Iron, dissolved	mg/L	<0.1
UA	G200	B	2010/07/27	Iron, dissolved	mg/L	<0.01
UA	G200	B	2010/11/15	Iron, dissolved	mg/L	<0.01
UA	G200	B	2011/01/27	Iron, dissolved	mg/L	0.0230
UA	G200	B	2011/05/04	Iron, dissolved	mg/L	0.0200
UA	G200	B	2011/07/25	Iron, dissolved	mg/L	<0.01
UA	G200	B	2011/11/11	Iron, dissolved	mg/L	0.0290
UA	G200	B	2012/01/30	Iron, dissolved	mg/L	0.0160
UA	G200	B	2012/05/22	Iron, dissolved	mg/L	0.0130
UA	G200	B	2012/07/23	Iron, dissolved	mg/L	<0.01
UA	G200	B	2012/11/14	Iron, dissolved	mg/L	<0.01
UA	G200	B	2013/01/31	Iron, dissolved	mg/L	0.0420
UA	G200	B	2013/05/20	Iron, dissolved	mg/L	0.0120
UA	G200	B	2013/07/22	Iron, dissolved	mg/L	<0.01
UA	G200	B	2013/10/14	Iron, dissolved	mg/L	1.10
UA	G200	B	2014/02/19	Iron, dissolved	mg/L	<0.01
UA	G200	B	2014/05/12	Iron, dissolved	mg/L	0.0120
UA	G200	B	2014/08/11	Iron, dissolved	mg/L	<0.01
UA	G200	B	2014/10/15	Iron, dissolved	mg/L	0.0180
UA	G200	B	2015/01/20	Iron, dissolved	mg/L	<0.01
UA	G200	B	2015/04/10	Iron, dissolved	mg/L	0.0140
UA	G200	B	2015/07/22	Iron, dissolved	mg/L	0.0950
UA	G200	B	2015/10/05	Iron, dissolved	mg/L	0.0510
UA	G200	B	2016/02/12	Iron, dissolved	mg/L	0.0560
UA	G200	B	2016/05/10	Iron, dissolved	mg/L	0.0200
UA	G200	B	2016/07/26	Iron, dissolved	mg/L	0.470
UA	G200	B	2016/11/18	Iron, dissolved	mg/L	0.210
UA	G200	B	2017/02/13	Iron, dissolved	mg/L	0.0190
UA	G200	B	2017/05/19	Iron, dissolved	mg/L	<0.01
UA	G200	B	2017/07/13	Iron, dissolved	mg/L	0.0160
UA	G200	B	2017/10/28	Iron, dissolved	mg/L	0.0150
UA	G200	B	2018/01/30	Iron, dissolved	mg/L	0.0940
UA	G200	B	2018/05/11	Iron, dissolved	mg/L	0.100
UA	G200	B	2018/08/08	Iron, dissolved	mg/L	0.0490
UA	G200	B	2018/11/02	Iron, dissolved	mg/L	<0.1

UA	G200	B	2019/01/16	Iron, dissolved	mg/L	0.0930
UA	G200	B	2019/05/01	Iron, dissolved	mg/L	0.0200
UA	G200	B	2019/08/12	Iron, dissolved	mg/L	0.0140
UA	G200	B	2019/10/23	Iron, dissolved	mg/L	0.0140
UA	G200	B	2020/01/21	Iron, dissolved	mg/L	0.0200
UA	G200	B	2020/05/05	Iron, dissolved	mg/L	<0.01
UA	G200	B	2020/08/11	Iron, dissolved	mg/L	<0.01
UA	G200	B	2020/10/13	Iron, dissolved	mg/L	<0.01
UA	G200	B	2021/01/29	Iron, dissolved	mg/L	0.0200
UA	G200	B	2021/04/21	Iron, dissolved	mg/L	<0.01
UA	G200	B	2021/08/18	Iron, dissolved	mg/L	<0.01
UA	G200	B	2021/10/27	Iron, dissolved	mg/L	0.0110
UA	G200	B	2022/02/09	Iron, dissolved	mg/L	<0.01
UA	G200	B	2022/05/10	Iron, dissolved	mg/L	0.00390
UA	G200	B	2022/08/23	Iron, dissolved	mg/L	3.20
UA	G200	B	2022/11/10	Iron, dissolved	mg/L	0.370
UA	G200	B	2023/02/16	Iron, dissolved	mg/L	<0.00072
UA	G200	B	2023/06/07	Iron, dissolved	mg/L	<0.00072
UA	G200	B	2023/11/14	Iron, dissolved	mg/L	<0.0115
UA	G200	B	2008/03/11	Magnesium, total	mg/L	51.0
UA	G200	B	2008/04/22	Magnesium, total	mg/L	40.0
UA	G200	B	2008/06/10	Magnesium, total	mg/L	41.0
UA	G200	B	2008/08/14	Magnesium, total	mg/L	39.0
UA	G200	B	2008/10/14	Magnesium, total	mg/L	41.0
UA	G200	B	2008/12/02	Magnesium, total	mg/L	40.0
UA	G200	B	2010/02/11	Magnesium, total	mg/L	43.0
UA	G200	B	2011/01/27	Magnesium, total	mg/L	49.0
UA	G200	B	2012/01/30	Magnesium, total	mg/L	42.0
UA	G200	B	2013/01/31	Magnesium, total	mg/L	36.0
UA	G200	B	2014/02/19	Magnesium, total	mg/L	45.0
UA	G200	B	2015/04/10	Magnesium, total	mg/L	54.0
UA	G200	B	2017/07/13	Magnesium, total	mg/L	44.0
UA	G200	B	2020/01/21	Magnesium, total	mg/L	51.0
UA	G200	B	2020/08/11	Magnesium, total	mg/L	40.0
UA	G200	B	2021/01/29	Magnesium, total	mg/L	40.0
UA	G200	B	2021/03/29	Magnesium, total	mg/L	41.0
UA	G200	B	2021/04/21	Magnesium, total	mg/L	43.0
UA	G200	B	2021/05/06	Magnesium, total	mg/L	62.0
UA	G200	B	2021/05/17	Magnesium, total	mg/L	45.0
UA	G200	B	2021/07/28	Magnesium, total	mg/L	42.0
UA	G200	B	2021/08/18	Magnesium, total	mg/L	40.0
UA	G200	B	2022/02/09	Magnesium, total	mg/L	43.0
UA	G200	B	2022/05/10	Magnesium, total	mg/L	46.0
UA	G200	B	2022/08/23	Magnesium, total	mg/L	39.0
UA	G200	B	2023/02/16	Magnesium, total	mg/L	54.0
UA	G200	B	2023/06/07	Magnesium, total	mg/L	53.0
UA	G200	B	2023/11/14	Magnesium, total	mg/L	38.6
UA	G200	B	2008/03/11	Manganese, dissolved	mg/L	0.450
UA	G200	B	2008/04/22	Manganese, dissolved	mg/L	0.330
UA	G200	B	2008/06/10	Manganese, dissolved	mg/L	0.300

UA	G200	B	2008/08/14	Manganese, dissolved	mg/L	0.340
UA	G200	B	2008/10/14	Manganese, dissolved	mg/L	0.310
UA	G200	B	2008/12/02	Manganese, dissolved	mg/L	0.260
UA	G200	B	2009/09/24	Manganese, dissolved	mg/L	0.190
UA	G200	B	2009/11/12	Manganese, dissolved	mg/L	0.130
UA	G200	B	2010/01/28	Manganese, dissolved	mg/L	0.0590
UA	G200	B	2010/07/27	Manganese, dissolved	mg/L	0.0310
UA	G200	B	2010/11/15	Manganese, dissolved	mg/L	0.0240
UA	G200	B	2011/01/27	Manganese, dissolved	mg/L	0.0710
UA	G200	B	2011/05/04	Manganese, dissolved	mg/L	0.00650
UA	G200	B	2011/07/25	Manganese, dissolved	mg/L	0.0150
UA	G200	B	2011/11/11	Manganese, dissolved	mg/L	0.150
UA	G200	B	2012/01/30	Manganese, dissolved	mg/L	0.0720
UA	G200	B	2012/05/22	Manganese, dissolved	mg/L	0.0210
UA	G200	B	2012/07/23	Manganese, dissolved	mg/L	0.00550
UA	G200	B	2012/11/14	Manganese, dissolved	mg/L	0.0890
UA	G200	B	2013/01/31	Manganese, dissolved	mg/L	0.0230
UA	G200	B	2013/05/20	Manganese, dissolved	mg/L	0.0530
UA	G200	B	2013/07/22	Manganese, dissolved	mg/L	0.0420
UA	G200	B	2013/10/14	Manganese, dissolved	mg/L	0.0270
UA	G200	B	2014/02/19	Manganese, dissolved	mg/L	0.0110
UA	G200	B	2014/05/12	Manganese, dissolved	mg/L	0.0450
UA	G200	B	2014/08/11	Manganese, dissolved	mg/L	0.0590
UA	G200	B	2014/10/15	Manganese, dissolved	mg/L	0.100
UA	G200	B	2015/01/20	Manganese, dissolved	mg/L	0.0130
UA	G200	B	2015/04/10	Manganese, dissolved	mg/L	0.00300
UA	G200	B	2015/07/22	Manganese, dissolved	mg/L	0.0500
UA	G200	B	2015/10/05	Manganese, dissolved	mg/L	0.120
UA	G200	B	2016/02/12	Manganese, dissolved	mg/L	0.0230
UA	G200	B	2016/05/10	Manganese, dissolved	mg/L	0.0390
UA	G200	B	2016/07/26	Manganese, dissolved	mg/L	1.00
UA	G200	B	2016/11/18	Manganese, dissolved	mg/L	0.350
UA	G200	B	2017/02/13	Manganese, dissolved	mg/L	0.00250
UA	G200	B	2017/05/19	Manganese, dissolved	mg/L	0.00420
UA	G200	B	2017/07/13	Manganese, dissolved	mg/L	0.140
UA	G200	B	2017/10/28	Manganese, dissolved	mg/L	0.750
UA	G200	B	2018/01/30	Manganese, dissolved	mg/L	0.0130
UA	G200	B	2018/05/11	Manganese, dissolved	mg/L	0.0120
UA	G200	B	2018/08/08	Manganese, dissolved	mg/L	0.0810
UA	G200	B	2018/11/02	Manganese, dissolved	mg/L	0.0560
UA	G200	B	2019/01/16	Manganese, dissolved	mg/L	0.0240
UA	G200	B	2019/05/01	Manganese, dissolved	mg/L	0.0240
UA	G200	B	2019/08/12	Manganese, dissolved	mg/L	0.0700
UA	G200	B	2019/10/23	Manganese, dissolved	mg/L	0.0380
UA	G200	B	2020/01/21	Manganese, dissolved	mg/L	0.0260
UA	G200	B	2020/05/05	Manganese, dissolved	mg/L	0.0330
UA	G200	B	2020/08/11	Manganese, dissolved	mg/L	0.0380
UA	G200	B	2020/10/13	Manganese, dissolved	mg/L	0.0640
UA	G200	B	2021/01/29	Manganese, dissolved	mg/L	0.0390
UA	G200	B	2021/04/21	Manganese, dissolved	mg/L	0.00520

UA	G200	B	2021/08/18	Manganese, dissolved	mg/L	0.0470
UA	G200	B	2021/10/27	Manganese, dissolved	mg/L	0.0370
UA	G200	B	2022/02/09	Manganese, dissolved	mg/L	0.0190
UA	G200	B	2022/05/10	Manganese, dissolved	mg/L	0.0170
UA	G200	B	2022/08/23	Manganese, dissolved	mg/L	1.10
UA	G200	B	2022/11/10	Manganese, dissolved	mg/L	0.130
UA	G200	B	2023/02/16	Manganese, dissolved	mg/L	0.0170
UA	G200	B	2023/06/07	Manganese, dissolved	mg/L	0.100
UA	G200	B	2023/11/14	Manganese, dissolved	mg/L	0.147
UA	G200	B	2008/03/11	Potassium, total	mg/L	<2.5
UA	G200	B	2008/04/22	Potassium, total	mg/L	0.710
UA	G200	B	2008/06/10	Potassium, total	mg/L	1.10
UA	G200	B	2008/08/14	Potassium, total	mg/L	0.540
UA	G200	B	2008/10/14	Potassium, total	mg/L	0.560
UA	G200	B	2008/12/02	Potassium, total	mg/L	0.680
UA	G200	B	2010/02/11	Potassium, total	mg/L	0.530
UA	G200	B	2011/01/27	Potassium, total	mg/L	2.20
UA	G200	B	2012/01/30	Potassium, total	mg/L	0.600
UA	G200	B	2013/01/31	Potassium, total	mg/L	1.20
UA	G200	B	2014/02/19	Potassium, total	mg/L	1.10
UA	G200	B	2015/04/10	Potassium, total	mg/L	0.900
UA	G200	B	2017/07/13	Potassium, total	mg/L	1.00
UA	G200	B	2020/01/21	Potassium, total	mg/L	0.850
UA	G200	B	2020/08/11	Potassium, total	mg/L	0.720
UA	G200	B	2021/01/29	Potassium, total	mg/L	1.10
UA	G200	B	2021/03/29	Potassium, total	mg/L	0.590
UA	G200	B	2021/04/21	Potassium, total	mg/L	0.460
UA	G200	B	2021/05/06	Potassium, total	mg/L	1.70
UA	G200	B	2021/05/17	Potassium, total	mg/L	0.520
UA	G200	B	2021/07/28	Potassium, total	mg/L	0.860
UA	G200	B	2021/08/18	Potassium, total	mg/L	0.550
UA	G200	B	2022/02/09	Potassium, total	mg/L	0.500
UA	G200	B	2022/05/10	Potassium, total	mg/L	0.500
UA	G200	B	2022/08/23	Potassium, total	mg/L	0.610
UA	G200	B	2023/02/16	Potassium, total	mg/L	1.90
UA	G200	B	2023/06/07	Potassium, total	mg/L	1.90
UA	G200	B	2023/11/14	Potassium, total	mg/L	0.969
UA	G200	B	2023/06/07	Silicon, dissolved	mg/L	7.70
UA	G200	B	2008/03/11	Sodium, total	mg/L	47.0
UA	G200	B	2008/04/22	Sodium, total	mg/L	47.0
UA	G200	B	2008/06/10	Sodium, total	mg/L	46.0
UA	G200	B	2008/08/14	Sodium, total	mg/L	44.0
UA	G200	B	2008/10/14	Sodium, total	mg/L	48.0
UA	G200	B	2008/12/02	Sodium, total	mg/L	44.0
UA	G200	B	2010/02/11	Sodium, total	mg/L	48.0
UA	G200	B	2011/01/27	Sodium, total	mg/L	42.0
UA	G200	B	2012/01/30	Sodium, total	mg/L	52.0
UA	G200	B	2013/01/31	Sodium, total	mg/L	62.0
UA	G200	B	2014/02/19	Sodium, total	mg/L	53.0
UA	G200	B	2015/04/10	Sodium, total	mg/L	58.0

UA	G200	B	2017/07/13	Sodium, total	mg/L	63.0
UA	G200	B	2020/01/21	Sodium, total	mg/L	65.0
UA	G200	B	2020/08/11	Sodium, total	mg/L	64.0
UA	G200	B	2021/01/29	Sodium, total	mg/L	78.0
UA	G200	B	2021/03/29	Sodium, total	mg/L	56.0
UA	G200	B	2021/04/21	Sodium, total	mg/L	52.0
UA	G200	B	2021/05/06	Sodium, total	mg/L	68.0
UA	G200	B	2021/05/17	Sodium, total	mg/L	56.0
UA	G200	B	2021/07/28	Sodium, total	mg/L	58.0
UA	G200	B	2021/08/18	Sodium, total	mg/L	67.0
UA	G200	B	2022/02/09	Sodium, total	mg/L	60.0
UA	G200	B	2022/05/10	Sodium, total	mg/L	62.0
UA	G200	B	2022/08/23	Sodium, total	mg/L	58.0
UA	G200	B	2023/02/16	Sodium, total	mg/L	65.0
UA	G200	B	2023/06/07	Sodium, total	mg/L	56.0
UA	G200	B	2023/11/14	Sodium, total	mg/L	53.1
UA	G200	B	2008/03/11	Sulfate, total	mg/L	73.0
UA	G200	B	2008/04/22	Sulfate, total	mg/L	69.0
UA	G200	B	2008/06/10	Sulfate, total	mg/L	71.0
UA	G200	B	2008/08/14	Sulfate, total	mg/L	85.0
UA	G200	B	2008/10/14	Sulfate, total	mg/L	77.0
UA	G200	B	2008/12/02	Sulfate, total	mg/L	85.0
UA	G200	B	2009/09/24	Sulfate, total	mg/L	64.0
UA	G200	B	2009/11/12	Sulfate, total	mg/L	64.0
UA	G200	B	2010/01/28	Sulfate, total	mg/L	72.0
UA	G200	B	2010/07/27	Sulfate, total	mg/L	90.0
UA	G200	B	2010/11/15	Sulfate, total	mg/L	74.0
UA	G200	B	2011/01/27	Sulfate, total	mg/L	75.0
UA	G200	B	2011/05/04	Sulfate, total	mg/L	74.0
UA	G200	B	2011/07/25	Sulfate, total	mg/L	72.0
UA	G200	B	2011/11/11	Sulfate, total	mg/L	74.0
UA	G200	B	2012/01/30	Sulfate, total	mg/L	73.0
UA	G200	B	2012/05/22	Sulfate, total	mg/L	87.0
UA	G200	B	2012/07/23	Sulfate, total	mg/L	90.0
UA	G200	B	2012/11/14	Sulfate, total	mg/L	74.0
UA	G200	B	2013/01/31	Sulfate, total	mg/L	84.0
UA	G200	B	2013/05/20	Sulfate, total	mg/L	91.0
UA	G200	B	2013/07/22	Sulfate, total	mg/L	110
UA	G200	B	2013/10/14	Sulfate, total	mg/L	110
UA	G200	B	2014/02/19	Sulfate, total	mg/L	99.0
UA	G200	B	2014/05/12	Sulfate, total	mg/L	110
UA	G200	B	2014/08/11	Sulfate, total	mg/L	120
UA	G200	B	2014/10/15	Sulfate, total	mg/L	97.0
UA	G200	B	2015/01/20	Sulfate, total	mg/L	100
UA	G200	B	2015/04/10	Sulfate, total	mg/L	87.0
UA	G200	B	2015/07/22	Sulfate, total	mg/L	88.0
UA	G200	B	2015/10/05	Sulfate, total	mg/L	90.0
UA	G200	B	2015/11/23	Sulfate, total	mg/L	94.0
UA	G200	B	2016/02/12	Sulfate, total	mg/L	97.0
UA	G200	B	2016/05/10	Sulfate, total	mg/L	100

UA	G200	B	2016/07/30	Sulfate, total	mg/L	100
UA	G200	B	2016/11/18	Sulfate, total	mg/L	110
UA	G200	B	2017/02/10	Sulfate, total	mg/L	100
UA	G200	B	2017/05/18	Sulfate, total	mg/L	90.0
UA	G200	B	2017/07/13	Sulfate, total	mg/L	110
UA	G200	B	2017/10/28	Sulfate, total	mg/L	100
UA	G200	B	2018/05/11	Sulfate, total	mg/L	100
UA	G200	B	2018/11/02	Sulfate, total	mg/L	100
UA	G200	B	2019/01/16	Sulfate, total	mg/L	110
UA	G200	B	2019/08/12	Sulfate, total	mg/L	110
UA	G200	B	2020/01/21	Sulfate, total	mg/L	120
UA	G200	B	2020/08/11	Sulfate, total	mg/L	110
UA	G200	B	2020/10/13	Sulfate, total	mg/L	100
UA	G200	B	2021/01/29	Sulfate, total	mg/L	110
UA	G200	B	2021/03/29	Sulfate, total	mg/L	100
UA	G200	B	2021/04/21	Sulfate, total	mg/L	95.0
UA	G200	B	2021/05/06	Sulfate, total	mg/L	100
UA	G200	B	2021/05/17	Sulfate, total	mg/L	110
UA	G200	B	2021/07/28	Sulfate, total	mg/L	100
UA	G200	B	2021/08/18	Sulfate, total	mg/L	100
UA	G200	B	2021/10/27	Sulfate, total	mg/L	110
UA	G200	B	2022/02/09	Sulfate, total	mg/L	110
UA	G200	B	2022/05/10	Sulfate, total	mg/L	110
UA	G200	B	2022/08/23	Sulfate, total	mg/L	110
UA	G200	B	2022/11/10	Sulfate, total	mg/L	95.0
UA	G200	B	2023/02/16	Sulfate, total	mg/L	100
UA	G200	B	2023/06/07	Sulfate, total	mg/L	110
UA	G200	B	2023/11/14	Sulfate, total	mg/L	106
UA	G200	B	2015/11/23	Temperature (Celsius)	degrees C	15.7
UA	G200	B	2016/02/12	Temperature (Celsius)	degrees C	9.30
UA	G200	B	2016/05/10	Temperature (Celsius)	degrees C	18.3
UA	G200	B	2016/07/30	Temperature (Celsius)	degrees C	19.2
UA	G200	B	2016/11/18	Temperature (Celsius)	degrees C	16.3
UA	G200	B	2017/02/10	Temperature (Celsius)	degrees C	15.7
UA	G200	B	2017/05/18	Temperature (Celsius)	degrees C	15.4
UA	G200	B	2017/07/13	Temperature (Celsius)	degrees C	18.1
UA	G200	B	2017/10/28	Temperature (Celsius)	degrees C	13.0
UA	G200	B	2018/01/25	Temperature (Celsius)	degrees C	12.1
UA	G200	B	2018/05/11	Temperature (Celsius)	degrees C	13.2
UA	G200	B	2018/11/02	Temperature (Celsius)	degrees C	13.8
UA	G200	B	2019/01/16	Temperature (Celsius)	degrees C	12.3
UA	G200	B	2019/08/12	Temperature (Celsius)	degrees C	17.0
UA	G200	B	2020/01/21	Temperature (Celsius)	degrees C	10.4
UA	G200	B	2020/08/11	Temperature (Celsius)	degrees C	19.1
UA	G200	B	2021/01/29	Temperature (Celsius)	degrees C	9.10
UA	G200	B	2021/03/29	Temperature (Celsius)	degrees C	12.8
UA	G200	B	2021/04/21	Temperature (Celsius)	degrees C	10.6
UA	G200	B	2021/05/06	Temperature (Celsius)	degrees C	11.9
UA	G200	B	2021/05/17	Temperature (Celsius)	degrees C	14.2
UA	G200	B	2021/07/28	Temperature (Celsius)	degrees C	19.3

UA	G200	B	2021/08/18	Temperature (Celsius)	degrees C	22.3
UA	G200	B	2022/02/09	Temperature (Celsius)	degrees C	9.10
UA	G200	B	2022/05/10	Temperature (Celsius)	degrees C	17.5
UA	G200	B	2022/08/23	Temperature (Celsius)	degrees C	20.6
UA	G200	B	2022/11/10	Temperature (Celsius)	degrees C	15.6
UA	G200	B	2023/02/16	Temperature (Celsius)	degrees C	7.80
UA	G200	B	2023/06/07	Temperature (Celsius)	degrees C	25.4
UA	G200	B	2023/11/14	Temperature (Celsius)	degrees C	16.0
UA	G200	B	2008/03/11	Total Dissolved Solids	mg/L	490
UA	G200	B	2008/04/22	Total Dissolved Solids	mg/L	470
UA	G200	B	2008/06/10	Total Dissolved Solids	mg/L	480
UA	G200	B	2008/08/14	Total Dissolved Solids	mg/L	480
UA	G200	B	2008/10/14	Total Dissolved Solids	mg/L	480
UA	G200	B	2008/12/02	Total Dissolved Solids	mg/L	450
UA	G200	B	2009/09/24	Total Dissolved Solids	mg/L	520
UA	G200	B	2009/11/12	Total Dissolved Solids	mg/L	500
UA	G200	B	2010/01/28	Total Dissolved Solids	mg/L	500
UA	G200	B	2010/02/11	Total Dissolved Solids	mg/L	510
UA	G200	B	2010/07/27	Total Dissolved Solids	mg/L	550
UA	G200	B	2010/11/15	Total Dissolved Solids	mg/L	550
UA	G200	B	2011/01/27	Total Dissolved Solids	mg/L	510
UA	G200	B	2011/05/04	Total Dissolved Solids	mg/L	510
UA	G200	B	2011/07/25	Total Dissolved Solids	mg/L	550
UA	G200	B	2011/11/11	Total Dissolved Solids	mg/L	500
UA	G200	B	2012/01/30	Total Dissolved Solids	mg/L	510
UA	G200	B	2012/05/22	Total Dissolved Solids	mg/L	510
UA	G200	B	2012/07/23	Total Dissolved Solids	mg/L	560
UA	G200	B	2012/11/14	Total Dissolved Solids	mg/L	540
UA	G200	B	2013/01/31	Total Dissolved Solids	mg/L	530
UA	G200	B	2013/05/20	Total Dissolved Solids	mg/L	520
UA	G200	B	2013/07/22	Total Dissolved Solids	mg/L	540
UA	G200	B	2013/10/14	Total Dissolved Solids	mg/L	520
UA	G200	B	2014/02/19	Total Dissolved Solids	mg/L	520
UA	G200	B	2014/05/12	Total Dissolved Solids	mg/L	540
UA	G200	B	2014/08/11	Total Dissolved Solids	mg/L	530
UA	G200	B	2014/10/15	Total Dissolved Solids	mg/L	530
UA	G200	B	2015/01/20	Total Dissolved Solids	mg/L	570
UA	G200	B	2015/04/10	Total Dissolved Solids	mg/L	580
UA	G200	B	2015/07/22	Total Dissolved Solids	mg/L	630
UA	G200	B	2015/10/05	Total Dissolved Solids	mg/L	660
UA	G200	B	2015/11/23	Total Dissolved Solids	mg/L	520
UA	G200	B	2016/02/12	Total Dissolved Solids	mg/L	540
UA	G200	B	2016/05/10	Total Dissolved Solids	mg/L	480
UA	G200	B	2016/07/30	Total Dissolved Solids	mg/L	520
UA	G200	B	2016/11/18	Total Dissolved Solids	mg/L	520
UA	G200	B	2017/02/10	Total Dissolved Solids	mg/L	700
UA	G200	B	2017/05/18	Total Dissolved Solids	mg/L	620
UA	G200	B	2017/07/13	Total Dissolved Solids	mg/L	540
UA	G200	B	2017/10/28	Total Dissolved Solids	mg/L	520
UA	G200	B	2018/05/11	Total Dissolved Solids	mg/L	460

UA	G200	B	2018/11/02	Total Dissolved Solids	mg/L	480
UA	G200	B	2019/01/16	Total Dissolved Solids	mg/L	700
UA	G200	B	2019/08/12	Total Dissolved Solids	mg/L	540
UA	G200	B	2020/01/21	Total Dissolved Solids	mg/L	520
UA	G200	B	2020/08/11	Total Dissolved Solids	mg/L	530
UA	G200	B	2020/10/13	Total Dissolved Solids	mg/L	560
UA	G200	B	2021/01/29	Total Dissolved Solids	mg/L	580
UA	G200	B	2021/03/29	Total Dissolved Solids	mg/L	460
UA	G200	B	2021/04/21	Total Dissolved Solids	mg/L	570
UA	G200	B	2021/05/06	Total Dissolved Solids	mg/L	570
UA	G200	B	2021/05/17	Total Dissolved Solids	mg/L	560
UA	G200	B	2021/07/28	Total Dissolved Solids	mg/L	500
UA	G200	B	2021/08/18	Total Dissolved Solids	mg/L	540
UA	G200	B	2021/10/27	Total Dissolved Solids	mg/L	470
UA	G200	B	2022/02/09	Total Dissolved Solids	mg/L	500
UA	G200	B	2022/05/10	Total Dissolved Solids	mg/L	750
UA	G200	B	2022/08/23	Total Dissolved Solids	mg/L	540
UA	G200	B	2022/11/10	Total Dissolved Solids	mg/L	480
UA	G200	B	2023/02/16	Total Dissolved Solids	mg/L	440
UA	G200	B	2023/06/07	Total Dissolved Solids	mg/L	630
UA	G200	B	2023/11/14	Total Dissolved Solids	mg/L	455
UA	R201	B	2010/11/15	pH (field)	SU	7.5
UA	R201	B	2011/01/27	pH (field)	SU	7.2
UA	R201	B	2011/05/04	pH (field)	SU	6.9
UA	R201	B	2011/07/25	pH (field)	SU	6.9
UA	R201	B	2011/11/11	pH (field)	SU	7.2
UA	R201	B	2012/01/30	pH (field)	SU	7.3
UA	R201	B	2012/05/22	pH (field)	SU	7.0
UA	R201	B	2012/07/23	pH (field)	SU	6.8
UA	R201	B	2012/11/14	pH (field)	SU	7.2
UA	R201	B	2013/01/31	pH (field)	SU	7.0
UA	R201	B	2013/05/20	pH (field)	SU	7.0
UA	R201	B	2013/07/22	pH (field)	SU	6.9
UA	R201	B	2013/10/14	pH (field)	SU	7.1
UA	R201	B	2014/02/19	pH (field)	SU	7.1
UA	R201	B	2014/05/12	pH (field)	SU	7.3
UA	R201	B	2014/08/11	pH (field)	SU	6.9
UA	R201	B	2014/10/15	pH (field)	SU	7.2
UA	R201	B	2015/01/20	pH (field)	SU	7.2
UA	R201	B	2015/04/10	pH (field)	SU	6.8
UA	R201	B	2015/07/22	pH (field)	SU	6.9
UA	R201	B	2015/10/05	pH (field)	SU	7.0
UA	R201	B	2015/11/23	pH (field)	SU	7.3
UA	R201	B	2016/02/12	pH (field)	SU	7.0
UA	R201	B	2016/05/10	pH (field)	SU	7.0
UA	R201	B	2016/07/30	pH (field)	SU	7.1
UA	R201	B	2016/11/18	pH (field)	SU	7.2
UA	R201	B	2017/02/11	pH (field)	SU	7.1
UA	R201	B	2017/05/18	pH (field)	SU	7.2
UA	R201	B	2017/07/13	pH (field)	SU	7.0

UA	R201	B	2017/10/28	pH (field)	SU	7.1
UA	R201	B	2018/01/25	pH (field)	SU	7.0
UA	R201	B	2018/05/11	pH (field)	SU	7.1
UA	R201	B	2018/11/02	pH (field)	SU	7.1
UA	R201	B	2019/01/16	pH (field)	SU	7.1
UA	R201	B	2019/08/12	pH (field)	SU	7.1
UA	R201	B	2020/01/21	pH (field)	SU	7.2
UA	R201	B	2020/08/11	pH (field)	SU	6.9
UA	R201	B	2020/10/13	pH (field)	SU	6.9
UA	R201	B	2021/01/29	pH (field)	SU	7.0
UA	R201	B	2021/03/29	pH (field)	SU	7.0
UA	R201	B	2021/04/21	pH (field)	SU	6.9
UA	R201	B	2021/05/06	pH (field)	SU	7.2
UA	R201	B	2021/05/17	pH (field)	SU	7.0
UA	R201	B	2021/06/14	pH (field)	SU	7.0
UA	R201	B	2021/06/29	pH (field)	SU	7.1
UA	R201	B	2021/07/13	pH (field)	SU	7.0
UA	R201	B	2021/07/28	pH (field)	SU	7.2
UA	R201	B	2021/08/18	pH (field)	SU	7.0
UA	R201	B	2021/10/27	pH (field)	SU	7.0
UA	R201	B	2022/02/09	pH (field)	SU	7.1
UA	R201	B	2022/05/11	pH (field)	SU	7.0
UA	R201	B	2022/08/23	pH (field)	SU	7.0
UA	R201	B	2022/11/10	pH (field)	SU	6.8
UA	R201	B	2023/02/16	pH (field)	SU	7.1
UA	R201	B	2023/06/07	pH (field)	SU	7.3
UA	R201	B	2023/11/14	pH (field)	SU	7.0
UA	R201	B	2015/11/23	Oxidation Reduction Potential	mV	-69.0
UA	R201	B	2016/02/12	Oxidation Reduction Potential	mV	101
UA	R201	B	2016/05/10	Oxidation Reduction Potential	mV	-106
UA	R201	B	2016/07/30	Oxidation Reduction Potential	mV	-96.0
UA	R201	B	2016/11/18	Oxidation Reduction Potential	mV	-78.0
UA	R201	B	2017/02/11	Oxidation Reduction Potential	mV	-57.0
UA	R201	B	2017/05/18	Oxidation Reduction Potential	mV	-59.0
UA	R201	B	2017/07/13	Oxidation Reduction Potential	mV	-98.0
UA	R201	B	2017/10/28	Oxidation Reduction Potential	mV	-99.0
UA	R201	B	2018/01/25	Oxidation Reduction Potential	mV	56.0
UA	R201	B	2018/05/11	Oxidation Reduction Potential	mV	-88.0
UA	R201	B	2018/11/02	Oxidation Reduction Potential	mV	-91.0
UA	R201	B	2019/01/16	Oxidation Reduction Potential	mV	-94.0
UA	R201	B	2019/08/12	Oxidation Reduction Potential	mV	-93.0
UA	R201	B	2020/01/21	Oxidation Reduction Potential	mV	-115
UA	R201	B	2020/08/11	Oxidation Reduction Potential	mV	-80.1
UA	R201	B	2021/01/29	Oxidation Reduction Potential	mV	-32.1
UA	R201	B	2021/03/29	Oxidation Reduction Potential	mV	-56.5
UA	R201	B	2021/04/21	Oxidation Reduction Potential	mV	-44.5
UA	R201	B	2021/05/06	Oxidation Reduction Potential	mV	-42.4
UA	R201	B	2021/05/17	Oxidation Reduction Potential	mV	-109
UA	R201	B	2021/06/14	Oxidation Reduction Potential	mV	-120
UA	R201	B	2021/06/29	Oxidation Reduction Potential	mV	-116

UA	R201	B	2021/07/13	Oxidation Reduction Potential	mV	-27.1
UA	R201	B	2021/07/28	Oxidation Reduction Potential	mV	-122
UA	R201	B	2021/08/18	Oxidation Reduction Potential	mV	-82.1
UA	R201	B	2022/02/09	Oxidation Reduction Potential	mV	-66.0
UA	R201	B	2022/05/11	Oxidation Reduction Potential	mV	-88.7
UA	R201	B	2022/08/23	Oxidation Reduction Potential	mV	-109
UA	R201	B	2022/11/10	Oxidation Reduction Potential	mV	-87.9
UA	R201	B	2023/02/16	Oxidation Reduction Potential	mV	-15.0
UA	R201	B	2023/06/07	Oxidation Reduction Potential	mV	-123
UA	R201	B	2023/11/14	Oxidation Reduction Potential	mV	-97.0
UA	R201	B	2015/11/23	Eh	V	0.13
UA	R201	B	2016/02/12	Eh	V	0.30
UA	R201	B	2016/05/10	Eh	V	0.089
UA	R201	B	2016/07/30	Eh	V	0.098
UA	R201	B	2016/11/18	Eh	V	0.12
UA	R201	B	2017/02/11	Eh	V	0.14
UA	R201	B	2017/05/18	Eh	V	0.14
UA	R201	B	2017/07/13	Eh	V	0.096
UA	R201	B	2017/10/28	Eh	V	0.098
UA	R201	B	2018/01/25	Eh	V	0.25
UA	R201	B	2018/05/11	Eh	V	0.11
UA	R201	B	2018/11/02	Eh	V	0.11
UA	R201	B	2019/01/16	Eh	V	0.10
UA	R201	B	2019/08/12	Eh	V	0.10
UA	R201	B	2020/01/21	Eh	V	0.085
UA	R201	B	2020/08/11	Eh	V	0.11
UA	R201	B	2021/01/29	Eh	V	0.17
UA	R201	B	2021/03/29	Eh	V	0.14
UA	R201	B	2021/04/21	Eh	V	0.15
UA	R201	B	2021/05/06	Eh	V	0.16
UA	R201	B	2021/05/17	Eh	V	0.087
UA	R201	B	2021/06/14	Eh	V	0.072
UA	R201	B	2021/06/29	Eh	V	0.074
UA	R201	B	2021/07/13	Eh	V	0.17
UA	R201	B	2021/07/28	Eh	V	0.070
UA	R201	B	2021/08/18	Eh	V	0.11
UA	R201	B	2022/02/09	Eh	V	0.13
UA	R201	B	2022/05/11	Eh	V	0.10
UA	R201	B	2022/08/23	Eh	V	0.083
UA	R201	B	2022/11/10	Eh	V	0.11
UA	R201	B	2023/02/16	Eh	V	0.19
UA	R201	B	2023/06/07	Eh	V	0.070
UA	R201	B	2023/11/14	Eh	V	0.098
UA	R201	B	2011/01/27	Alkalinity, bicarbonate	mg/L CaCO3	330
UA	R201	B	2012/01/30	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	R201	B	2013/01/31	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	R201	B	2014/02/19	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	R201	B	2014/08/11	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	R201	B	2014/10/15	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	R201	B	2015/01/20	Alkalinity, bicarbonate	mg/L CaCO3	390

UA	R201	B	2015/04/10	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	R201	B	2017/07/13	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	R201	B	2020/01/21	Alkalinity, bicarbonate	mg/L CaCO3	390
UA	R201	B	2020/08/11	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	R201	B	2021/01/29	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	R201	B	2021/03/29	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	R201	B	2021/04/21	Alkalinity, bicarbonate	mg/L CaCO3	390
UA	R201	B	2021/05/06	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	R201	B	2021/05/17	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	R201	B	2021/06/14	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	R201	B	2021/06/29	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	R201	B	2021/07/13	Alkalinity, bicarbonate	mg/L CaCO3	350
UA	R201	B	2021/07/28	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	R201	B	2021/08/18	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	R201	B	2022/02/09	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	R201	B	2022/06/15	Alkalinity, bicarbonate	mg/L CaCO3	390
UA	R201	B	2022/08/23	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	R201	B	2023/02/16	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	R201	B	2023/06/07	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	R201	B	2023/11/14	Alkalinity, bicarbonate	mg/L CaCO3	364
UA	R201	B	2022/08/23	Alkalinity, carbonate	mg/L CaCO3	10.0
UA	R201	B	2011/01/27	Barium, total	mg/L	0.0780
UA	R201	B	2012/01/30	Barium, total	mg/L	0.0830
UA	R201	B	2013/01/31	Barium, total	mg/L	0.0650
UA	R201	B	2014/02/19	Barium, total	mg/L	0.100
UA	R201	B	2015/04/10	Barium, total	mg/L	0.0840
UA	R201	B	2015/07/22	Barium, total	mg/L	0.0990
UA	R201	B	2015/10/05	Barium, total	mg/L	0.0810
UA	R201	B	2015/11/23	Barium, total	mg/L	0.0780
UA	R201	B	2016/02/12	Barium, total	mg/L	0.0840
UA	R201	B	2016/05/10	Barium, total	mg/L	0.0840
UA	R201	B	2016/07/30	Barium, total	mg/L	0.0920
UA	R201	B	2016/11/18	Barium, total	mg/L	0.0580
UA	R201	B	2017/02/11	Barium, total	mg/L	0.0860
UA	R201	B	2017/05/18	Barium, total	mg/L	0.0870
UA	R201	B	2017/07/13	Barium, total	mg/L	0.170
UA	R201	B	2020/10/13	Barium, total	mg/L	0.110
UA	R201	B	2021/01/29	Barium, total	mg/L	0.0740
UA	R201	B	2021/03/29	Barium, total	mg/L	0.0730
UA	R201	B	2021/04/21	Barium, total	mg/L	0.0710
UA	R201	B	2021/05/06	Barium, total	mg/L	0.0780
UA	R201	B	2021/05/17	Barium, total	mg/L	0.0780
UA	R201	B	2021/06/14	Barium, total	mg/L	0.0820
UA	R201	B	2021/06/29	Barium, total	mg/L	0.130
UA	R201	B	2021/07/13	Barium, total	mg/L	0.0690
UA	R201	B	2021/07/28	Barium, total	mg/L	0.0810
UA	R201	B	2021/08/18	Barium, total	mg/L	0.0670
UA	R201	B	2021/10/27	Barium, total	mg/L	0.0700
UA	R201	B	2022/02/09	Barium, total	mg/L	0.0800
UA	R201	B	2022/05/11	Barium, total	mg/L	0.110

UA	R201	B	2022/08/23	Barium, total	mg/L	0.0910
UA	R201	B	2022/11/10	Barium, total	mg/L	0.0870
UA	R201	B	2023/02/16	Barium, total	mg/L	0.0760
UA	R201	B	2023/06/07	Barium, total	mg/L	0.0780
UA	R201	B	2023/11/14	Barium, total	mg/L	0.0879
UA	R201	B	2010/11/15	Calcium, total	mg/L	140
UA	R201	B	2011/01/27	Calcium, total	mg/L	110
UA	R201	B	2011/05/04	Calcium, total	mg/L	130
UA	R201	B	2011/07/25	Calcium, total	mg/L	130
UA	R201	B	2011/11/11	Calcium, total	mg/L	110
UA	R201	B	2012/01/30	Calcium, total	mg/L	120
UA	R201	B	2012/05/22	Calcium, total	mg/L	130
UA	R201	B	2012/07/23	Calcium, total	mg/L	130
UA	R201	B	2012/11/14	Calcium, total	mg/L	100
UA	R201	B	2013/01/31	Calcium, total	mg/L	100
UA	R201	B	2013/05/20	Calcium, total	mg/L	130
UA	R201	B	2013/07/22	Calcium, total	mg/L	110
UA	R201	B	2013/10/14	Calcium, total	mg/L	120
UA	R201	B	2014/02/19	Calcium, total	mg/L	100
UA	R201	B	2014/05/12	Calcium, total	mg/L	130
UA	R201	B	2014/08/11	Calcium, total	mg/L	120
UA	R201	B	2014/10/15	Calcium, total	mg/L	89.0
UA	R201	B	2015/01/20	Calcium, total	mg/L	110
UA	R201	B	2015/04/10	Calcium, total	mg/L	130
UA	R201	B	2015/11/23	Calcium, total	mg/L	85.0
UA	R201	B	2016/02/12	Calcium, total	mg/L	120
UA	R201	B	2016/05/10	Calcium, total	mg/L	120
UA	R201	B	2016/07/30	Calcium, total	mg/L	120
UA	R201	B	2016/11/18	Calcium, total	mg/L	81.0
UA	R201	B	2017/02/11	Calcium, total	mg/L	100
UA	R201	B	2017/05/18	Calcium, total	mg/L	120
UA	R201	B	2017/07/13	Calcium, total	mg/L	120
UA	R201	B	2017/10/28	Calcium, total	mg/L	93.0
UA	R201	B	2018/05/11	Calcium, total	mg/L	87.0
UA	R201	B	2018/11/02	Calcium, total	mg/L	82.0
UA	R201	B	2019/01/16	Calcium, total	mg/L	100
UA	R201	B	2019/08/12	Calcium, total	mg/L	120
UA	R201	B	2020/01/21	Calcium, total	mg/L	130
UA	R201	B	2020/08/11	Calcium, total	mg/L	120
UA	R201	B	2021/01/29	Calcium, total	mg/L	94.0
UA	R201	B	2021/03/29	Calcium, total	mg/L	97.0
UA	R201	B	2021/04/21	Calcium, total	mg/L	100
UA	R201	B	2021/05/06	Calcium, total	mg/L	110
UA	R201	B	2021/05/17	Calcium, total	mg/L	110
UA	R201	B	2021/06/14	Calcium, total	mg/L	120
UA	R201	B	2021/06/29	Calcium, total	mg/L	140
UA	R201	B	2021/07/13	Calcium, total	mg/L	97.0
UA	R201	B	2021/07/28	Calcium, total	mg/L	110
UA	R201	B	2021/08/18	Calcium, total	mg/L	110
UA	R201	B	2022/02/09	Calcium, total	mg/L	120

UA	R201	B	2022/05/11	Calcium, total	mg/L	130
UA	R201	B	2022/08/23	Calcium, total	mg/L	140
UA	R201	B	2023/02/16	Calcium, total	mg/L	97.0
UA	R201	B	2023/06/07	Calcium, total	mg/L	120
UA	R201	B	2023/11/14	Calcium, total	mg/L	103
UA	R201	B	2010/11/15	Chloride, total	mg/L	99.0
UA	R201	B	2011/01/27	Chloride, total	mg/L	90.0
UA	R201	B	2011/05/04	Chloride, total	mg/L	76.0
UA	R201	B	2011/07/25	Chloride, total	mg/L	90.0
UA	R201	B	2011/11/11	Chloride, total	mg/L	78.0
UA	R201	B	2012/01/30	Chloride, total	mg/L	94.0
UA	R201	B	2012/05/22	Chloride, total	mg/L	86.0
UA	R201	B	2012/07/23	Chloride, total	mg/L	89.0
UA	R201	B	2012/11/14	Chloride, total	mg/L	51.0
UA	R201	B	2013/01/31	Chloride, total	mg/L	56.0
UA	R201	B	2013/05/20	Chloride, total	mg/L	65.0
UA	R201	B	2013/07/22	Chloride, total	mg/L	70.0
UA	R201	B	2013/10/14	Chloride, total	mg/L	77.0
UA	R201	B	2014/02/19	Chloride, total	mg/L	44.0
UA	R201	B	2014/05/12	Chloride, total	mg/L	73.0
UA	R201	B	2014/08/11	Chloride, total	mg/L	81.0
UA	R201	B	2014/10/15	Chloride, total	mg/L	34.0
UA	R201	B	2015/01/20	Chloride, total	mg/L	53.0
UA	R201	B	2015/04/10	Chloride, total	mg/L	66.0
UA	R201	B	2015/07/22	Chloride, total	mg/L	78.0
UA	R201	B	2015/10/05	Chloride, total	mg/L	74.0
UA	R201	B	2015/11/23	Chloride, total	mg/L	37.0
UA	R201	B	2016/02/12	Chloride, total	mg/L	75.0
UA	R201	B	2016/05/10	Chloride, total	mg/L	85.0
UA	R201	B	2016/07/30	Chloride, total	mg/L	85.0
UA	R201	B	2016/11/18	Chloride, total	mg/L	39.0
UA	R201	B	2017/02/11	Chloride, total	mg/L	79.0
UA	R201	B	2017/05/18	Chloride, total	mg/L	74.0
UA	R201	B	2017/07/13	Chloride, total	mg/L	81.0
UA	R201	B	2017/10/28	Chloride, total	mg/L	30.0
UA	R201	B	2018/01/25	Chloride, total	mg/L	31.0
UA	R201	B	2018/05/11	Chloride, total	mg/L	54.0
UA	R201	B	2018/11/02	Chloride, total	mg/L	24.0
UA	R201	B	2019/01/16	Chloride, total	mg/L	48.0
UA	R201	B	2019/08/12	Chloride, total	mg/L	71.0
UA	R201	B	2020/01/21	Chloride, total	mg/L	66.0
UA	R201	B	2020/08/11	Chloride, total	mg/L	87.0
UA	R201	B	2020/10/13	Chloride, total	mg/L	83.0
UA	R201	B	2021/01/29	Chloride, total	mg/L	46.0
UA	R201	B	2021/03/29	Chloride, total	mg/L	55.0
UA	R201	B	2021/04/21	Chloride, total	mg/L	63.0
UA	R201	B	2021/05/06	Chloride, total	mg/L	67.0
UA	R201	B	2021/05/17	Chloride, total	mg/L	76.0
UA	R201	B	2021/06/14	Chloride, total	mg/L	68.0
UA	R201	B	2021/06/29	Chloride, total	mg/L	81.0

UA	R201	B	2021/07/13	Chloride, total	mg/L	58.0
UA	R201	B	2021/07/28	Chloride, total	mg/L	79.0
UA	R201	B	2021/08/18	Chloride, total	mg/L	88.0
UA	R201	B	2021/10/27	Chloride, total	mg/L	100
UA	R201	B	2022/02/09	Chloride, total	mg/L	83.0
UA	R201	B	2022/05/11	Chloride, total	mg/L	80.0
UA	R201	B	2022/08/23	Chloride, total	mg/L	86.0
UA	R201	B	2022/11/10	Chloride, total	mg/L	140
UA	R201	B	2023/02/16	Chloride, total	mg/L	51.0
UA	R201	B	2023/06/07	Chloride, total	mg/L	89.0
UA	R201	B	2023/11/14	Chloride, total	mg/L	60.0
UA	R201	B	2023/06/07	Ferrous Iron, dissolved	mg/L	3.90
UA	R201	B	2010/11/15	Iron, dissolved	mg/L	1.20
UA	R201	B	2011/01/27	Iron, dissolved	mg/L	<0.01
UA	R201	B	2011/05/04	Iron, dissolved	mg/L	1.40
UA	R201	B	2011/07/25	Iron, dissolved	mg/L	0.890
UA	R201	B	2011/11/11	Iron, dissolved	mg/L	0.0320
UA	R201	B	2012/01/30	Iron, dissolved	mg/L	<0.01
UA	R201	B	2012/05/22	Iron, dissolved	mg/L	0.250
UA	R201	B	2012/07/23	Iron, dissolved	mg/L	1.60
UA	R201	B	2012/11/14	Iron, dissolved	mg/L	0.0370
UA	R201	B	2013/01/31	Iron, dissolved	mg/L	0.0140
UA	R201	B	2013/05/20	Iron, dissolved	mg/L	0.0260
UA	R201	B	2013/07/22	Iron, dissolved	mg/L	0.110
UA	R201	B	2013/10/14	Iron, dissolved	mg/L	0.200
UA	R201	B	2014/02/19	Iron, dissolved	mg/L	0.0140
UA	R201	B	2014/05/12	Iron, dissolved	mg/L	0.180
UA	R201	B	2014/08/11	Iron, dissolved	mg/L	0.450
UA	R201	B	2014/10/15	Iron, dissolved	mg/L	1.30
UA	R201	B	2015/01/20	Iron, dissolved	mg/L	0.110
UA	R201	B	2015/04/10	Iron, dissolved	mg/L	0.350
UA	R201	B	2015/07/22	Iron, dissolved	mg/L	2.30
UA	R201	B	2015/10/05	Iron, dissolved	mg/L	3.50
UA	R201	B	2016/02/12	Iron, dissolved	mg/L	0.350
UA	R201	B	2016/05/10	Iron, dissolved	mg/L	2.40
UA	R201	B	2016/07/26	Iron, dissolved	mg/L	0.850
UA	R201	B	2016/11/18	Iron, dissolved	mg/L	2.10
UA	R201	B	2017/02/13	Iron, dissolved	mg/L	47.0
UA	R201	B	2017/05/19	Iron, dissolved	mg/L	7.50
UA	R201	B	2017/07/13	Iron, dissolved	mg/L	2.70
UA	R201	B	2017/10/28	Iron, dissolved	mg/L	1.10
UA	R201	B	2018/01/30	Iron, dissolved	mg/L	3.90
UA	R201	B	2018/05/11	Iron, dissolved	mg/L	2.20
UA	R201	B	2018/08/08	Iron, dissolved	mg/L	2.00
UA	R201	B	2018/11/02	Iron, dissolved	mg/L	1.50
UA	R201	B	2019/01/16	Iron, dissolved	mg/L	3.50
UA	R201	B	2019/05/01	Iron, dissolved	mg/L	0.300
UA	R201	B	2019/08/12	Iron, dissolved	mg/L	1.00
UA	R201	B	2019/10/23	Iron, dissolved	mg/L	0.0200
UA	R201	B	2020/01/21	Iron, dissolved	mg/L	1.80

UA	R201	B	2020/08/11	Iron, dissolved	mg/L	2.60
UA	R201	B	2020/10/13	Iron, dissolved	mg/L	2.50
UA	R201	B	2021/01/29	Iron, dissolved	mg/L	0.370
UA	R201	B	2021/04/21	Iron, dissolved	mg/L	1.10
UA	R201	B	2021/08/18	Iron, dissolved	mg/L	2.50
UA	R201	B	2021/10/27	Iron, dissolved	mg/L	2.40
UA	R201	B	2022/02/09	Iron, dissolved	mg/L	1.20
UA	R201	B	2022/05/11	Iron, dissolved	mg/L	2.70
UA	R201	B	2022/08/23	Iron, dissolved	mg/L	2.20
UA	R201	B	2022/11/10	Iron, dissolved	mg/L	2.70
UA	R201	B	2023/02/16	Iron, dissolved	mg/L	8.00
UA	R201	B	2023/06/07	Iron, dissolved	mg/L	3.30
UA	R201	B	2023/11/14	Iron, dissolved	mg/L	2.66
UA	R201	B	2011/01/27	Magnesium, total	mg/L	52.0
UA	R201	B	2012/01/30	Magnesium, total	mg/L	54.0
UA	R201	B	2013/01/31	Magnesium, total	mg/L	46.0
UA	R201	B	2014/02/19	Magnesium, total	mg/L	44.0
UA	R201	B	2015/04/10	Magnesium, total	mg/L	54.0
UA	R201	B	2017/07/13	Magnesium, total	mg/L	54.0
UA	R201	B	2020/01/21	Magnesium, total	mg/L	53.0
UA	R201	B	2020/08/11	Magnesium, total	mg/L	50.0
UA	R201	B	2021/01/29	Magnesium, total	mg/L	41.0
UA	R201	B	2021/03/29	Magnesium, total	mg/L	43.0
UA	R201	B	2021/04/21	Magnesium, total	mg/L	45.0
UA	R201	B	2021/05/06	Magnesium, total	mg/L	45.0
UA	R201	B	2021/05/17	Magnesium, total	mg/L	48.0
UA	R201	B	2021/06/14	Magnesium, total	mg/L	48.0
UA	R201	B	2021/06/29	Magnesium, total	mg/L	60.0
UA	R201	B	2021/07/13	Magnesium, total	mg/L	42.0
UA	R201	B	2021/07/28	Magnesium, total	mg/L	45.0
UA	R201	B	2021/08/18	Magnesium, total	mg/L	45.0
UA	R201	B	2022/02/09	Magnesium, total	mg/L	49.0
UA	R201	B	2022/05/11	Magnesium, total	mg/L	53.0
UA	R201	B	2022/08/23	Magnesium, total	mg/L	58.0
UA	R201	B	2023/02/16	Magnesium, total	mg/L	42.0
UA	R201	B	2023/06/07	Magnesium, total	mg/L	46.0
UA	R201	B	2023/11/14	Magnesium, total	mg/L	40.4
UA	R201	B	2010/11/15	Manganese, dissolved	mg/L	0.600
UA	R201	B	2011/01/27	Manganese, dissolved	mg/L	0.0670
UA	R201	B	2011/05/04	Manganese, dissolved	mg/L	0.280
UA	R201	B	2011/07/25	Manganese, dissolved	mg/L	0.270
UA	R201	B	2011/11/11	Manganese, dissolved	mg/L	0.230
UA	R201	B	2012/01/30	Manganese, dissolved	mg/L	0.170
UA	R201	B	2012/05/22	Manganese, dissolved	mg/L	0.510
UA	R201	B	2012/07/23	Manganese, dissolved	mg/L	0.380
UA	R201	B	2012/11/14	Manganese, dissolved	mg/L	0.270
UA	R201	B	2013/01/31	Manganese, dissolved	mg/L	0.210
UA	R201	B	2013/05/20	Manganese, dissolved	mg/L	0.440
UA	R201	B	2013/07/22	Manganese, dissolved	mg/L	0.330
UA	R201	B	2013/10/14	Manganese, dissolved	mg/L	0.560

UA	R201	B	2014/02/19	Manganese, dissolved	mg/L	0.110
UA	R201	B	2014/05/12	Manganese, dissolved	mg/L	0.380
UA	R201	B	2014/08/11	Manganese, dissolved	mg/L	1.80
UA	R201	B	2014/10/15	Manganese, dissolved	mg/L	0.550
UA	R201	B	2015/01/20	Manganese, dissolved	mg/L	0.210
UA	R201	B	2015/04/10	Manganese, dissolved	mg/L	0.280
UA	R201	B	2015/07/22	Manganese, dissolved	mg/L	1.60
UA	R201	B	2015/10/05	Manganese, dissolved	mg/L	0.900
UA	R201	B	2016/02/12	Manganese, dissolved	mg/L	0.150
UA	R201	B	2016/05/10	Manganese, dissolved	mg/L	0.300
UA	R201	B	2016/07/26	Manganese, dissolved	mg/L	0.260
UA	R201	B	2016/11/18	Manganese, dissolved	mg/L	0.200
UA	R201	B	2017/02/13	Manganese, dissolved	mg/L	0.510
UA	R201	B	2017/05/19	Manganese, dissolved	mg/L	0.360
UA	R201	B	2017/07/13	Manganese, dissolved	mg/L	0.230
UA	R201	B	2017/10/28	Manganese, dissolved	mg/L	0.170
UA	R201	B	2018/01/30	Manganese, dissolved	mg/L	0.240
UA	R201	B	2018/05/11	Manganese, dissolved	mg/L	2.70
UA	R201	B	2018/08/08	Manganese, dissolved	mg/L	0.650
UA	R201	B	2018/11/02	Manganese, dissolved	mg/L	0.450
UA	R201	B	2019/01/16	Manganese, dissolved	mg/L	0.900
UA	R201	B	2019/05/01	Manganese, dissolved	mg/L	0.380
UA	R201	B	2019/08/12	Manganese, dissolved	mg/L	0.380
UA	R201	B	2019/10/23	Manganese, dissolved	mg/L	0.350
UA	R201	B	2020/01/21	Manganese, dissolved	mg/L	0.320
UA	R201	B	2020/08/11	Manganese, dissolved	mg/L	0.290
UA	R201	B	2020/10/13	Manganese, dissolved	mg/L	0.280
UA	R201	B	2021/01/29	Manganese, dissolved	mg/L	0.240
UA	R201	B	2021/04/21	Manganese, dissolved	mg/L	0.480
UA	R201	B	2021/08/18	Manganese, dissolved	mg/L	0.330
UA	R201	B	2021/10/27	Manganese, dissolved	mg/L	0.350
UA	R201	B	2022/02/09	Manganese, dissolved	mg/L	0.180
UA	R201	B	2022/05/11	Manganese, dissolved	mg/L	0.220
UA	R201	B	2022/08/23	Manganese, dissolved	mg/L	0.290
UA	R201	B	2022/11/10	Manganese, dissolved	mg/L	0.230
UA	R201	B	2023/02/16	Manganese, dissolved	mg/L	0.280
UA	R201	B	2023/06/07	Manganese, dissolved	mg/L	0.240
UA	R201	B	2023/11/14	Manganese, dissolved	mg/L	0.378
UA	R201	B	2011/01/27	Potassium, total	mg/L	0.770
UA	R201	B	2012/01/30	Potassium, total	mg/L	0.840
UA	R201	B	2013/01/31	Potassium, total	mg/L	0.620
UA	R201	B	2014/02/19	Potassium, total	mg/L	0.900
UA	R201	B	2015/04/10	Potassium, total	mg/L	0.920
UA	R201	B	2017/07/13	Potassium, total	mg/L	1.20
UA	R201	B	2020/01/21	Potassium, total	mg/L	1.30
UA	R201	B	2020/08/11	Potassium, total	mg/L	1.10
UA	R201	B	2021/01/29	Potassium, total	mg/L	0.650
UA	R201	B	2021/03/29	Potassium, total	mg/L	0.640
UA	R201	B	2021/04/21	Potassium, total	mg/L	0.640
UA	R201	B	2021/05/06	Potassium, total	mg/L	0.740

UA	R201	B	2021/05/17	Potassium, total	mg/L	0.650
UA	R201	B	2021/06/14	Potassium, total	mg/L	0.750
UA	R201	B	2021/06/29	Potassium, total	mg/L	1.20
UA	R201	B	2021/07/13	Potassium, total	mg/L	0.720
UA	R201	B	2021/07/28	Potassium, total	mg/L	0.740
UA	R201	B	2021/08/18	Potassium, total	mg/L	0.710
UA	R201	B	2022/02/09	Potassium, total	mg/L	0.840
UA	R201	B	2022/05/11	Potassium, total	mg/L	0.860
UA	R201	B	2022/08/23	Potassium, total	mg/L	0.940
UA	R201	B	2023/02/16	Potassium, total	mg/L	0.840
UA	R201	B	2023/06/07	Potassium, total	mg/L	0.840
UA	R201	B	2023/11/14	Potassium, total	mg/L	1.03
UA	R201	B	2023/06/07	Silicon, dissolved	mg/L	8.10
UA	R201	B	2011/01/27	Sodium, total	mg/L	73.0
UA	R201	B	2012/01/30	Sodium, total	mg/L	91.0
UA	R201	B	2013/01/31	Sodium, total	mg/L	93.0
UA	R201	B	2014/02/19	Sodium, total	mg/L	89.0
UA	R201	B	2015/04/10	Sodium, total	mg/L	120
UA	R201	B	2017/07/13	Sodium, total	mg/L	140
UA	R201	B	2020/01/21	Sodium, total	mg/L	120
UA	R201	B	2020/08/11	Sodium, total	mg/L	120
UA	R201	B	2021/01/29	Sodium, total	mg/L	110
UA	R201	B	2021/03/29	Sodium, total	mg/L	100
UA	R201	B	2021/04/21	Sodium, total	mg/L	110
UA	R201	B	2021/05/06	Sodium, total	mg/L	110
UA	R201	B	2021/05/17	Sodium, total	mg/L	120
UA	R201	B	2021/06/14	Sodium, total	mg/L	120
UA	R201	B	2021/06/29	Sodium, total	mg/L	120
UA	R201	B	2021/07/13	Sodium, total	mg/L	100
UA	R201	B	2021/07/28	Sodium, total	mg/L	110
UA	R201	B	2021/08/18	Sodium, total	mg/L	120
UA	R201	B	2022/02/09	Sodium, total	mg/L	130
UA	R201	B	2022/05/11	Sodium, total	mg/L	130
UA	R201	B	2022/08/23	Sodium, total	mg/L	130
UA	R201	B	2023/02/16	Sodium, total	mg/L	110
UA	R201	B	2023/06/07	Sodium, total	mg/L	120
UA	R201	B	2023/11/14	Sodium, total	mg/L	101
UA	R201	B	2010/11/15	Sulfate, total	mg/L	250
UA	R201	B	2011/01/27	Sulfate, total	mg/L	190
UA	R201	B	2011/05/04	Sulfate, total	mg/L	230
UA	R201	B	2011/07/25	Sulfate, total	mg/L	230
UA	R201	B	2011/11/11	Sulfate, total	mg/L	190
UA	R201	B	2012/01/30	Sulfate, total	mg/L	190
UA	R201	B	2012/05/22	Sulfate, total	mg/L	240
UA	R201	B	2012/07/23	Sulfate, total	mg/L	250
UA	R201	B	2012/11/14	Sulfate, total	mg/L	190
UA	R201	B	2013/01/31	Sulfate, total	mg/L	180
UA	R201	B	2013/05/20	Sulfate, total	mg/L	220
UA	R201	B	2013/07/22	Sulfate, total	mg/L	210
UA	R201	B	2013/10/14	Sulfate, total	mg/L	230

UA	R201	B	2014/02/19	Sulfate, total	mg/L	170
UA	R201	B	2014/05/12	Sulfate, total	mg/L	200
UA	R201	B	2014/08/11	Sulfate, total	mg/L	240
UA	R201	B	2014/10/15	Sulfate, total	mg/L	150
UA	R201	B	2015/01/20	Sulfate, total	mg/L	210
UA	R201	B	2015/04/10	Sulfate, total	mg/L	220
UA	R201	B	2015/07/22	Sulfate, total	mg/L	250
UA	R201	B	2015/10/05	Sulfate, total	mg/L	210
UA	R201	B	2015/11/23	Sulfate, total	mg/L	150
UA	R201	B	2016/02/12	Sulfate, total	mg/L	240
UA	R201	B	2016/05/10	Sulfate, total	mg/L	260
UA	R201	B	2016/07/30	Sulfate, total	mg/L	260
UA	R201	B	2016/11/18	Sulfate, total	mg/L	160
UA	R201	B	2017/02/11	Sulfate, total	mg/L	230
UA	R201	B	2017/05/18	Sulfate, total	mg/L	300
UA	R201	B	2017/07/13	Sulfate, total	mg/L	250
UA	R201	B	2017/10/28	Sulfate, total	mg/L	89.0
UA	R201	B	2018/05/11	Sulfate, total	mg/L	190
UA	R201	B	2018/11/02	Sulfate, total	mg/L	110
UA	R201	B	2019/01/16	Sulfate, total	mg/L	150
UA	R201	B	2019/08/12	Sulfate, total	mg/L	220
UA	R201	B	2020/01/21	Sulfate, total	mg/L	210
UA	R201	B	2020/08/11	Sulfate, total	mg/L	240
UA	R201	B	2020/10/13	Sulfate, total	mg/L	240
UA	R201	B	2021/01/29	Sulfate, total	mg/L	160
UA	R201	B	2021/03/29	Sulfate, total	mg/L	190
UA	R201	B	2021/04/21	Sulfate, total	mg/L	200
UA	R201	B	2021/05/06	Sulfate, total	mg/L	210
UA	R201	B	2021/05/17	Sulfate, total	mg/L	210
UA	R201	B	2021/06/14	Sulfate, total	mg/L	230
UA	R201	B	2021/06/29	Sulfate, total	mg/L	220
UA	R201	B	2021/07/13	Sulfate, total	mg/L	170
UA	R201	B	2021/07/28	Sulfate, total	mg/L	370
UA	R201	B	2021/08/18	Sulfate, total	mg/L	180
UA	R201	B	2021/10/27	Sulfate, total	mg/L	230
UA	R201	B	2022/02/09	Sulfate, total	mg/L	240
UA	R201	B	2022/05/11	Sulfate, total	mg/L	260
UA	R201	B	2022/08/23	Sulfate, total	mg/L	240
UA	R201	B	2022/11/10	Sulfate, total	mg/L	220
UA	R201	B	2023/02/16	Sulfate, total	mg/L	160
UA	R201	B	2023/06/07	Sulfate, total	mg/L	220
UA	R201	B	2023/11/14	Sulfate, total	mg/L	167
UA	R201	B	2015/11/23	Temperature (Celsius)	degrees C	15.6
UA	R201	B	2016/02/12	Temperature (Celsius)	degrees C	10.3
UA	R201	B	2016/05/10	Temperature (Celsius)	degrees C	15.5
UA	R201	B	2016/07/30	Temperature (Celsius)	degrees C	16.9
UA	R201	B	2016/11/18	Temperature (Celsius)	degrees C	15.3
UA	R201	B	2017/02/11	Temperature (Celsius)	degrees C	15.0
UA	R201	B	2017/05/18	Temperature (Celsius)	degrees C	14.8
UA	R201	B	2017/07/13	Temperature (Celsius)	degrees C	17.0

UA	R201	B	2017/10/28	Temperature (Celsius)	degrees C	12.6
UA	R201	B	2018/01/25	Temperature (Celsius)	degrees C	11.5
UA	R201	B	2018/05/11	Temperature (Celsius)	degrees C	13.9
UA	R201	B	2018/11/02	Temperature (Celsius)	degrees C	14.0
UA	R201	B	2019/01/16	Temperature (Celsius)	degrees C	12.7
UA	R201	B	2019/08/12	Temperature (Celsius)	degrees C	17.4
UA	R201	B	2020/01/21	Temperature (Celsius)	degrees C	9.00
UA	R201	B	2020/08/11	Temperature (Celsius)	degrees C	18.4
UA	R201	B	2021/01/29	Temperature (Celsius)	degrees C	8.50
UA	R201	B	2021/03/29	Temperature (Celsius)	degrees C	13.3
UA	R201	B	2021/04/21	Temperature (Celsius)	degrees C	11.0
UA	R201	B	2021/05/06	Temperature (Celsius)	degrees C	11.9
UA	R201	B	2021/05/17	Temperature (Celsius)	degrees C	13.7
UA	R201	B	2021/06/14	Temperature (Celsius)	degrees C	19.9
UA	R201	B	2021/06/29	Temperature (Celsius)	degrees C	23.3
UA	R201	B	2021/07/13	Temperature (Celsius)	degrees C	15.8
UA	R201	B	2021/07/28	Temperature (Celsius)	degrees C	20.0
UA	R201	B	2021/08/18	Temperature (Celsius)	degrees C	21.1
UA	R201	B	2022/02/09	Temperature (Celsius)	degrees C	9.80
UA	R201	B	2022/05/11	Temperature (Celsius)	degrees C	18.3
UA	R201	B	2022/08/23	Temperature (Celsius)	degrees C	20.0
UA	R201	B	2022/11/10	Temperature (Celsius)	degrees C	15.8
UA	R201	B	2023/02/16	Temperature (Celsius)	degrees C	8.50
UA	R201	B	2023/06/07	Temperature (Celsius)	degrees C	19.0
UA	R201	B	2023/11/14	Temperature (Celsius)	degrees C	16.0
UA	R201	B	2010/11/15	Total Dissolved Solids	mg/L	970
UA	R201	B	2011/01/27	Total Dissolved Solids	mg/L	780
UA	R201	B	2011/05/04	Total Dissolved Solids	mg/L	910
UA	R201	B	2011/07/25	Total Dissolved Solids	mg/L	900
UA	R201	B	2011/11/11	Total Dissolved Solids	mg/L	690
UA	R201	B	2012/01/30	Total Dissolved Solids	mg/L	780
UA	R201	B	2012/05/22	Total Dissolved Solids	mg/L	820
UA	R201	B	2012/07/23	Total Dissolved Solids	mg/L	880
UA	R201	B	2012/11/14	Total Dissolved Solids	mg/L	730
UA	R201	B	2013/01/31	Total Dissolved Solids	mg/L	650
UA	R201	B	2013/05/20	Total Dissolved Solids	mg/L	680
UA	R201	B	2013/07/22	Total Dissolved Solids	mg/L	760
UA	R201	B	2013/10/14	Total Dissolved Solids	mg/L	790
UA	R201	B	2014/02/19	Total Dissolved Solids	mg/L	660
UA	R201	B	2014/05/12	Total Dissolved Solids	mg/L	740
UA	R201	B	2014/08/11	Total Dissolved Solids	mg/L	810
UA	R201	B	2014/10/15	Total Dissolved Solids	mg/L	600
UA	R201	B	2015/01/20	Total Dissolved Solids	mg/L	750
UA	R201	B	2015/04/10	Total Dissolved Solids	mg/L	760
UA	R201	B	2015/07/22	Total Dissolved Solids	mg/L	930
UA	R201	B	2015/10/05	Total Dissolved Solids	mg/L	840
UA	R201	B	2015/11/23	Total Dissolved Solids	mg/L	560
UA	R201	B	2016/02/12	Total Dissolved Solids	mg/L	740
UA	R201	B	2016/05/10	Total Dissolved Solids	mg/L	840
UA	R201	B	2016/07/30	Total Dissolved Solids	mg/L	750

UA	R201	B	2016/11/18	Total Dissolved Solids	mg/L	580
UA	R201	B	2017/02/11	Total Dissolved Solids	mg/L	900
UA	R201	B	2017/05/18	Total Dissolved Solids	mg/L	820
UA	R201	B	2017/07/13	Total Dissolved Solids	mg/L	780
UA	R201	B	2017/10/28	Total Dissolved Solids	mg/L	660
UA	R201	B	2018/05/11	Total Dissolved Solids	mg/L	640
UA	R201	B	2018/11/02	Total Dissolved Solids	mg/L	470
UA	R201	B	2019/01/16	Total Dissolved Solids	mg/L	790
UA	R201	B	2019/08/12	Total Dissolved Solids	mg/L	760
UA	R201	B	2020/01/21	Total Dissolved Solids	mg/L	770
UA	R201	B	2020/08/11	Total Dissolved Solids	mg/L	790
UA	R201	B	2020/10/13	Total Dissolved Solids	mg/L	860
UA	R201	B	2021/01/29	Total Dissolved Solids	mg/L	710
UA	R201	B	2021/03/29	Total Dissolved Solids	mg/L	660
UA	R201	B	2021/04/21	Total Dissolved Solids	mg/L	810
UA	R201	B	2021/05/06	Total Dissolved Solids	mg/L	730
UA	R201	B	2021/05/17	Total Dissolved Solids	mg/L	770
UA	R201	B	2021/06/14	Total Dissolved Solids	mg/L	820
UA	R201	B	2021/06/29	Total Dissolved Solids	mg/L	560
UA	R201	B	2021/07/13	Total Dissolved Solids	mg/L	710
UA	R201	B	2021/07/28	Total Dissolved Solids	mg/L	750
UA	R201	B	2021/08/18	Total Dissolved Solids	mg/L	740
UA	R201	B	2021/10/27	Total Dissolved Solids	mg/L	760
UA	R201	B	2022/02/09	Total Dissolved Solids	mg/L	760
UA	R201	B	2022/05/11	Total Dissolved Solids	mg/L	870
UA	R201	B	2022/08/23	Total Dissolved Solids	mg/L	840
UA	R201	B	2022/11/10	Total Dissolved Solids	mg/L	820
UA	R201	B	2023/02/16	Total Dissolved Solids	mg/L	750
UA	R201	B	2023/06/07	Total Dissolved Solids	mg/L	930
UA	R201	B	2023/11/14	Total Dissolved Solids	mg/L	705
UA	G206	C	2010/11/22	pH (field)	SU	7.3
UA	G206	C	2011/01/24	pH (field)	SU	7.3
UA	G206	C	2011/03/08	pH (field)	SU	7.2
UA	G206	C	2011/05/04	pH (field)	SU	9.6
UA	G206	C	2011/07/26	pH (field)	SU	7.3
UA	G206	C	2011/09/19	pH (field)	SU	7.4
UA	G206	C	2011/11/11	pH (field)	SU	7.2
UA	G206	C	2012/01/30	pH (field)	SU	7.4
UA	G206	C	2012/05/23	pH (field)	SU	7.4
UA	G206	C	2012/07/23	pH (field)	SU	7.1
UA	G206	C	2012/11/14	pH (field)	SU	7.4
UA	G206	C	2013/01/29	pH (field)	SU	7.7
UA	G206	C	2013/05/21	pH (field)	SU	6.8
UA	G206	C	2013/07/23	pH (field)	SU	7.2
UA	G206	C	2013/10/14	pH (field)	SU	7.3
UA	G206	C	2014/02/20	pH (field)	SU	7.2
UA	G206	C	2014/05/13	pH (field)	SU	8.0
UA	G206	C	2014/08/11	pH (field)	SU	7.3
UA	G206	C	2014/10/15	pH (field)	SU	7.5
UA	G206	C	2015/01/21	pH (field)	SU	7.3

UA	G206	C	2015/04/09	pH (field)	SU	7.0
UA	G206	C	2015/07/22	pH (field)	SU	7.0
UA	G206	C	2015/10/07	pH (field)	SU	6.8
UA	G206	C	2015/11/18	pH (field)	SU	7.1
UA	G206	C	2016/02/24	pH (field)	SU	6.7
UA	G206	C	2016/06/27	pH (field)	SU	6.2
UA	G206	C	2016/08/06	pH (field)	SU	7.1
UA	G206	C	2016/11/22	pH (field)	SU	7.1
UA	G206	C	2017/02/11	pH (field)	SU	7.2
UA	G206	C	2017/05/18	pH (field)	SU	7.0
UA	G206	C	2017/07/15	pH (field)	SU	7.1
UA	G206	C	2017/10/30	pH (field)	SU	7.2
UA	G206	C	2018/05/15	pH (field)	SU	7.0
UA	G206	C	2018/11/02	pH (field)	SU	7.0
UA	G206	C	2019/01/17	pH (field)	SU	7.1
UA	G206	C	2019/08/14	pH (field)	SU	7.1
UA	G206	C	2020/01/21	pH (field)	SU	7.5
UA	G206	C	2020/05/05	pH (field)	SU	7.5
UA	G206	C	2020/08/13	pH (field)	SU	7.4
UA	G206	C	2020/10/13	pH (field)	SU	7.1
UA	G206	C	2021/01/27	pH (field)	SU	7.1
UA	G206	C	2021/05/19	pH (field)	SU	7.3
UA	G206	C	2021/08/20	pH (field)	SU	7.2
UA	G206	C	2021/10/27	pH (field)	SU	7.2
UA	G206	C	2021/11/29	pH (field)	SU	7.2
UA	G206	C	2022/02/10	pH (field)	SU	7.0
UA	G206	C	2022/05/10	pH (field)	SU	7.1
UA	G206	C	2022/08/23	pH (field)	SU	6.9
UA	G206	C	2022/11/08	pH (field)	SU	6.9
UA	G206	C	2023/02/16	pH (field)	SU	7.4
UA	G206	C	2023/06/09	pH (field)	SU	7.1
UA	G206	C	2023/08/14	pH (field)	SU	6.9
UA	G206	C	2023/11/15	pH (field)	SU	7.5
UA	G206	C	2015/11/18	Oxidation Reduction Potential	mV	-165
UA	G206	C	2016/02/24	Oxidation Reduction Potential	mV	22.0
UA	G206	C	2016/06/27	Oxidation Reduction Potential	mV	-31.0
UA	G206	C	2016/08/06	Oxidation Reduction Potential	mV	103
UA	G206	C	2016/11/22	Oxidation Reduction Potential	mV	91.0
UA	G206	C	2017/02/11	Oxidation Reduction Potential	mV	123
UA	G206	C	2017/05/18	Oxidation Reduction Potential	mV	93.0
UA	G206	C	2017/07/15	Oxidation Reduction Potential	mV	85.0
UA	G206	C	2017/10/30	Oxidation Reduction Potential	mV	105
UA	G206	C	2018/05/15	Oxidation Reduction Potential	mV	91.0
UA	G206	C	2018/11/02	Oxidation Reduction Potential	mV	98.0
UA	G206	C	2019/01/17	Oxidation Reduction Potential	mV	101
UA	G206	C	2019/08/14	Oxidation Reduction Potential	mV	99.0
UA	G206	C	2020/01/21	Oxidation Reduction Potential	mV	16.8
UA	G206	C	2020/05/05	Oxidation Reduction Potential	mV	176
UA	G206	C	2020/08/13	Oxidation Reduction Potential	mV	202
UA	G206	C	2021/01/27	Oxidation Reduction Potential	mV	39.1

UA	G206	C	2021/08/20	Oxidation Reduction Potential	mV	67.9
UA	G206	C	2021/11/29	Oxidation Reduction Potential	mV	-1.80
UA	G206	C	2022/02/10	Oxidation Reduction Potential	mV	124
UA	G206	C	2022/05/10	Oxidation Reduction Potential	mV	107
UA	G206	C	2022/08/23	Oxidation Reduction Potential	mV	-178
UA	G206	C	2022/11/08	Oxidation Reduction Potential	mV	-112
UA	G206	C	2023/02/16	Oxidation Reduction Potential	mV	188
UA	G206	C	2023/06/09	Oxidation Reduction Potential	mV	-232
UA	G206	C	2023/08/14	Oxidation Reduction Potential	mV	-188
UA	G206	C	2023/11/15	Oxidation Reduction Potential	mV	-256
UA	G206	C	2015/11/18	Eh	V	0.029
UA	G206	C	2016/02/24	Eh	V	0.22
UA	G206	C	2016/06/27	Eh	V	0.16
UA	G206	C	2016/08/06	Eh	V	0.30
UA	G206	C	2016/11/22	Eh	V	0.29
UA	G206	C	2017/02/11	Eh	V	0.32
UA	G206	C	2017/05/18	Eh	V	0.29
UA	G206	C	2017/07/15	Eh	V	0.28
UA	G206	C	2017/10/30	Eh	V	0.30
UA	G206	C	2018/05/15	Eh	V	0.29
UA	G206	C	2018/11/02	Eh	V	0.29
UA	G206	C	2019/01/17	Eh	V	0.30
UA	G206	C	2019/08/14	Eh	V	0.29
UA	G206	C	2020/01/21	Eh	V	0.21
UA	G206	C	2020/05/05	Eh	V	0.37
UA	G206	C	2020/08/13	Eh	V	0.40
UA	G206	C	2021/01/27	Eh	V	0.24
UA	G206	C	2021/08/20	Eh	V	0.26
UA	G206	C	2021/11/29	Eh	V	0.19
UA	G206	C	2022/02/10	Eh	V	0.32
UA	G206	C	2022/05/10	Eh	V	0.30
UA	G206	C	2022/08/23	Eh	V	0.014
UA	G206	C	2022/11/08	Eh	V	0.082
UA	G206	C	2023/02/16	Eh	V	0.39
UA	G206	C	2023/06/09	Eh	V	-0.039
UA	G206	C	2023/08/14	Eh	V	0.0067
UA	G206	C	2023/11/15	Eh	V	-0.062
UA	G206	C	2010/12/21	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G206	C	2011/01/24	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G206	C	2011/03/08	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G206	C	2011/05/04	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G206	C	2011/07/26	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G206	C	2011/09/19	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G206	C	2012/01/30	Alkalinity, bicarbonate	mg/L CaCO3	260
UA	G206	C	2013/01/29	Alkalinity, bicarbonate	mg/L CaCO3	270
UA	G206	C	2014/02/20	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G206	C	2014/08/11	Alkalinity, bicarbonate	mg/L CaCO3	220
UA	G206	C	2014/10/15	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G206	C	2015/01/21	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G206	C	2015/04/09	Alkalinity, bicarbonate	mg/L CaCO3	270

UA	G206	C	2017/07/15	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G206	C	2020/01/21	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G206	C	2020/08/13	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G206	C	2021/01/27	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G206	C	2021/08/20	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G206	C	2022/02/10	Alkalinity, bicarbonate	mg/L CaCO3	260
UA	G206	C	2022/06/16	Alkalinity, bicarbonate	mg/L CaCO3	260
UA	G206	C	2022/08/23	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G206	C	2023/02/16	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G206	C	2023/06/09	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G206	C	2023/08/14	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G206	C	2023/11/15	Alkalinity, bicarbonate	mg/L CaCO3	293
UA	G206	C	2022/08/23	Alkalinity, carbonate	mg/L CaCO3	10.0
UA	G206	C	2010/11/22	Barium, total	mg/L	0.120
UA	G206	C	2011/01/24	Barium, total	mg/L	0.0540
UA	G206	C	2011/03/08	Barium, total	mg/L	0.0410
UA	G206	C	2011/05/04	Barium, total	mg/L	<0.001
UA	G206	C	2011/07/26	Barium, total	mg/L	0.0350
UA	G206	C	2011/09/19	Barium, total	mg/L	0.00380
UA	G206	C	2012/01/30	Barium, total	mg/L	0.0400
UA	G206	C	2013/01/29	Barium, total	mg/L	0.0440
UA	G206	C	2014/02/20	Barium, total	mg/L	0.0430
UA	G206	C	2015/04/09	Barium, total	mg/L	0.0520
UA	G206	C	2015/07/22	Barium, total	mg/L	0.0940
UA	G206	C	2015/10/07	Barium, total	mg/L	0.0650
UA	G206	C	2015/11/18	Barium, total	mg/L	0.0620
UA	G206	C	2016/02/24	Barium, total	mg/L	0.0560
UA	G206	C	2016/06/27	Barium, total	mg/L	0.0620
UA	G206	C	2016/08/06	Barium, total	mg/L	0.0640
UA	G206	C	2016/11/22	Barium, total	mg/L	0.0480
UA	G206	C	2017/02/11	Barium, total	mg/L	0.0520
UA	G206	C	2017/05/18	Barium, total	mg/L	0.0430
UA	G206	C	2017/07/15	Barium, total	mg/L	0.0550
UA	G206	C	2020/10/13	Barium, total	mg/L	0.0450
UA	G206	C	2021/01/27	Barium, total	mg/L	0.0370
UA	G206	C	2021/05/19	Barium, total	mg/L	0.0480
UA	G206	C	2021/08/20	Barium, total	mg/L	0.0470
UA	G206	C	2021/10/27	Barium, total	mg/L	0.0480
UA	G206	C	2022/02/10	Barium, total	mg/L	0.0510
UA	G206	C	2022/05/10	Barium, total	mg/L	0.0470
UA	G206	C	2022/08/23	Barium, total	mg/L	0.0510
UA	G206	C	2022/11/08	Barium, total	mg/L	0.0420
UA	G206	C	2023/02/16	Barium, total	mg/L	0.0570
UA	G206	C	2023/06/09	Barium, total	mg/L	0.0500
UA	G206	C	2023/08/14	Barium, total	mg/L	0.0581
UA	G206	C	2023/11/15	Barium, total	mg/L	0.0534
UA	G206	C	2010/11/22	Calcium, total	mg/L	98.0
UA	G206	C	2011/01/24	Calcium, total	mg/L	75.0
UA	G206	C	2011/03/08	Calcium, total	mg/L	75.0
UA	G206	C	2011/05/04	Calcium, total	mg/L	<100

UA	G206	C	2011/07/26	Calcium, total	mg/L	69.0
UA	G206	C	2011/09/19	Calcium, total	mg/L	7.10
UA	G206	C	2011/11/11	Calcium, total	mg/L	70.0
UA	G206	C	2012/01/30	Calcium, total	mg/L	96.0
UA	G206	C	2012/05/23	Calcium, total	mg/L	74.0
UA	G206	C	2012/07/23	Calcium, total	mg/L	78.0
UA	G206	C	2012/11/14	Calcium, total	mg/L	71.0
UA	G206	C	2013/01/29	Calcium, total	mg/L	78.0
UA	G206	C	2013/05/21	Calcium, total	mg/L	74.0
UA	G206	C	2013/07/23	Calcium, total	mg/L	73.0
UA	G206	C	2013/10/14	Calcium, total	mg/L	76.0
UA	G206	C	2014/02/20	Calcium, total	mg/L	79.0
UA	G206	C	2014/05/13	Calcium, total	mg/L	90.0
UA	G206	C	2014/08/11	Calcium, total	mg/L	84.0
UA	G206	C	2014/10/15	Calcium, total	mg/L	98.0
UA	G206	C	2015/01/21	Calcium, total	mg/L	84.0
UA	G206	C	2015/04/09	Calcium, total	mg/L	92.0
UA	G206	C	2015/11/18	Calcium, total	mg/L	79.0
UA	G206	C	2016/02/24	Calcium, total	mg/L	78.0
UA	G206	C	2016/06/27	Calcium, total	mg/L	94.0
UA	G206	C	2016/08/06	Calcium, total	mg/L	90.0
UA	G206	C	2016/11/22	Calcium, total	mg/L	63.0
UA	G206	C	2017/02/11	Calcium, total	mg/L	70.0
UA	G206	C	2017/05/18	Calcium, total	mg/L	66.0
UA	G206	C	2017/07/15	Calcium, total	mg/L	61.0
UA	G206	C	2017/10/30	Calcium, total	mg/L	90.0
UA	G206	C	2018/05/15	Calcium, total	mg/L	73.0
UA	G206	C	2018/11/02	Calcium, total	mg/L	85.0
UA	G206	C	2019/01/17	Calcium, total	mg/L	81.0
UA	G206	C	2019/08/14	Calcium, total	mg/L	120
UA	G206	C	2020/01/21	Calcium, total	mg/L	84.0
UA	G206	C	2020/08/13	Calcium, total	mg/L	81.0
UA	G206	C	2021/01/27	Calcium, total	mg/L	65.0
UA	G206	C	2021/08/20	Calcium, total	mg/L	83.0
UA	G206	C	2022/02/10	Calcium, total	mg/L	82.0
UA	G206	C	2022/05/10	Calcium, total	mg/L	79.0
UA	G206	C	2022/08/23	Calcium, total	mg/L	92.0
UA	G206	C	2023/02/16	Calcium, total	mg/L	87.0
UA	G206	C	2023/06/09	Calcium, total	mg/L	86.0
UA	G206	C	2023/08/14	Calcium, total	mg/L	86.8
UA	G206	C	2023/11/15	Calcium, total	mg/L	83.3
UA	G206	C	2010/11/22	Chloride, total	mg/L	42.0
UA	G206	C	2011/01/24	Chloride, total	mg/L	36.0
UA	G206	C	2011/03/08	Chloride, total	mg/L	39.0
UA	G206	C	2011/05/04	Chloride, total	mg/L	37.0
UA	G206	C	2011/07/26	Chloride, total	mg/L	36.0
UA	G206	C	2011/09/19	Chloride, total	mg/L	37.0
UA	G206	C	2011/11/11	Chloride, total	mg/L	40.0
UA	G206	C	2012/01/30	Chloride, total	mg/L	39.0
UA	G206	C	2012/05/23	Chloride, total	mg/L	39.0

UA	G206	C	2012/07/23	Chloride, total	mg/L	41.0
UA	G206	C	2012/11/14	Chloride, total	mg/L	34.0
UA	G206	C	2013/01/29	Chloride, total	mg/L	36.0
UA	G206	C	2013/05/21	Chloride, total	mg/L	30.0
UA	G206	C	2013/07/23	Chloride, total	mg/L	42.0
UA	G206	C	2013/10/14	Chloride, total	mg/L	29.0
UA	G206	C	2014/02/20	Chloride, total	mg/L	30.0
UA	G206	C	2014/05/13	Chloride, total	mg/L	28.0
UA	G206	C	2014/08/11	Chloride, total	mg/L	33.0
UA	G206	C	2014/10/15	Chloride, total	mg/L	32.0
UA	G206	C	2015/01/21	Chloride, total	mg/L	28.0
UA	G206	C	2015/04/09	Chloride, total	mg/L	29.0
UA	G206	C	2015/07/22	Chloride, total	mg/L	24.0
UA	G206	C	2015/10/07	Chloride, total	mg/L	34.0
UA	G206	C	2015/11/18	Chloride, total	mg/L	32.0
UA	G206	C	2016/02/24	Chloride, total	mg/L	26.0
UA	G206	C	2016/06/27	Chloride, total	mg/L	25.0
UA	G206	C	2016/08/06	Chloride, total	mg/L	27.0
UA	G206	C	2016/11/22	Chloride, total	mg/L	30.0
UA	G206	C	2017/02/11	Chloride, total	mg/L	29.0
UA	G206	C	2017/05/18	Chloride, total	mg/L	29.0
UA	G206	C	2017/07/15	Chloride, total	mg/L	31.0
UA	G206	C	2017/10/30	Chloride, total	mg/L	30.0
UA	G206	C	2018/05/15	Chloride, total	mg/L	26.0
UA	G206	C	2018/11/02	Chloride, total	mg/L	25.0
UA	G206	C	2019/01/17	Chloride, total	mg/L	27.0
UA	G206	C	2019/08/14	Chloride, total	mg/L	22.0
UA	G206	C	2020/01/21	Chloride, total	mg/L	24.0
UA	G206	C	2020/08/13	Chloride, total	mg/L	23.0
UA	G206	C	2020/10/13	Chloride, total	mg/L	22.0
UA	G206	C	2021/01/27	Chloride, total	mg/L	22.0
UA	G206	C	2021/05/19	Chloride, total	mg/L	25.0
UA	G206	C	2021/08/20	Chloride, total	mg/L	21.0
UA	G206	C	2021/10/27	Chloride, total	mg/L	22.0
UA	G206	C	2022/02/10	Chloride, total	mg/L	23.0
UA	G206	C	2022/05/10	Chloride, total	mg/L	22.0
UA	G206	C	2022/08/23	Chloride, total	mg/L	21.0
UA	G206	C	2022/11/08	Chloride, total	mg/L	19.0
UA	G206	C	2023/02/16	Chloride, total	mg/L	23.0
UA	G206	C	2023/06/09	Chloride, total	mg/L	22.0
UA	G206	C	2023/08/14	Chloride, total	mg/L	23.0
UA	G206	C	2023/11/15	Chloride, total	mg/L	23.0
UA	G206	C	2023/06/09	Ferrous Iron, dissolved	mg/L	0.990
UA	G206	C	2010/11/22	Iron, dissolved	mg/L	<0.1
UA	G206	C	2011/01/24	Iron, dissolved	mg/L	0.0240
UA	G206	C	2011/03/08	Iron, dissolved	mg/L	0.0350
UA	G206	C	2011/05/04	Iron, dissolved	mg/L	0.0180
UA	G206	C	2011/07/26	Iron, dissolved	mg/L	<0.01
UA	G206	C	2011/09/19	Iron, dissolved	mg/L	<0.01
UA	G206	C	2011/11/11	Iron, dissolved	mg/L	<0.01

UA	G206	C	2012/01/30	Iron, dissolved	mg/L	0.0260
UA	G206	C	2012/05/23	Iron, dissolved	mg/L	0.0160
UA	G206	C	2012/07/23	Iron, dissolved	mg/L	<0.01
UA	G206	C	2012/11/14	Iron, dissolved	mg/L	<0.01
UA	G206	C	2013/01/29	Iron, dissolved	mg/L	<0.01
UA	G206	C	2013/05/21	Iron, dissolved	mg/L	0.0140
UA	G206	C	2013/07/23	Iron, dissolved	mg/L	0.0130
UA	G206	C	2013/10/14	Iron, dissolved	mg/L	<0.01
UA	G206	C	2014/02/20	Iron, dissolved	mg/L	0.0110
UA	G206	C	2014/05/13	Iron, dissolved	mg/L	0.0130
UA	G206	C	2014/08/11	Iron, dissolved	mg/L	0.0130
UA	G206	C	2014/10/15	Iron, dissolved	mg/L	0.0170
UA	G206	C	2015/01/21	Iron, dissolved	mg/L	0.0160
UA	G206	C	2015/04/09	Iron, dissolved	mg/L	<0.01
UA	G206	C	2015/07/22	Iron, dissolved	mg/L	1.80
UA	G206	C	2015/10/07	Iron, dissolved	mg/L	0.0970
UA	G206	C	2016/02/24	Iron, dissolved	mg/L	0.400
UA	G206	C	2016/06/27	Iron, dissolved	mg/L	0.300
UA	G206	C	2016/07/26	Iron, dissolved	mg/L	0.460
UA	G206	C	2016/11/22	Iron, dissolved	mg/L	<0.01
UA	G206	C	2017/02/13	Iron, dissolved	mg/L	<0.01
UA	G206	C	2017/05/21	Iron, dissolved	mg/L	0.0300
UA	G206	C	2017/07/24	Iron, dissolved	mg/L	0.240
UA	G206	C	2017/10/30	Iron, dissolved	mg/L	0.260
UA	G206	C	2018/01/25	Iron, dissolved	mg/L	0.0690
UA	G206	C	2018/05/15	Iron, dissolved	mg/L	<0.01
UA	G206	C	2018/08/08	Iron, dissolved	mg/L	0.0170
UA	G206	C	2018/11/02	Iron, dissolved	mg/L	<0.1
UA	G206	C	2019/01/17	Iron, dissolved	mg/L	2.80
UA	G206	C	2019/05/03	Iron, dissolved	mg/L	<0.01
UA	G206	C	2019/08/14	Iron, dissolved	mg/L	0.400
UA	G206	C	2019/10/23	Iron, dissolved	mg/L	0.240
UA	G206	C	2020/01/21	Iron, dissolved	mg/L	0.0130
UA	G206	C	2020/05/05	Iron, dissolved	mg/L	<0.01
UA	G206	C	2020/08/13	Iron, dissolved	mg/L	<0.01
UA	G206	C	2020/10/13	Iron, dissolved	mg/L	<0.01
UA	G206	C	2021/01/27	Iron, dissolved	mg/L	<0.01
UA	G206	C	2021/05/19	Iron, dissolved	mg/L	<0.01
UA	G206	C	2021/08/20	Iron, dissolved	mg/L	<0.01
UA	G206	C	2021/10/27	Iron, dissolved	mg/L	<0.01
UA	G206	C	2022/02/10	Iron, dissolved	mg/L	<0.01
UA	G206	C	2022/05/10	Iron, dissolved	mg/L	0.160
UA	G206	C	2022/08/23	Iron, dissolved	mg/L	0.270
UA	G206	C	2022/11/08	Iron, dissolved	mg/L	0.300
UA	G206	C	2023/02/16	Iron, dissolved	mg/L	<0.00072
UA	G206	C	2023/06/09	Iron, dissolved	mg/L	0.840
UA	G206	C	2023/08/14	Iron, dissolved	mg/L	0.285
UA	G206	C	2023/11/15	Iron, dissolved	mg/L	0.309
UA	G206	C	2010/11/22	Magnesium, total	mg/L	42.0
UA	G206	C	2011/01/24	Magnesium, total	mg/L	30.0

UA	G206	C	2011/03/08	Magnesium, total	mg/L	33.0
UA	G206	C	2011/05/04	Magnesium, total	mg/L	<100
UA	G206	C	2011/07/26	Magnesium, total	mg/L	29.0
UA	G206	C	2011/09/19	Magnesium, total	mg/L	2.90
UA	G206	C	2012/01/30	Magnesium, total	mg/L	31.0
UA	G206	C	2013/01/29	Magnesium, total	mg/L	32.0
UA	G206	C	2014/02/20	Magnesium, total	mg/L	32.0
UA	G206	C	2015/04/09	Magnesium, total	mg/L	37.0
UA	G206	C	2017/07/15	Magnesium, total	mg/L	33.0
UA	G206	C	2020/01/21	Magnesium, total	mg/L	34.0
UA	G206	C	2020/08/13	Magnesium, total	mg/L	33.0
UA	G206	C	2021/01/27	Magnesium, total	mg/L	35.0
UA	G206	C	2021/08/20	Magnesium, total	mg/L	38.0
UA	G206	C	2022/02/10	Magnesium, total	mg/L	34.0
UA	G206	C	2022/05/10	Magnesium, total	mg/L	34.0
UA	G206	C	2022/08/23	Magnesium, total	mg/L	40.0
UA	G206	C	2023/02/16	Magnesium, total	mg/L	32.0
UA	G206	C	2023/06/09	Magnesium, total	mg/L	37.0
UA	G206	C	2023/08/14	Magnesium, total	mg/L	35.9
UA	G206	C	2023/11/15	Magnesium, total	mg/L	35.2
UA	G206	C	2010/11/22	Manganese, dissolved	mg/L	0.0530
UA	G206	C	2011/01/24	Manganese, dissolved	mg/L	0.0390
UA	G206	C	2011/03/08	Manganese, dissolved	mg/L	0.0100
UA	G206	C	2011/05/04	Manganese, dissolved	mg/L	0.0370
UA	G206	C	2011/07/26	Manganese, dissolved	mg/L	0.0270
UA	G206	C	2011/09/19	Manganese, dissolved	mg/L	0.0280
UA	G206	C	2011/11/11	Manganese, dissolved	mg/L	0.0120
UA	G206	C	2012/01/30	Manganese, dissolved	mg/L	0.0240
UA	G206	C	2012/05/23	Manganese, dissolved	mg/L	0.0110
UA	G206	C	2012/07/23	Manganese, dissolved	mg/L	0.00960
UA	G206	C	2012/11/14	Manganese, dissolved	mg/L	0.0140
UA	G206	C	2013/01/29	Manganese, dissolved	mg/L	0.0500
UA	G206	C	2013/05/21	Manganese, dissolved	mg/L	0.00120
UA	G206	C	2013/07/23	Manganese, dissolved	mg/L	<0.001
UA	G206	C	2013/10/14	Manganese, dissolved	mg/L	0.00110
UA	G206	C	2014/02/20	Manganese, dissolved	mg/L	0.00340
UA	G206	C	2014/05/13	Manganese, dissolved	mg/L	0.00450
UA	G206	C	2014/08/11	Manganese, dissolved	mg/L	<0.001
UA	G206	C	2014/10/15	Manganese, dissolved	mg/L	0.00250
UA	G206	C	2015/01/21	Manganese, dissolved	mg/L	0.00480
UA	G206	C	2015/04/09	Manganese, dissolved	mg/L	<0.002
UA	G206	C	2015/07/22	Manganese, dissolved	mg/L	0.130
UA	G206	C	2015/10/07	Manganese, dissolved	mg/L	1.10
UA	G206	C	2016/02/24	Manganese, dissolved	mg/L	0.0900
UA	G206	C	2016/06/27	Manganese, dissolved	mg/L	0.640
UA	G206	C	2016/07/26	Manganese, dissolved	mg/L	0.240
UA	G206	C	2016/11/22	Manganese, dissolved	mg/L	0.0520
UA	G206	C	2017/02/13	Manganese, dissolved	mg/L	0.00180
UA	G206	C	2017/05/21	Manganese, dissolved	mg/L	0.0290
UA	G206	C	2017/07/24	Manganese, dissolved	mg/L	0.680

UA	G206	C	2017/10/30	Manganese, dissolved	mg/L	0.220
UA	G206	C	2018/01/25	Manganese, dissolved	mg/L	0.0130
UA	G206	C	2018/05/15	Manganese, dissolved	mg/L	<0.001
UA	G206	C	2018/08/08	Manganese, dissolved	mg/L	0.00840
UA	G206	C	2018/11/02	Manganese, dissolved	mg/L	0.0160
UA	G206	C	2019/01/17	Manganese, dissolved	mg/L	0.190
UA	G206	C	2019/05/03	Manganese, dissolved	mg/L	<0.001
UA	G206	C	2019/08/14	Manganese, dissolved	mg/L	0.180
UA	G206	C	2019/10/23	Manganese, dissolved	mg/L	0.150
UA	G206	C	2020/01/21	Manganese, dissolved	mg/L	0.00400
UA	G206	C	2020/05/05	Manganese, dissolved	mg/L	<0.001
UA	G206	C	2020/08/13	Manganese, dissolved	mg/L	0.00720
UA	G206	C	2020/10/13	Manganese, dissolved	mg/L	0.0170
UA	G206	C	2021/01/27	Manganese, dissolved	mg/L	0.00790
UA	G206	C	2021/05/19	Manganese, dissolved	mg/L	<0.001
UA	G206	C	2021/08/20	Manganese, dissolved	mg/L	0.0110
UA	G206	C	2021/10/27	Manganese, dissolved	mg/L	0.0210
UA	G206	C	2022/02/10	Manganese, dissolved	mg/L	<0.001
UA	G206	C	2022/05/10	Manganese, dissolved	mg/L	0.00210
UA	G206	C	2022/08/23	Manganese, dissolved	mg/L	0.110
UA	G206	C	2022/11/08	Manganese, dissolved	mg/L	0.120
UA	G206	C	2023/02/16	Manganese, dissolved	mg/L	0.00720
UA	G206	C	2023/06/09	Manganese, dissolved	mg/L	0.250
UA	G206	C	2023/08/14	Manganese, dissolved	mg/L	0.164
UA	G206	C	2023/11/15	Manganese, dissolved	mg/L	0.156
UA	G206	C	2023/08/14	Phosphate, dissolved	mg/L	0.706
UA	G206	C	2010/11/22	Potassium, total	mg/L	3.00
UA	G206	C	2011/01/24	Potassium, total	mg/L	1.10
UA	G206	C	2011/03/08	Potassium, total	mg/L	0.580
UA	G206	C	2011/05/04	Potassium, total	mg/L	0.190
UA	G206	C	2011/07/26	Potassium, total	mg/L	0.630
UA	G206	C	2011/09/19	Potassium, total	mg/L	0.0600
UA	G206	C	2012/01/30	Potassium, total	mg/L	0.730
UA	G206	C	2013/01/29	Potassium, total	mg/L	0.360
UA	G206	C	2014/02/20	Potassium, total	mg/L	0.370
UA	G206	C	2015/04/09	Potassium, total	mg/L	0.400
UA	G206	C	2017/07/15	Potassium, total	mg/L	0.650
UA	G206	C	2020/01/21	Potassium, total	mg/L	0.350
UA	G206	C	2020/08/13	Potassium, total	mg/L	0.250
UA	G206	C	2021/01/27	Potassium, total	mg/L	0.250
UA	G206	C	2021/08/20	Potassium, total	mg/L	0.330
UA	G206	C	2022/02/10	Potassium, total	mg/L	0.540
UA	G206	C	2022/05/10	Potassium, total	mg/L	0.370
UA	G206	C	2022/08/23	Potassium, total	mg/L	0.910
UA	G206	C	2023/02/16	Potassium, total	mg/L	0.370
UA	G206	C	2023/06/09	Potassium, total	mg/L	0.850
UA	G206	C	2023/08/14	Potassium, total	mg/L	0.870
UA	G206	C	2023/11/15	Potassium, total	mg/L	0.625
UA	G206	C	2023/06/09	Silicon, dissolved	mg/L	8.50
UA	G206	C	2023/08/14	Silicon, dissolved	mg/L	7.11

UA	G206	C	2010/11/22	Sodium, total	mg/L	48.0
UA	G206	C	2011/01/24	Sodium, total	mg/L	44.0
UA	G206	C	2011/03/08	Sodium, total	mg/L	48.0
UA	G206	C	2011/05/04	Sodium, total	mg/L	<100
UA	G206	C	2011/07/26	Sodium, total	mg/L	45.0
UA	G206	C	2011/09/19	Sodium, total	mg/L	4.10
UA	G206	C	2012/01/30	Sodium, total	mg/L	67.0
UA	G206	C	2013/01/29	Sodium, total	mg/L	48.0
UA	G206	C	2014/02/20	Sodium, total	mg/L	45.0
UA	G206	C	2015/04/09	Sodium, total	mg/L	53.0
UA	G206	C	2017/07/15	Sodium, total	mg/L	44.0
UA	G206	C	2020/01/21	Sodium, total	mg/L	55.0
UA	G206	C	2020/08/13	Sodium, total	mg/L	52.0
UA	G206	C	2021/01/27	Sodium, total	mg/L	42.0
UA	G206	C	2021/08/20	Sodium, total	mg/L	52.0
UA	G206	C	2022/02/10	Sodium, total	mg/L	54.0
UA	G206	C	2022/05/10	Sodium, total	mg/L	51.0
UA	G206	C	2022/08/23	Sodium, total	mg/L	55.0
UA	G206	C	2023/02/16	Sodium, total	mg/L	47.0
UA	G206	C	2023/06/09	Sodium, total	mg/L	50.0
UA	G206	C	2023/08/14	Sodium, total	mg/L	52.6
UA	G206	C	2023/11/15	Sodium, total	mg/L	49.8
UA	G206	C	2010/11/22	Sulfate, total	mg/L	77.0
UA	G206	C	2011/01/24	Sulfate, total	mg/L	62.0
UA	G206	C	2011/03/08	Sulfate, total	mg/L	58.0
UA	G206	C	2011/05/04	Sulfate, total	mg/L	64.0
UA	G206	C	2011/07/26	Sulfate, total	mg/L	59.0
UA	G206	C	2011/09/19	Sulfate, total	mg/L	60.0
UA	G206	C	2011/11/11	Sulfate, total	mg/L	57.0
UA	G206	C	2012/01/30	Sulfate, total	mg/L	63.0
UA	G206	C	2012/05/23	Sulfate, total	mg/L	60.0
UA	G206	C	2012/07/23	Sulfate, total	mg/L	58.0
UA	G206	C	2012/11/14	Sulfate, total	mg/L	61.0
UA	G206	C	2013/01/29	Sulfate, total	mg/L	69.0
UA	G206	C	2013/05/21	Sulfate, total	mg/L	93.0
UA	G206	C	2013/07/23	Sulfate, total	mg/L	100
UA	G206	C	2013/10/14	Sulfate, total	mg/L	96.0
UA	G206	C	2014/02/20	Sulfate, total	mg/L	110
UA	G206	C	2014/05/13	Sulfate, total	mg/L	130
UA	G206	C	2014/08/11	Sulfate, total	mg/L	130
UA	G206	C	2014/10/15	Sulfate, total	mg/L	120
UA	G206	C	2015/01/21	Sulfate, total	mg/L	130
UA	G206	C	2015/04/09	Sulfate, total	mg/L	130
UA	G206	C	2015/07/22	Sulfate, total	mg/L	32.0
UA	G206	C	2015/10/07	Sulfate, total	mg/L	110
UA	G206	C	2015/11/18	Sulfate, total	mg/L	95.0
UA	G206	C	2016/02/24	Sulfate, total	mg/L	150
UA	G206	C	2016/06/27	Sulfate, total	mg/L	130
UA	G206	C	2016/08/06	Sulfate, total	mg/L	130
UA	G206	C	2016/11/22	Sulfate, total	mg/L	130

UA	G206	C	2017/02/11	Sulfate, total	mg/L	150
UA	G206	C	2017/05/18	Sulfate, total	mg/L	120
UA	G206	C	2017/07/15	Sulfate, total	mg/L	100
UA	G206	C	2017/10/30	Sulfate, total	mg/L	120
UA	G206	C	2018/05/15	Sulfate, total	mg/L	130
UA	G206	C	2018/11/02	Sulfate, total	mg/L	120
UA	G206	C	2019/01/17	Sulfate, total	mg/L	110
UA	G206	C	2019/08/14	Sulfate, total	mg/L	120
UA	G206	C	2020/01/21	Sulfate, total	mg/L	120
UA	G206	C	2020/08/13	Sulfate, total	mg/L	130
UA	G206	C	2020/10/13	Sulfate, total	mg/L	130
UA	G206	C	2021/01/27	Sulfate, total	mg/L	130
UA	G206	C	2021/05/19	Sulfate, total	mg/L	130
UA	G206	C	2021/08/20	Sulfate, total	mg/L	130
UA	G206	C	2021/10/27	Sulfate, total	mg/L	120
UA	G206	C	2022/02/10	Sulfate, total	mg/L	130
UA	G206	C	2022/05/10	Sulfate, total	mg/L	130
UA	G206	C	2022/08/23	Sulfate, total	mg/L	140
UA	G206	C	2022/11/08	Sulfate, total	mg/L	130
UA	G206	C	2023/02/16	Sulfate, total	mg/L	140
UA	G206	C	2023/06/09	Sulfate, total	mg/L	140
UA	G206	C	2023/08/14	Sulfate, total	mg/L	138
UA	G206	C	2023/11/15	Sulfate, total	mg/L	132
UA	G206	C	2015/11/18	Temperature (Celsius)	degrees C	16.6
UA	G206	C	2016/02/24	Temperature (Celsius)	degrees C	12.9
UA	G206	C	2016/06/27	Temperature (Celsius)	degrees C	23.5
UA	G206	C	2016/08/06	Temperature (Celsius)	degrees C	19.3
UA	G206	C	2016/11/22	Temperature (Celsius)	degrees C	14.9
UA	G206	C	2017/02/11	Temperature (Celsius)	degrees C	15.0
UA	G206	C	2017/05/18	Temperature (Celsius)	degrees C	15.7
UA	G206	C	2017/07/15	Temperature (Celsius)	degrees C	18.5
UA	G206	C	2017/10/30	Temperature (Celsius)	degrees C	12.8
UA	G206	C	2018/05/15	Temperature (Celsius)	degrees C	15.5
UA	G206	C	2018/11/02	Temperature (Celsius)	degrees C	15.1
UA	G206	C	2019/01/17	Temperature (Celsius)	degrees C	12.4
UA	G206	C	2019/08/14	Temperature (Celsius)	degrees C	17.0
UA	G206	C	2020/01/21	Temperature (Celsius)	degrees C	13.0
UA	G206	C	2020/05/05	Temperature (Celsius)	degrees C	13.0
UA	G206	C	2020/08/13	Temperature (Celsius)	degrees C	17.8
UA	G206	C	2021/01/27	Temperature (Celsius)	degrees C	12.0
UA	G206	C	2021/08/20	Temperature (Celsius)	degrees C	20.6
UA	G206	C	2021/11/29	Temperature (Celsius)	degrees C	14.6
UA	G206	C	2022/02/10	Temperature (Celsius)	degrees C	11.9
UA	G206	C	2022/05/10	Temperature (Celsius)	degrees C	17.3
UA	G206	C	2022/08/23	Temperature (Celsius)	degrees C	20.0
UA	G206	C	2022/11/08	Temperature (Celsius)	degrees C	17.5
UA	G206	C	2023/02/16	Temperature (Celsius)	degrees C	11.7
UA	G206	C	2023/06/09	Temperature (Celsius)	degrees C	18.3
UA	G206	C	2023/08/14	Temperature (Celsius)	degrees C	16.1
UA	G206	C	2023/11/15	Temperature (Celsius)	degrees C	17.6

UA	G206	C	2010/11/22	Total Dissolved Solids	mg/L	400
UA	G206	C	2011/01/24	Total Dissolved Solids	mg/L	440
UA	G206	C	2011/03/08	Total Dissolved Solids	mg/L	430
UA	G206	C	2011/05/04	Total Dissolved Solids	mg/L	440
UA	G206	C	2011/07/26	Total Dissolved Solids	mg/L	440
UA	G206	C	2011/09/19	Total Dissolved Solids	mg/L	420
UA	G206	C	2011/11/11	Total Dissolved Solids	mg/L	410
UA	G206	C	2012/01/30	Total Dissolved Solids	mg/L	380
UA	G206	C	2012/05/23	Total Dissolved Solids	mg/L	420
UA	G206	C	2012/07/23	Total Dissolved Solids	mg/L	430
UA	G206	C	2012/11/14	Total Dissolved Solids	mg/L	400
UA	G206	C	2013/01/29	Total Dissolved Solids	mg/L	430
UA	G206	C	2013/05/21	Total Dissolved Solids	mg/L	410
UA	G206	C	2013/07/23	Total Dissolved Solids	mg/L	440
UA	G206	C	2013/10/14	Total Dissolved Solids	mg/L	420
UA	G206	C	2014/02/20	Total Dissolved Solids	mg/L	440
UA	G206	C	2014/05/13	Total Dissolved Solids	mg/L	470
UA	G206	C	2014/08/11	Total Dissolved Solids	mg/L	500
UA	G206	C	2014/10/15	Total Dissolved Solids	mg/L	470
UA	G206	C	2015/01/21	Total Dissolved Solids	mg/L	480
UA	G206	C	2015/04/09	Total Dissolved Solids	mg/L	480
UA	G206	C	2015/07/22	Total Dissolved Solids	mg/L	380
UA	G206	C	2015/10/07	Total Dissolved Solids	mg/L	480
UA	G206	C	2015/11/18	Total Dissolved Solids	mg/L	460
UA	G206	C	2016/02/24	Total Dissolved Solids	mg/L	500
UA	G206	C	2016/06/27	Total Dissolved Solids	mg/L	420
UA	G206	C	2016/08/06	Total Dissolved Solids	mg/L	420
UA	G206	C	2016/11/22	Total Dissolved Solids	mg/L	480
UA	G206	C	2017/02/11	Total Dissolved Solids	mg/L	680
UA	G206	C	2017/05/18	Total Dissolved Solids	mg/L	460
UA	G206	C	2017/07/15	Total Dissolved Solids	mg/L	480
UA	G206	C	2017/10/30	Total Dissolved Solids	mg/L	460
UA	G206	C	2018/05/15	Total Dissolved Solids	mg/L	450
UA	G206	C	2018/11/02	Total Dissolved Solids	mg/L	440
UA	G206	C	2019/01/17	Total Dissolved Solids	mg/L	480
UA	G206	C	2019/08/14	Total Dissolved Solids	mg/L	470
UA	G206	C	2020/01/21	Total Dissolved Solids	mg/L	470
UA	G206	C	2020/08/13	Total Dissolved Solids	mg/L	500
UA	G206	C	2020/10/13	Total Dissolved Solids	mg/L	530
UA	G206	C	2021/01/27	Total Dissolved Solids	mg/L	480
UA	G206	C	2021/05/19	Total Dissolved Solids	mg/L	580
UA	G206	C	2021/08/20	Total Dissolved Solids	mg/L	560
UA	G206	C	2021/10/27	Total Dissolved Solids	mg/L	500
UA	G206	C	2022/02/10	Total Dissolved Solids	mg/L	540
UA	G206	C	2022/05/10	Total Dissolved Solids	mg/L	490
UA	G206	C	2022/08/23	Total Dissolved Solids	mg/L	540
UA	G206	C	2022/11/08	Total Dissolved Solids	mg/L	450
UA	G206	C	2023/02/16	Total Dissolved Solids	mg/L	460
UA	G206	C	2023/06/09	Total Dissolved Solids	mg/L	600
UA	G206	C	2023/08/14	Total Dissolved Solids	mg/L	548

UA	G206	C	2023/11/15	Total Dissolved Solids	mg/L	485
UA	G209	C	2010/11/22	pH (field)	SU	7.1
UA	G209	C	2011/01/25	pH (field)	SU	7.3
UA	G209	C	2011/03/08	pH (field)	SU	7.0
UA	G209	C	2011/05/04	pH (field)	SU	7.0
UA	G209	C	2011/07/26	pH (field)	SU	7.2
UA	G209	C	2011/09/19	pH (field)	SU	7.0
UA	G209	C	2011/11/11	pH (field)	SU	7.1
UA	G209	C	2012/01/31	pH (field)	SU	7.3
UA	G209	C	2012/05/23	pH (field)	SU	7.1
UA	G209	C	2012/07/25	pH (field)	SU	6.7
UA	G209	C	2012/11/14	pH (field)	SU	7.2
UA	G209	C	2013/01/30	pH (field)	SU	7.3
UA	G209	C	2013/05/21	pH (field)	SU	6.4
UA	G209	C	2013/07/23	pH (field)	SU	7.0
UA	G209	C	2013/10/14	pH (field)	SU	7.1
UA	G209	C	2014/02/20	pH (field)	SU	7.1
UA	G209	C	2014/05/13	pH (field)	SU	7.1
UA	G209	C	2014/08/11	pH (field)	SU	7.1
UA	G209	C	2014/10/15	pH (field)	SU	7.1
UA	G209	C	2015/01/21	pH (field)	SU	7.4
UA	G209	C	2015/04/09	pH (field)	SU	6.9
UA	G209	C	2015/07/22	pH (field)	SU	7.0
UA	G209	C	2015/10/07	pH (field)	SU	7.1
UA	G209	C	2015/11/18	pH (field)	SU	7.0
UA	G209	C	2016/02/23	pH (field)	SU	7.0
UA	G209	C	2016/05/11	pH (field)	SU	7.1
UA	G209	C	2016/08/06	pH (field)	SU	7.2
UA	G209	C	2016/11/22	pH (field)	SU	7.1
UA	G209	C	2017/02/11	pH (field)	SU	7.0
UA	G209	C	2017/05/18	pH (field)	SU	7.2
UA	G209	C	2017/07/15	pH (field)	SU	7.3
UA	G209	C	2017/10/31	pH (field)	SU	7.1
UA	G209	C	2018/01/25	pH (field)	SU	7.0
UA	G209	C	2018/05/15	pH (field)	SU	7.2
UA	G209	C	2018/11/02	pH (field)	SU	7.2
UA	G209	C	2019/01/17	pH (field)	SU	7.1
UA	G209	C	2019/05/03	pH (field)	SU	7.7
UA	G209	C	2019/08/14	pH (field)	SU	7.2
UA	G209	C	2020/01/22	pH (field)	SU	6.9
UA	G209	C	2020/05/05	pH (field)	SU	7.2
UA	G209	C	2020/08/13	pH (field)	SU	7.2
UA	G209	C	2020/10/13	pH (field)	SU	7.0
UA	G209	C	2021/01/27	pH (field)	SU	7.1
UA	G209	C	2021/05/19	pH (field)	SU	7.2
UA	G209	C	2021/08/20	pH (field)	SU	6.8
UA	G209	C	2021/10/27	pH (field)	SU	6.8
UA	G209	C	2021/11/29	pH (field)	SU	7.0
UA	G209	C	2022/02/10	pH (field)	SU	7.2
UA	G209	C	2022/05/11	pH (field)	SU	6.9

UA	G209	C	2022/08/23	pH (field)	SU	6.8
UA	G209	C	2022/11/08	pH (field)	SU	7.1
UA	G209	C	2023/02/15	pH (field)	SU	7.3
UA	G209	C	2023/06/09	pH (field)	SU	7.0
UA	G209	C	2023/08/14	pH (field)	SU	6.6
UA	G209	C	2023/11/16	pH (field)	SU	7.0
UA	G209	C	2015/11/18	Oxidation Reduction Potential	mV	-98.0
UA	G209	C	2016/02/23	Oxidation Reduction Potential	mV	76.0
UA	G209	C	2016/05/11	Oxidation Reduction Potential	mV	144
UA	G209	C	2016/08/06	Oxidation Reduction Potential	mV	149
UA	G209	C	2016/11/22	Oxidation Reduction Potential	mV	138
UA	G209	C	2017/02/11	Oxidation Reduction Potential	mV	-109
UA	G209	C	2017/05/18	Oxidation Reduction Potential	mV	-99.0
UA	G209	C	2017/07/15	Oxidation Reduction Potential	mV	161
UA	G209	C	2017/10/31	Oxidation Reduction Potential	mV	140
UA	G209	C	2018/01/25	Oxidation Reduction Potential	mV	101
UA	G209	C	2018/05/15	Oxidation Reduction Potential	mV	117
UA	G209	C	2018/11/02	Oxidation Reduction Potential	mV	148
UA	G209	C	2019/01/17	Oxidation Reduction Potential	mV	141
UA	G209	C	2019/05/03	Oxidation Reduction Potential	mV	159
UA	G209	C	2019/08/14	Oxidation Reduction Potential	mV	151
UA	G209	C	2020/01/22	Oxidation Reduction Potential	mV	-69.0
UA	G209	C	2020/05/05	Oxidation Reduction Potential	mV	-34.5
UA	G209	C	2020/08/13	Oxidation Reduction Potential	mV	-60.3
UA	G209	C	2021/01/27	Oxidation Reduction Potential	mV	47.8
UA	G209	C	2021/08/20	Oxidation Reduction Potential	mV	-82.5
UA	G209	C	2021/11/29	Oxidation Reduction Potential	mV	-14.0
UA	G209	C	2022/02/10	Oxidation Reduction Potential	mV	-53.8
UA	G209	C	2022/05/11	Oxidation Reduction Potential	mV	44.4
UA	G209	C	2022/08/23	Oxidation Reduction Potential	mV	-120
UA	G209	C	2022/11/08	Oxidation Reduction Potential	mV	-76.9
UA	G209	C	2023/02/15	Oxidation Reduction Potential	mV	128
UA	G209	C	2023/06/09	Oxidation Reduction Potential	mV	-33.0
UA	G209	C	2023/08/14	Oxidation Reduction Potential	mV	84.0
UA	G209	C	2023/11/16	Oxidation Reduction Potential	mV	-23.0
UA	G209	C	2015/11/18	Eh	V	0.096
UA	G209	C	2016/02/23	Eh	V	0.27
UA	G209	C	2016/05/11	Eh	V	0.34
UA	G209	C	2016/08/06	Eh	V	0.34
UA	G209	C	2016/11/22	Eh	V	0.33
UA	G209	C	2017/02/11	Eh	V	0.087
UA	G209	C	2017/05/18	Eh	V	0.096
UA	G209	C	2017/07/15	Eh	V	0.35
UA	G209	C	2017/10/31	Eh	V	0.34
UA	G209	C	2018/01/25	Eh	V	0.30
UA	G209	C	2018/05/15	Eh	V	0.31
UA	G209	C	2018/11/02	Eh	V	0.34
UA	G209	C	2019/01/17	Eh	V	0.34
UA	G209	C	2019/05/03	Eh	V	0.35
UA	G209	C	2019/08/14	Eh	V	0.35

UA	G209	C	2020/01/22	Eh	V	0.13
UA	G209	C	2020/05/05	Eh	V	0.16
UA	G209	C	2020/08/13	Eh	V	0.13
UA	G209	C	2021/01/27	Eh	V	0.25
UA	G209	C	2021/08/20	Eh	V	0.11
UA	G209	C	2021/11/29	Eh	V	0.18
UA	G209	C	2022/02/10	Eh	V	0.14
UA	G209	C	2022/05/11	Eh	V	0.24
UA	G209	C	2022/08/23	Eh	V	0.072
UA	G209	C	2022/11/08	Eh	V	0.12
UA	G209	C	2023/02/15	Eh	V	0.32
UA	G209	C	2023/06/09	Eh	V	0.16
UA	G209	C	2023/08/14	Eh	V	0.28
UA	G209	C	2023/11/16	Eh	V	0.17
UA	G209	C	2010/12/14	Alkalinity, bicarbonate	mg/L CaCO3	370
UA	G209	C	2011/01/25	Alkalinity, bicarbonate	mg/L CaCO3	350
UA	G209	C	2011/03/08	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	G209	C	2011/05/04	Alkalinity, bicarbonate	mg/L CaCO3	430
UA	G209	C	2011/07/26	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	G209	C	2011/09/19	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	G209	C	2012/01/31	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	G209	C	2013/01/30	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	G209	C	2014/02/20	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	G209	C	2014/08/11	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	G209	C	2014/10/15	Alkalinity, bicarbonate	mg/L CaCO3	430
UA	G209	C	2015/01/21	Alkalinity, bicarbonate	mg/L CaCO3	420
UA	G209	C	2015/04/09	Alkalinity, bicarbonate	mg/L CaCO3	430
UA	G209	C	2017/07/15	Alkalinity, bicarbonate	mg/L CaCO3	590
UA	G209	C	2020/01/22	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	G209	C	2020/08/13	Alkalinity, bicarbonate	mg/L CaCO3	410
UA	G209	C	2021/01/27	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	G209	C	2021/08/20	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	G209	C	2022/02/10	Alkalinity, bicarbonate	mg/L CaCO3	390
UA	G209	C	2022/06/15	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	G209	C	2022/08/23	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	G209	C	2023/02/15	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	G209	C	2023/06/09	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	G209	C	2023/08/14	Alkalinity, bicarbonate	mg/L CaCO3	401
UA	G209	C	2023/11/16	Alkalinity, bicarbonate	mg/L CaCO3	387
UA	G209	C	2022/08/23	Alkalinity, carbonate	mg/L CaCO3	10.0
UA	G209	C	2010/11/22	Barium, total	mg/L	0.100
UA	G209	C	2011/01/25	Barium, total	mg/L	0.0880
UA	G209	C	2011/03/08	Barium, total	mg/L	0.0900
UA	G209	C	2011/05/04	Barium, total	mg/L	0.0480
UA	G209	C	2011/07/26	Barium, total	mg/L	0.100
UA	G209	C	2011/09/19	Barium, total	mg/L	0.100
UA	G209	C	2012/01/31	Barium, total	mg/L	0.0990
UA	G209	C	2013/01/30	Barium, total	mg/L	0.110
UA	G209	C	2014/02/20	Barium, total	mg/L	0.0700
UA	G209	C	2015/04/09	Barium, total	mg/L	0.100

UA	G209	C	2015/07/22	Barium, total	mg/L	0.130
UA	G209	C	2015/10/07	Barium, total	mg/L	0.110
UA	G209	C	2015/11/18	Barium, total	mg/L	0.0720
UA	G209	C	2016/02/23	Barium, total	mg/L	0.0660
UA	G209	C	2016/05/11	Barium, total	mg/L	0.0610
UA	G209	C	2016/08/06	Barium, total	mg/L	0.0650
UA	G209	C	2016/11/22	Barium, total	mg/L	0.0450
UA	G209	C	2017/02/11	Barium, total	mg/L	0.0700
UA	G209	C	2017/05/18	Barium, total	mg/L	0.0770
UA	G209	C	2017/07/15	Barium, total	mg/L	0.0630
UA	G209	C	2020/10/13	Barium, total	mg/L	0.0520
UA	G209	C	2021/01/27	Barium, total	mg/L	0.0430
UA	G209	C	2021/05/19	Barium, total	mg/L	0.0600
UA	G209	C	2021/08/20	Barium, total	mg/L	0.0590
UA	G209	C	2021/10/27	Barium, total	mg/L	0.0620
UA	G209	C	2022/02/10	Barium, total	mg/L	0.0630
UA	G209	C	2022/05/11	Barium, total	mg/L	0.0940
UA	G209	C	2022/08/23	Barium, total	mg/L	0.0580
UA	G209	C	2022/11/08	Barium, total	mg/L	0.0540
UA	G209	C	2023/02/15	Barium, total	mg/L	0.0570
UA	G209	C	2023/06/09	Barium, total	mg/L	0.0700
UA	G209	C	2023/08/14	Barium, total	mg/L	0.0685
UA	G209	C	2023/11/16	Barium, total	mg/L	0.0599
UA	G209	C	2010/11/22	Calcium, total	mg/L	110
UA	G209	C	2011/01/25	Calcium, total	mg/L	150
UA	G209	C	2011/03/08	Calcium, total	mg/L	170
UA	G209	C	2011/05/04	Calcium, total	mg/L	<100
UA	G209	C	2011/07/26	Calcium, total	mg/L	160
UA	G209	C	2011/09/19	Calcium, total	mg/L	170
UA	G209	C	2011/11/11	Calcium, total	mg/L	160
UA	G209	C	2012/01/31	Calcium, total	mg/L	220
UA	G209	C	2012/05/23	Calcium, total	mg/L	170
UA	G209	C	2012/07/25	Calcium, total	mg/L	180
UA	G209	C	2012/11/14	Calcium, total	mg/L	170
UA	G209	C	2013/01/30	Calcium, total	mg/L	170
UA	G209	C	2013/05/21	Calcium, total	mg/L	170
UA	G209	C	2013/07/23	Calcium, total	mg/L	170
UA	G209	C	2013/10/14	Calcium, total	mg/L	170
UA	G209	C	2014/02/20	Calcium, total	mg/L	160
UA	G209	C	2014/05/13	Calcium, total	mg/L	170
UA	G209	C	2014/08/11	Calcium, total	mg/L	160
UA	G209	C	2014/10/15	Calcium, total	mg/L	170
UA	G209	C	2015/01/21	Calcium, total	mg/L	150
UA	G209	C	2015/04/09	Calcium, total	mg/L	180
UA	G209	C	2015/11/18	Calcium, total	mg/L	160
UA	G209	C	2016/02/23	Calcium, total	mg/L	150
UA	G209	C	2016/05/11	Calcium, total	mg/L	160
UA	G209	C	2016/08/06	Calcium, total	mg/L	160
UA	G209	C	2016/11/22	Calcium, total	mg/L	100
UA	G209	C	2017/02/11	Calcium, total	mg/L	120

UA	G209	C	2017/05/18	Calcium, total	mg/L	130
UA	G209	C	2017/07/15	Calcium, total	mg/L	120
UA	G209	C	2017/10/31	Calcium, total	mg/L	150
UA	G209	C	2018/01/25	Calcium, total	mg/L	120
UA	G209	C	2018/05/15	Calcium, total	mg/L	140
UA	G209	C	2018/11/02	Calcium, total	mg/L	160
UA	G209	C	2019/01/17	Calcium, total	mg/L	150
UA	G209	C	2019/05/03	Calcium, total	mg/L	150
UA	G209	C	2019/08/14	Calcium, total	mg/L	160
UA	G209	C	2020/01/22	Calcium, total	mg/L	150
UA	G209	C	2020/05/05	Calcium, total	mg/L	140
UA	G209	C	2020/08/13	Calcium, total	mg/L	150
UA	G209	C	2021/01/27	Calcium, total	mg/L	120
UA	G209	C	2021/08/20	Calcium, total	mg/L	150
UA	G209	C	2022/02/10	Calcium, total	mg/L	150
UA	G209	C	2022/05/11	Calcium, total	mg/L	150
UA	G209	C	2022/08/23	Calcium, total	mg/L	160
UA	G209	C	2023/02/15	Calcium, total	mg/L	150
UA	G209	C	2023/06/09	Calcium, total	mg/L	140
UA	G209	C	2023/08/14	Calcium, total	mg/L	149
UA	G209	C	2023/11/16	Calcium, total	mg/L	143
UA	G209	C	2010/11/22	Chloride, total	mg/L	60.0
UA	G209	C	2011/01/25	Chloride, total	mg/L	62.0
UA	G209	C	2011/03/08	Chloride, total	mg/L	69.0
UA	G209	C	2011/05/04	Chloride, total	mg/L	68.0
UA	G209	C	2011/07/26	Chloride, total	mg/L	72.0
UA	G209	C	2011/09/19	Chloride, total	mg/L	73.0
UA	G209	C	2011/11/11	Chloride, total	mg/L	71.0
UA	G209	C	2012/01/31	Chloride, total	mg/L	76.0
UA	G209	C	2012/05/23	Chloride, total	mg/L	78.0
UA	G209	C	2012/07/25	Chloride, total	mg/L	72.0
UA	G209	C	2012/11/14	Chloride, total	mg/L	71.0
UA	G209	C	2013/01/30	Chloride, total	mg/L	81.0
UA	G209	C	2013/05/21	Chloride, total	mg/L	100
UA	G209	C	2013/07/23	Chloride, total	mg/L	75.0
UA	G209	C	2013/10/14	Chloride, total	mg/L	63.0
UA	G209	C	2014/02/20	Chloride, total	mg/L	74.0
UA	G209	C	2014/05/13	Chloride, total	mg/L	70.0
UA	G209	C	2014/08/11	Chloride, total	mg/L	74.0
UA	G209	C	2014/10/15	Chloride, total	mg/L	76.0
UA	G209	C	2015/01/21	Chloride, total	mg/L	73.0
UA	G209	C	2015/04/09	Chloride, total	mg/L	69.0
UA	G209	C	2015/07/22	Chloride, total	mg/L	69.0
UA	G209	C	2015/10/07	Chloride, total	mg/L	59.0
UA	G209	C	2015/11/18	Chloride, total	mg/L	67.0
UA	G209	C	2016/02/23	Chloride, total	mg/L	70.0
UA	G209	C	2016/05/11	Chloride, total	mg/L	59.0
UA	G209	C	2016/08/06	Chloride, total	mg/L	67.0
UA	G209	C	2016/11/22	Chloride, total	mg/L	70.0
UA	G209	C	2017/02/11	Chloride, total	mg/L	60.0

UA	G209	C	2017/05/18	Chloride, total	mg/L	63.0
UA	G209	C	2017/07/15	Chloride, total	mg/L	72.0
UA	G209	C	2017/10/31	Chloride, total	mg/L	63.0
UA	G209	C	2018/05/15	Chloride, total	mg/L	65.0
UA	G209	C	2018/11/02	Chloride, total	mg/L	59.0
UA	G209	C	2019/01/17	Chloride, total	mg/L	68.0
UA	G209	C	2019/08/14	Chloride, total	mg/L	61.0
UA	G209	C	2020/01/22	Chloride, total	mg/L	59.0
UA	G209	C	2020/08/13	Chloride, total	mg/L	65.0
UA	G209	C	2020/10/13	Chloride, total	mg/L	63.0
UA	G209	C	2021/01/27	Chloride, total	mg/L	77.0
UA	G209	C	2021/05/19	Chloride, total	mg/L	62.0
UA	G209	C	2021/08/20	Chloride, total	mg/L	59.0
UA	G209	C	2021/10/27	Chloride, total	mg/L	100
UA	G209	C	2022/02/10	Chloride, total	mg/L	63.0
UA	G209	C	2022/05/11	Chloride, total	mg/L	59.0
UA	G209	C	2022/08/23	Chloride, total	mg/L	66.0
UA	G209	C	2022/11/08	Chloride, total	mg/L	81.0
UA	G209	C	2023/02/15	Chloride, total	mg/L	56.0
UA	G209	C	2023/06/09	Chloride, total	mg/L	61.0
UA	G209	C	2023/08/14	Chloride, total	mg/L	53.0
UA	G209	C	2023/11/16	Chloride, total	mg/L	52.0
UA	G209	C	2023/06/09	Ferrous Iron, dissolved	mg/L	1.10
UA	G209	C	2010/11/22	Iron, dissolved	mg/L	<0.1
UA	G209	C	2011/01/25	Iron, dissolved	mg/L	0.0150
UA	G209	C	2011/03/08	Iron, dissolved	mg/L	<0.01
UA	G209	C	2011/05/04	Iron, dissolved	mg/L	0.0110
UA	G209	C	2011/07/26	Iron, dissolved	mg/L	<0.01
UA	G209	C	2011/09/19	Iron, dissolved	mg/L	<0.01
UA	G209	C	2011/11/11	Iron, dissolved	mg/L	<0.01
UA	G209	C	2012/01/31	Iron, dissolved	mg/L	0.0330
UA	G209	C	2012/05/23	Iron, dissolved	mg/L	0.0270
UA	G209	C	2012/07/25	Iron, dissolved	mg/L	<0.01
UA	G209	C	2012/11/14	Iron, dissolved	mg/L	<0.01
UA	G209	C	2013/01/30	Iron, dissolved	mg/L	<0.01
UA	G209	C	2013/05/21	Iron, dissolved	mg/L	<0.01
UA	G209	C	2013/07/23	Iron, dissolved	mg/L	<0.01
UA	G209	C	2013/10/14	Iron, dissolved	mg/L	<0.01
UA	G209	C	2014/02/20	Iron, dissolved	mg/L	<0.01
UA	G209	C	2014/05/13	Iron, dissolved	mg/L	<0.01
UA	G209	C	2014/08/11	Iron, dissolved	mg/L	<0.01
UA	G209	C	2014/10/15	Iron, dissolved	mg/L	<0.01
UA	G209	C	2015/01/21	Iron, dissolved	mg/L	<0.01
UA	G209	C	2015/04/09	Iron, dissolved	mg/L	0.0380
UA	G209	C	2015/07/22	Iron, dissolved	mg/L	0.430
UA	G209	C	2015/10/07	Iron, dissolved	mg/L	0.430
UA	G209	C	2016/02/23	Iron, dissolved	mg/L	0.200
UA	G209	C	2016/05/11	Iron, dissolved	mg/L	<0.01
UA	G209	C	2016/07/26	Iron, dissolved	mg/L	0.960
UA	G209	C	2016/11/22	Iron, dissolved	mg/L	1.10

UA	G209	C	2017/02/13	Iron, dissolved	mg/L	0.0810
UA	G209	C	2017/05/21	Iron, dissolved	mg/L	0.320
UA	G209	C	2017/07/24	Iron, dissolved	mg/L	0.110
UA	G209	C	2017/10/31	Iron, dissolved	mg/L	0.410
UA	G209	C	2018/01/25	Iron, dissolved	mg/L	0.850
UA	G209	C	2018/05/15	Iron, dissolved	mg/L	1.30
UA	G209	C	2018/08/08	Iron, dissolved	mg/L	0.990
UA	G209	C	2018/11/02	Iron, dissolved	mg/L	1.30
UA	G209	C	2019/01/17	Iron, dissolved	mg/L	0.0460
UA	G209	C	2019/05/03	Iron, dissolved	mg/L	0.0640
UA	G209	C	2019/08/14	Iron, dissolved	mg/L	1.90
UA	G209	C	2019/10/23	Iron, dissolved	mg/L	3.10
UA	G209	C	2020/01/22	Iron, dissolved	mg/L	0.820
UA	G209	C	2020/05/05	Iron, dissolved	mg/L	0.770
UA	G209	C	2020/08/13	Iron, dissolved	mg/L	2.00
UA	G209	C	2020/10/13	Iron, dissolved	mg/L	1.70
UA	G209	C	2021/01/27	Iron, dissolved	mg/L	0.590
UA	G209	C	2021/05/19	Iron, dissolved	mg/L	0.720
UA	G209	C	2021/08/20	Iron, dissolved	mg/L	1.90
UA	G209	C	2021/10/27	Iron, dissolved	mg/L	2.20
UA	G209	C	2022/02/10	Iron, dissolved	mg/L	1.10
UA	G209	C	2022/05/11	Iron, dissolved	mg/L	1.20
UA	G209	C	2022/08/23	Iron, dissolved	mg/L	1.60
UA	G209	C	2022/11/08	Iron, dissolved	mg/L	1.10
UA	G209	C	2023/02/15	Iron, dissolved	mg/L	0.560
UA	G209	C	2023/06/09	Iron, dissolved	mg/L	0.880
UA	G209	C	2023/08/14	Iron, dissolved	mg/L	0.798
UA	G209	C	2023/11/16	Iron, dissolved	mg/L	0.704
UA	G209	C	2010/11/22	Magnesium, total	mg/L	38.0
UA	G209	C	2011/01/25	Magnesium, total	mg/L	50.0
UA	G209	C	2011/03/08	Magnesium, total	mg/L	59.0
UA	G209	C	2011/05/04	Magnesium, total	mg/L	<100
UA	G209	C	2011/07/26	Magnesium, total	mg/L	59.0
UA	G209	C	2011/09/19	Magnesium, total	mg/L	59.0
UA	G209	C	2012/01/31	Magnesium, total	mg/L	60.0
UA	G209	C	2013/01/30	Magnesium, total	mg/L	59.0
UA	G209	C	2014/02/20	Magnesium, total	mg/L	56.0
UA	G209	C	2015/04/09	Magnesium, total	mg/L	63.0
UA	G209	C	2017/07/15	Magnesium, total	mg/L	55.0
UA	G209	C	2020/01/22	Magnesium, total	mg/L	52.0
UA	G209	C	2020/08/13	Magnesium, total	mg/L	50.0
UA	G209	C	2021/01/27	Magnesium, total	mg/L	53.0
UA	G209	C	2021/08/20	Magnesium, total	mg/L	55.0
UA	G209	C	2022/02/10	Magnesium, total	mg/L	51.0
UA	G209	C	2022/05/11	Magnesium, total	mg/L	53.0
UA	G209	C	2022/08/23	Magnesium, total	mg/L	57.0
UA	G209	C	2023/02/15	Magnesium, total	mg/L	47.0
UA	G209	C	2023/06/09	Magnesium, total	mg/L	50.0
UA	G209	C	2023/08/14	Magnesium, total	mg/L	51.2
UA	G209	C	2023/11/16	Magnesium, total	mg/L	50.6

UA	G209	C	2010/11/22	Manganese, dissolved	mg/L	0.120
UA	G209	C	2011/01/25	Manganese, dissolved	mg/L	0.0490
UA	G209	C	2011/03/08	Manganese, dissolved	mg/L	0.120
UA	G209	C	2011/05/04	Manganese, dissolved	mg/L	0.0770
UA	G209	C	2011/07/26	Manganese, dissolved	mg/L	0.180
UA	G209	C	2011/09/19	Manganese, dissolved	mg/L	0.0940
UA	G209	C	2011/11/11	Manganese, dissolved	mg/L	0.100
UA	G209	C	2012/01/31	Manganese, dissolved	mg/L	0.110
UA	G209	C	2012/05/23	Manganese, dissolved	mg/L	<0.001
UA	G209	C	2012/07/25	Manganese, dissolved	mg/L	<0.001
UA	G209	C	2012/11/14	Manganese, dissolved	mg/L	0.0410
UA	G209	C	2013/01/30	Manganese, dissolved	mg/L	0.120
UA	G209	C	2013/05/21	Manganese, dissolved	mg/L	<0.001
UA	G209	C	2013/07/23	Manganese, dissolved	mg/L	<0.001
UA	G209	C	2013/10/14	Manganese, dissolved	mg/L	0.00230
UA	G209	C	2014/02/20	Manganese, dissolved	mg/L	0.0370
UA	G209	C	2014/05/13	Manganese, dissolved	mg/L	<0.001
UA	G209	C	2014/08/11	Manganese, dissolved	mg/L	<0.001
UA	G209	C	2014/10/15	Manganese, dissolved	mg/L	0.00280
UA	G209	C	2015/01/21	Manganese, dissolved	mg/L	0.0650
UA	G209	C	2015/04/09	Manganese, dissolved	mg/L	0.00420
UA	G209	C	2015/07/22	Manganese, dissolved	mg/L	1.40
UA	G209	C	2015/10/07	Manganese, dissolved	mg/L	0.780
UA	G209	C	2016/02/23	Manganese, dissolved	mg/L	0.350
UA	G209	C	2016/05/11	Manganese, dissolved	mg/L	0.160
UA	G209	C	2016/07/26	Manganese, dissolved	mg/L	0.890
UA	G209	C	2016/11/22	Manganese, dissolved	mg/L	0.760
UA	G209	C	2017/02/13	Manganese, dissolved	mg/L	0.0650
UA	G209	C	2017/05/21	Manganese, dissolved	mg/L	0.960
UA	G209	C	2017/07/24	Manganese, dissolved	mg/L	0.830
UA	G209	C	2017/10/31	Manganese, dissolved	mg/L	0.720
UA	G209	C	2018/01/25	Manganese, dissolved	mg/L	0.400
UA	G209	C	2018/05/15	Manganese, dissolved	mg/L	0.550
UA	G209	C	2018/08/08	Manganese, dissolved	mg/L	0.300
UA	G209	C	2018/11/02	Manganese, dissolved	mg/L	0.470
UA	G209	C	2019/01/17	Manganese, dissolved	mg/L	0.0920
UA	G209	C	2019/05/03	Manganese, dissolved	mg/L	0.0250
UA	G209	C	2019/08/14	Manganese, dissolved	mg/L	0.290
UA	G209	C	2019/10/23	Manganese, dissolved	mg/L	0.420
UA	G209	C	2020/01/22	Manganese, dissolved	mg/L	0.250
UA	G209	C	2020/05/05	Manganese, dissolved	mg/L	0.150
UA	G209	C	2020/08/13	Manganese, dissolved	mg/L	0.440
UA	G209	C	2020/10/13	Manganese, dissolved	mg/L	0.250
UA	G209	C	2021/01/27	Manganese, dissolved	mg/L	0.190
UA	G209	C	2021/05/19	Manganese, dissolved	mg/L	0.220
UA	G209	C	2021/08/20	Manganese, dissolved	mg/L	0.320
UA	G209	C	2021/10/27	Manganese, dissolved	mg/L	0.430
UA	G209	C	2022/02/10	Manganese, dissolved	mg/L	0.430
UA	G209	C	2022/05/11	Manganese, dissolved	mg/L	0.420
UA	G209	C	2022/08/23	Manganese, dissolved	mg/L	0.470

UA	G209	C	2022/11/08	Manganese, dissolved	mg/L	0.370
UA	G209	C	2023/02/15	Manganese, dissolved	mg/L	0.370
UA	G209	C	2023/06/09	Manganese, dissolved	mg/L	0.500
UA	G209	C	2023/08/14	Manganese, dissolved	mg/L	0.276
UA	G209	C	2023/11/16	Manganese, dissolved	mg/L	0.237
UA	G209	C	2023/08/14	Phosphate, dissolved	mg/L	0.0550
UA	G209	C	2010/11/22	Potassium, total	mg/L	3.50
UA	G209	C	2011/01/25	Potassium, total	mg/L	1.60
UA	G209	C	2011/03/08	Potassium, total	mg/L	0.990
UA	G209	C	2011/05/04	Potassium, total	mg/L	0.670
UA	G209	C	2011/07/26	Potassium, total	mg/L	0.720
UA	G209	C	2011/09/19	Potassium, total	mg/L	1.00
UA	G209	C	2012/01/31	Potassium, total	mg/L	0.840
UA	G209	C	2013/01/30	Potassium, total	mg/L	0.860
UA	G209	C	2014/02/20	Potassium, total	mg/L	0.580
UA	G209	C	2015/04/09	Potassium, total	mg/L	1.20
UA	G209	C	2017/07/15	Potassium, total	mg/L	2.20
UA	G209	C	2020/01/22	Potassium, total	mg/L	0.470
UA	G209	C	2020/08/13	Potassium, total	mg/L	0.400
UA	G209	C	2021/01/27	Potassium, total	mg/L	0.360
UA	G209	C	2021/08/20	Potassium, total	mg/L	0.480
UA	G209	C	2022/02/10	Potassium, total	mg/L	0.630
UA	G209	C	2022/05/11	Potassium, total	mg/L	0.660
UA	G209	C	2022/08/23	Potassium, total	mg/L	0.470
UA	G209	C	2023/02/15	Potassium, total	mg/L	0.430
UA	G209	C	2023/06/09	Potassium, total	mg/L	0.450
UA	G209	C	2023/08/14	Potassium, total	mg/L	0.551
UA	G209	C	2023/11/16	Potassium, total	mg/L	0.581
UA	G209	C	2023/06/09	Silicon, dissolved	mg/L	7.90
UA	G209	C	2023/08/14	Silicon, dissolved	mg/L	6.81
UA	G209	C	2010/11/22	Sodium, total	mg/L	69.0
UA	G209	C	2011/01/25	Sodium, total	mg/L	73.0
UA	G209	C	2011/03/08	Sodium, total	mg/L	74.0
UA	G209	C	2011/05/04	Sodium, total	mg/L	<100
UA	G209	C	2011/07/26	Sodium, total	mg/L	78.0
UA	G209	C	2011/09/19	Sodium, total	mg/L	73.0
UA	G209	C	2012/01/31	Sodium, total	mg/L	110
UA	G209	C	2013/01/30	Sodium, total	mg/L	76.0
UA	G209	C	2014/02/20	Sodium, total	mg/L	72.0
UA	G209	C	2015/04/09	Sodium, total	mg/L	79.0
UA	G209	C	2017/07/15	Sodium, total	mg/L	69.0
UA	G209	C	2020/01/22	Sodium, total	mg/L	82.0
UA	G209	C	2020/08/13	Sodium, total	mg/L	78.0
UA	G209	C	2021/01/27	Sodium, total	mg/L	63.0
UA	G209	C	2021/08/20	Sodium, total	mg/L	77.0
UA	G209	C	2022/02/10	Sodium, total	mg/L	79.0
UA	G209	C	2022/05/11	Sodium, total	mg/L	78.0
UA	G209	C	2022/08/23	Sodium, total	mg/L	81.0
UA	G209	C	2023/02/15	Sodium, total	mg/L	70.0
UA	G209	C	2023/06/09	Sodium, total	mg/L	73.0

UA	G209	C	2023/08/14	Sodium, total	mg/L	77.6
UA	G209	C	2023/11/16	Sodium, total	mg/L	75.7
UA	G209	C	2010/11/22	Sulfate, total	mg/L	230
UA	G209	C	2011/01/25	Sulfate, total	mg/L	280
UA	G209	C	2011/03/08	Sulfate, total	mg/L	300
UA	G209	C	2011/05/04	Sulfate, total	mg/L	310
UA	G209	C	2011/07/26	Sulfate, total	mg/L	300
UA	G209	C	2011/09/19	Sulfate, total	mg/L	340
UA	G209	C	2011/11/11	Sulfate, total	mg/L	300
UA	G209	C	2012/01/31	Sulfate, total	mg/L	310
UA	G209	C	2012/05/23	Sulfate, total	mg/L	270
UA	G209	C	2012/07/25	Sulfate, total	mg/L	290
UA	G209	C	2012/11/14	Sulfate, total	mg/L	310
UA	G209	C	2013/01/30	Sulfate, total	mg/L	380
UA	G209	C	2013/05/21	Sulfate, total	mg/L	270
UA	G209	C	2013/07/23	Sulfate, total	mg/L	350
UA	G209	C	2013/10/14	Sulfate, total	mg/L	260
UA	G209	C	2014/02/20	Sulfate, total	mg/L	310
UA	G209	C	2014/05/13	Sulfate, total	mg/L	300
UA	G209	C	2014/08/11	Sulfate, total	mg/L	320
UA	G209	C	2014/10/15	Sulfate, total	mg/L	310
UA	G209	C	2015/01/21	Sulfate, total	mg/L	310
UA	G209	C	2015/04/09	Sulfate, total	mg/L	280
UA	G209	C	2015/07/22	Sulfate, total	mg/L	270
UA	G209	C	2015/10/07	Sulfate, total	mg/L	270
UA	G209	C	2015/11/18	Sulfate, total	mg/L	280
UA	G209	C	2016/02/23	Sulfate, total	mg/L	280
UA	G209	C	2016/05/11	Sulfate, total	mg/L	280
UA	G209	C	2016/08/06	Sulfate, total	mg/L	270
UA	G209	C	2016/11/22	Sulfate, total	mg/L	270
UA	G209	C	2017/02/11	Sulfate, total	mg/L	260
UA	G209	C	2017/05/18	Sulfate, total	mg/L	240
UA	G209	C	2017/07/15	Sulfate, total	mg/L	120
UA	G209	C	2017/10/31	Sulfate, total	mg/L	95.0
UA	G209	C	2018/05/15	Sulfate, total	mg/L	250
UA	G209	C	2018/11/02	Sulfate, total	mg/L	240
UA	G209	C	2019/01/17	Sulfate, total	mg/L	250
UA	G209	C	2019/08/14	Sulfate, total	mg/L	240
UA	G209	C	2020/01/22	Sulfate, total	mg/L	250
UA	G209	C	2020/08/13	Sulfate, total	mg/L	270
UA	G209	C	2020/10/13	Sulfate, total	mg/L	250
UA	G209	C	2021/01/27	Sulfate, total	mg/L	250
UA	G209	C	2021/05/19	Sulfate, total	mg/L	260
UA	G209	C	2021/08/20	Sulfate, total	mg/L	240
UA	G209	C	2021/10/27	Sulfate, total	mg/L	240
UA	G209	C	2022/02/10	Sulfate, total	mg/L	270
UA	G209	C	2022/05/11	Sulfate, total	mg/L	240
UA	G209	C	2022/08/23	Sulfate, total	mg/L	240
UA	G209	C	2022/11/08	Sulfate, total	mg/L	240
UA	G209	C	2023/02/15	Sulfate, total	mg/L	230

UA	G209	C	2023/06/09	Sulfate, total	mg/L	230
UA	G209	C	2023/08/14	Sulfate, total	mg/L	243
UA	G209	C	2023/11/16	Sulfate, total	mg/L	255
UA	G209	C	2015/11/18	Temperature (Celsius)	degrees C	16.5
UA	G209	C	2016/02/23	Temperature (Celsius)	degrees C	12.2
UA	G209	C	2016/05/11	Temperature (Celsius)	degrees C	19.0
UA	G209	C	2016/08/06	Temperature (Celsius)	degrees C	19.3
UA	G209	C	2016/11/22	Temperature (Celsius)	degrees C	15.1
UA	G209	C	2017/02/11	Temperature (Celsius)	degrees C	14.5
UA	G209	C	2017/05/18	Temperature (Celsius)	degrees C	15.5
UA	G209	C	2017/07/15	Temperature (Celsius)	degrees C	17.9
UA	G209	C	2017/10/31	Temperature (Celsius)	degrees C	12.9
UA	G209	C	2018/01/25	Temperature (Celsius)	degrees C	11.1
UA	G209	C	2018/05/15	Temperature (Celsius)	degrees C	13.5
UA	G209	C	2018/11/02	Temperature (Celsius)	degrees C	13.8
UA	G209	C	2019/01/17	Temperature (Celsius)	degrees C	12.9
UA	G209	C	2019/05/03	Temperature (Celsius)	degrees C	14.5
UA	G209	C	2019/08/14	Temperature (Celsius)	degrees C	17.1
UA	G209	C	2020/01/22	Temperature (Celsius)	degrees C	11.6
UA	G209	C	2020/05/05	Temperature (Celsius)	degrees C	13.0
UA	G209	C	2020/08/13	Temperature (Celsius)	degrees C	18.6
UA	G209	C	2021/01/27	Temperature (Celsius)	degrees C	9.10
UA	G209	C	2021/08/20	Temperature (Celsius)	degrees C	19.9
UA	G209	C	2021/11/29	Temperature (Celsius)	degrees C	14.4
UA	G209	C	2022/02/10	Temperature (Celsius)	degrees C	12.4
UA	G209	C	2022/05/11	Temperature (Celsius)	degrees C	17.4
UA	G209	C	2022/08/23	Temperature (Celsius)	degrees C	19.6
UA	G209	C	2022/11/08	Temperature (Celsius)	degrees C	16.9
UA	G209	C	2023/02/15	Temperature (Celsius)	degrees C	15.2
UA	G209	C	2023/06/09	Temperature (Celsius)	degrees C	16.1
UA	G209	C	2023/08/14	Temperature (Celsius)	degrees C	15.4
UA	G209	C	2023/11/16	Temperature (Celsius)	degrees C	16.3
UA	G209	C	2010/11/22	Total Dissolved Solids	mg/L	680
UA	G209	C	2011/01/25	Total Dissolved Solids	mg/L	860
UA	G209	C	2011/03/08	Total Dissolved Solids	mg/L	950
UA	G209	C	2011/05/04	Total Dissolved Solids	mg/L	980
UA	G209	C	2011/07/26	Total Dissolved Solids	mg/L	1,000
UA	G209	C	2011/09/19	Total Dissolved Solids	mg/L	930
UA	G209	C	2011/11/11	Total Dissolved Solids	mg/L	910
UA	G209	C	2012/01/31	Total Dissolved Solids	mg/L	920
UA	G209	C	2012/05/23	Total Dissolved Solids	mg/L	980
UA	G209	C	2012/07/25	Total Dissolved Solids	mg/L	970
UA	G209	C	2012/11/14	Total Dissolved Solids	mg/L	980
UA	G209	C	2013/01/30	Total Dissolved Solids	mg/L	950
UA	G209	C	2013/05/21	Total Dissolved Solids	mg/L	900
UA	G209	C	2013/07/23	Total Dissolved Solids	mg/L	970
UA	G209	C	2013/10/14	Total Dissolved Solids	mg/L	930
UA	G209	C	2014/02/20	Total Dissolved Solids	mg/L	900
UA	G209	C	2014/05/13	Total Dissolved Solids	mg/L	950
UA	G209	C	2014/08/11	Total Dissolved Solids	mg/L	950

UA	G209	C	2014/10/15	Total Dissolved Solids	mg/L	920
UA	G209	C	2015/01/21	Total Dissolved Solids	mg/L	940
UA	G209	C	2015/04/09	Total Dissolved Solids	mg/L	910
UA	G209	C	2015/07/22	Total Dissolved Solids	mg/L	970
UA	G209	C	2015/10/07	Total Dissolved Solids	mg/L	940
UA	G209	C	2015/11/18	Total Dissolved Solids	mg/L	810
UA	G209	C	2016/02/23	Total Dissolved Solids	mg/L	760
UA	G209	C	2016/05/11	Total Dissolved Solids	mg/L	800
UA	G209	C	2016/08/06	Total Dissolved Solids	mg/L	760
UA	G209	C	2016/11/22	Total Dissolved Solids	mg/L	750
UA	G209	C	2017/02/11	Total Dissolved Solids	mg/L	960
UA	G209	C	2017/05/18	Total Dissolved Solids	mg/L	820
UA	G209	C	2017/07/15	Total Dissolved Solids	mg/L	780
UA	G209	C	2017/10/31	Total Dissolved Solids	mg/L	730
UA	G209	C	2018/05/15	Total Dissolved Solids	mg/L	760
UA	G209	C	2018/11/02	Total Dissolved Solids	mg/L	740
UA	G209	C	2019/01/17	Total Dissolved Solids	mg/L	860
UA	G209	C	2019/08/14	Total Dissolved Solids	mg/L	830
UA	G209	C	2020/01/22	Total Dissolved Solids	mg/L	730
UA	G209	C	2020/08/13	Total Dissolved Solids	mg/L	800
UA	G209	C	2020/10/13	Total Dissolved Solids	mg/L	850
UA	G209	C	2021/01/27	Total Dissolved Solids	mg/L	810
UA	G209	C	2021/05/19	Total Dissolved Solids	mg/L	870
UA	G209	C	2021/08/20	Total Dissolved Solids	mg/L	840
UA	G209	C	2021/10/27	Total Dissolved Solids	mg/L	750
UA	G209	C	2022/02/10	Total Dissolved Solids	mg/L	810
UA	G209	C	2022/05/11	Total Dissolved Solids	mg/L	930
UA	G209	C	2022/08/23	Total Dissolved Solids	mg/L	880
UA	G209	C	2022/11/08	Total Dissolved Solids	mg/L	850
UA	G209	C	2023/02/15	Total Dissolved Solids	mg/L	930
UA	G209	C	2023/06/09	Total Dissolved Solids	mg/L	860
UA	G209	C	2023/08/14	Total Dissolved Solids	mg/L	878
UA	G209	C	2023/11/16	Total Dissolved Solids	mg/L	826
UA	G212	C	2010/11/18	pH (field)	SU	7.2
UA	G212	C	2011/01/26	pH (field)	SU	7.4
UA	G212	C	2011/03/10	pH (field)	SU	7.2
UA	G212	C	2011/05/05	pH (field)	SU	7.1
UA	G212	C	2011/07/26	pH (field)	SU	7.3
UA	G212	C	2011/09/20	pH (field)	SU	7.3
UA	G212	C	2011/11/11	pH (field)	SU	7.3
UA	G212	C	2012/01/31	pH (field)	SU	7.3
UA	G212	C	2012/05/23	pH (field)	SU	7.2
UA	G212	C	2012/07/25	pH (field)	SU	6.8
UA	G212	C	2012/11/15	pH (field)	SU	7.5
UA	G212	C	2013/02/04	pH (field)	SU	7.5
UA	G212	C	2013/05/20	pH (field)	SU	7.4
UA	G212	C	2013/07/23	pH (field)	SU	7.2
UA	G212	C	2013/10/14	pH (field)	SU	7.3
UA	G212	C	2014/02/20	pH (field)	SU	7.6
UA	G212	C	2014/05/14	pH (field)	SU	7.2

UA	G212	C	2014/08/11	pH (field)	SU	7.2
UA	G212	C	2014/10/15	pH (field)	SU	7.2
UA	G212	C	2015/01/21	pH (field)	SU	7.5
UA	G212	C	2015/04/09	pH (field)	SU	7.0
UA	G212	C	2015/07/22	pH (field)	SU	7.0
UA	G212	C	2015/10/07	pH (field)	SU	7.0
UA	G212	C	2015/11/18	pH (field)	SU	7.2
UA	G212	C	2016/02/19	pH (field)	SU	7.3
UA	G212	C	2016/05/11	pH (field)	SU	7.3
UA	G212	C	2016/08/06	pH (field)	SU	7.3
UA	G212	C	2016/11/23	pH (field)	SU	7.1
UA	G212	C	2017/02/15	pH (field)	SU	7.1
UA	G212	C	2017/05/22	pH (field)	SU	7.0
UA	G212	C	2017/07/15	pH (field)	SU	7.6
UA	G212	C	2017/10/31	pH (field)	SU	7.3
UA	G212	C	2018/05/14	pH (field)	SU	7.2
UA	G212	C	2018/11/02	pH (field)	SU	7.3
UA	G212	C	2019/01/16	pH (field)	SU	7.3
UA	G212	C	2019/08/14	pH (field)	SU	7.3
UA	G212	C	2020/01/22	pH (field)	SU	7.2
UA	G212	C	2020/08/13	pH (field)	SU	7.3
UA	G212	C	2020/10/13	pH (field)	SU	6.8
UA	G212	C	2021/01/26	pH (field)	SU	6.8
UA	G212	C	2021/05/19	pH (field)	SU	7.2
UA	G212	C	2021/06/29	pH (field)	SU	7.4
UA	G212	C	2021/08/19	pH (field)	SU	7.2
UA	G212	C	2021/10/27	pH (field)	SU	7.2
UA	G212	C	2022/02/11	pH (field)	SU	7.2
UA	G212	C	2022/05/11	pH (field)	SU	7.4
UA	G212	C	2022/08/24	pH (field)	SU	6.9
UA	G212	C	2022/11/08	pH (field)	SU	7.0
UA	G212	C	2023/02/14	pH (field)	SU	7.5
UA	G212	C	2023/06/07	pH (field)	SU	7.2
UA	G212	C	2023/08/10	pH (field)	SU	7.2
UA	G212	C	2023/11/16	pH (field)	SU	7.2
UA	G212	C	2015/11/18	Oxidation Reduction Potential	mV	-63.0
UA	G212	C	2016/02/19	Oxidation Reduction Potential	mV	128
UA	G212	C	2016/05/11	Oxidation Reduction Potential	mV	141
UA	G212	C	2016/08/06	Oxidation Reduction Potential	mV	130
UA	G212	C	2016/11/23	Oxidation Reduction Potential	mV	126
UA	G212	C	2017/02/15	Oxidation Reduction Potential	mV	114
UA	G212	C	2017/05/22	Oxidation Reduction Potential	mV	102
UA	G212	C	2017/07/15	Oxidation Reduction Potential	mV	130
UA	G212	C	2017/10/31	Oxidation Reduction Potential	mV	139
UA	G212	C	2018/05/14	Oxidation Reduction Potential	mV	122
UA	G212	C	2018/11/02	Oxidation Reduction Potential	mV	121
UA	G212	C	2019/01/16	Oxidation Reduction Potential	mV	131
UA	G212	C	2019/08/14	Oxidation Reduction Potential	mV	128
UA	G212	C	2020/01/22	Oxidation Reduction Potential	mV	154
UA	G212	C	2020/08/13	Oxidation Reduction Potential	mV	150

UA	G212	C	2021/01/26	Oxidation Reduction Potential	mV	152
UA	G212	C	2021/06/29	Oxidation Reduction Potential	mV	29.9
UA	G212	C	2021/08/19	Oxidation Reduction Potential	mV	210
UA	G212	C	2022/02/11	Oxidation Reduction Potential	mV	121
UA	G212	C	2022/05/11	Oxidation Reduction Potential	mV	49.1
UA	G212	C	2022/08/24	Oxidation Reduction Potential	mV	108
UA	G212	C	2022/11/08	Oxidation Reduction Potential	mV	130
UA	G212	C	2023/02/14	Oxidation Reduction Potential	mV	159
UA	G212	C	2023/06/07	Oxidation Reduction Potential	mV	110
UA	G212	C	2023/08/10	Oxidation Reduction Potential	mV	68.0
UA	G212	C	2023/11/16	Oxidation Reduction Potential	mV	102
UA	G212	C	2015/11/18	Eh	V	0.13
UA	G212	C	2016/02/19	Eh	V	0.32
UA	G212	C	2016/05/11	Eh	V	0.34
UA	G212	C	2016/08/06	Eh	V	0.32
UA	G212	C	2016/11/23	Eh	V	0.32
UA	G212	C	2017/02/15	Eh	V	0.31
UA	G212	C	2017/05/22	Eh	V	0.30
UA	G212	C	2017/07/15	Eh	V	0.32
UA	G212	C	2017/10/31	Eh	V	0.34
UA	G212	C	2018/05/14	Eh	V	0.32
UA	G212	C	2018/11/02	Eh	V	0.32
UA	G212	C	2019/01/16	Eh	V	0.33
UA	G212	C	2019/08/14	Eh	V	0.32
UA	G212	C	2020/01/22	Eh	V	0.35
UA	G212	C	2020/08/13	Eh	V	0.34
UA	G212	C	2021/01/26	Eh	V	0.35
UA	G212	C	2021/06/29	Eh	V	0.22
UA	G212	C	2021/08/19	Eh	V	0.40
UA	G212	C	2022/02/11	Eh	V	0.32
UA	G212	C	2022/05/11	Eh	V	0.24
UA	G212	C	2022/08/24	Eh	V	0.30
UA	G212	C	2022/11/08	Eh	V	0.32
UA	G212	C	2023/02/14	Eh	V	0.36
UA	G212	C	2023/06/07	Eh	V	0.30
UA	G212	C	2023/08/10	Eh	V	0.26
UA	G212	C	2023/11/16	Eh	V	0.30
UA	G212	C	2010/12/14	Alkalinity, bicarbonate	mg/L CaCO3	220
UA	G212	C	2011/01/26	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	G212	C	2011/03/10	Alkalinity, bicarbonate	mg/L CaCO3	270
UA	G212	C	2011/05/05	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G212	C	2011/07/26	Alkalinity, bicarbonate	mg/L CaCO3	1,300
UA	G212	C	2011/09/20	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	G212	C	2012/01/31	Alkalinity, bicarbonate	mg/L CaCO3	270
UA	G212	C	2013/02/04	Alkalinity, bicarbonate	mg/L CaCO3	260
UA	G212	C	2014/02/20	Alkalinity, bicarbonate	mg/L CaCO3	270
UA	G212	C	2014/08/11	Alkalinity, bicarbonate	mg/L CaCO3	260
UA	G212	C	2014/10/15	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G212	C	2015/01/21	Alkalinity, bicarbonate	mg/L CaCO3	260
UA	G212	C	2015/04/09	Alkalinity, bicarbonate	mg/L CaCO3	260

UA	G212	C	2017/07/15	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G212	C	2020/01/22	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G212	C	2020/08/13	Alkalinity, bicarbonate	mg/L CaCO3	270
UA	G212	C	2021/01/26	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G212	C	2021/08/19	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G212	C	2022/02/11	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	G212	C	2022/06/15	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	G212	C	2022/08/24	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	G212	C	2023/02/14	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	G212	C	2023/06/07	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G212	C	2023/08/10	Alkalinity, bicarbonate	mg/L CaCO3	234
UA	G212	C	2023/11/16	Alkalinity, bicarbonate	mg/L CaCO3	236
UA	G212	C	2022/08/24	Alkalinity, carbonate	mg/L CaCO3	10.0
UA	G212	C	2010/11/18	Barium, total	mg/L	0.0730
UA	G212	C	2011/01/26	Barium, total	mg/L	0.0480
UA	G212	C	2011/03/10	Barium, total	mg/L	0.0480
UA	G212	C	2011/05/05	Barium, total	mg/L	0.0490
UA	G212	C	2011/07/26	Barium, total	mg/L	0.0450
UA	G212	C	2011/09/20	Barium, total	mg/L	0.0500
UA	G212	C	2012/01/31	Barium, total	mg/L	0.0470
UA	G212	C	2013/02/04	Barium, total	mg/L	0.0500
UA	G212	C	2014/02/20	Barium, total	mg/L	0.0810
UA	G212	C	2015/04/09	Barium, total	mg/L	0.0560
UA	G212	C	2015/07/22	Barium, total	mg/L	0.0570
UA	G212	C	2015/10/07	Barium, total	mg/L	0.0570
UA	G212	C	2015/11/18	Barium, total	mg/L	0.0520
UA	G212	C	2016/02/19	Barium, total	mg/L	0.0500
UA	G212	C	2016/05/11	Barium, total	mg/L	0.0500
UA	G212	C	2016/08/06	Barium, total	mg/L	0.0590
UA	G212	C	2016/11/23	Barium, total	mg/L	0.0490
UA	G212	C	2017/02/15	Barium, total	mg/L	0.0580
UA	G212	C	2017/05/22	Barium, total	mg/L	0.0610
UA	G212	C	2017/07/15	Barium, total	mg/L	0.0520
UA	G212	C	2020/10/13	Barium, total	mg/L	0.0510
UA	G212	C	2021/01/26	Barium, total	mg/L	0.0460
UA	G212	C	2021/05/19	Barium, total	mg/L	0.0500
UA	G212	C	2021/08/19	Barium, total	mg/L	0.0470
UA	G212	C	2021/10/27	Barium, total	mg/L	0.0480
UA	G212	C	2022/02/11	Barium, total	mg/L	0.0480
UA	G212	C	2022/05/11	Barium, total	mg/L	0.0490
UA	G212	C	2022/08/24	Barium, total	mg/L	0.0460
UA	G212	C	2022/11/08	Barium, total	mg/L	0.0430
UA	G212	C	2023/02/14	Barium, total	mg/L	0.0510
UA	G212	C	2023/06/07	Barium, total	mg/L	0.0510
UA	G212	C	2023/08/10	Barium, total	mg/L	0.0529
UA	G212	C	2023/11/16	Barium, total	mg/L	0.0630
UA	G212	C	2010/11/18	Calcium, total	mg/L	57.0
UA	G212	C	2011/01/26	Calcium, total	mg/L	56.0
UA	G212	C	2011/03/10	Calcium, total	mg/L	57.0
UA	G212	C	2011/05/05	Calcium, total	mg/L	<100

UA	G212	C	2011/07/26	Calcium, total	mg/L	59.0
UA	G212	C	2011/09/20	Calcium, total	mg/L	58.0
UA	G212	C	2011/11/11	Calcium, total	mg/L	54.0
UA	G212	C	2012/01/31	Calcium, total	mg/L	75.0
UA	G212	C	2012/05/23	Calcium, total	mg/L	56.0
UA	G212	C	2012/07/25	Calcium, total	mg/L	68.0
UA	G212	C	2012/11/15	Calcium, total	mg/L	58.0
UA	G212	C	2013/02/04	Calcium, total	mg/L	55.0
UA	G212	C	2013/05/20	Calcium, total	mg/L	55.0
UA	G212	C	2013/07/23	Calcium, total	mg/L	55.0
UA	G212	C	2013/10/14	Calcium, total	mg/L	53.0
UA	G212	C	2014/02/20	Calcium, total	mg/L	57.0
UA	G212	C	2014/05/14	Calcium, total	mg/L	71.0
UA	G212	C	2014/08/11	Calcium, total	mg/L	58.0
UA	G212	C	2014/10/15	Calcium, total	mg/L	59.0
UA	G212	C	2015/01/21	Calcium, total	mg/L	62.0
UA	G212	C	2015/04/09	Calcium, total	mg/L	60.0
UA	G212	C	2015/11/18	Calcium, total	mg/L	55.0
UA	G212	C	2016/02/19	Calcium, total	mg/L	58.0
UA	G212	C	2016/05/11	Calcium, total	mg/L	58.0
UA	G212	C	2016/08/06	Calcium, total	mg/L	59.0
UA	G212	C	2016/11/23	Calcium, total	mg/L	51.0
UA	G212	C	2017/02/15	Calcium, total	mg/L	53.0
UA	G212	C	2017/05/22	Calcium, total	mg/L	46.0
UA	G212	C	2017/07/15	Calcium, total	mg/L	46.0
UA	G212	C	2017/10/31	Calcium, total	mg/L	50.0
UA	G212	C	2018/05/14	Calcium, total	mg/L	51.0
UA	G212	C	2018/11/02	Calcium, total	mg/L	53.0
UA	G212	C	2019/01/16	Calcium, total	mg/L	56.0
UA	G212	C	2019/08/14	Calcium, total	mg/L	53.0
UA	G212	C	2020/01/22	Calcium, total	mg/L	61.0
UA	G212	C	2020/08/13	Calcium, total	mg/L	54.0
UA	G212	C	2021/01/26	Calcium, total	mg/L	56.0
UA	G212	C	2021/08/19	Calcium, total	mg/L	54.0
UA	G212	C	2022/02/11	Calcium, total	mg/L	57.0
UA	G212	C	2022/05/11	Calcium, total	mg/L	53.0
UA	G212	C	2022/08/24	Calcium, total	mg/L	59.0
UA	G212	C	2023/02/14	Calcium, total	mg/L	60.0
UA	G212	C	2023/06/07	Calcium, total	mg/L	56.0
UA	G212	C	2023/08/10	Calcium, total	mg/L	53.6
UA	G212	C	2023/11/16	Calcium, total	mg/L	54.6
UA	G212	C	2010/11/18	Chloride, total	mg/L	38.0
UA	G212	C	2011/01/26	Chloride, total	mg/L	38.0
UA	G212	C	2011/03/10	Chloride, total	mg/L	43.0
UA	G212	C	2011/05/05	Chloride, total	mg/L	50.0
UA	G212	C	2011/07/26	Chloride, total	mg/L	40.0
UA	G212	C	2011/09/20	Chloride, total	mg/L	39.0
UA	G212	C	2011/11/11	Chloride, total	mg/L	38.0
UA	G212	C	2012/01/31	Chloride, total	mg/L	39.0
UA	G212	C	2012/05/23	Chloride, total	mg/L	43.0

UA	G212	C	2012/07/25	Chloride, total	mg/L	36.0
UA	G212	C	2012/11/15	Chloride, total	mg/L	41.0
UA	G212	C	2013/02/04	Chloride, total	mg/L	37.0
UA	G212	C	2013/05/20	Chloride, total	mg/L	39.0
UA	G212	C	2013/07/23	Chloride, total	mg/L	51.0
UA	G212	C	2013/10/14	Chloride, total	mg/L	3.90
UA	G212	C	2014/02/20	Chloride, total	mg/L	38.0
UA	G212	C	2014/05/14	Chloride, total	mg/L	37.0
UA	G212	C	2014/08/11	Chloride, total	mg/L	38.0
UA	G212	C	2014/10/15	Chloride, total	mg/L	43.0
UA	G212	C	2015/01/21	Chloride, total	mg/L	39.0
UA	G212	C	2015/04/09	Chloride, total	mg/L	44.0
UA	G212	C	2015/07/22	Chloride, total	mg/L	38.0
UA	G212	C	2015/10/07	Chloride, total	mg/L	43.0
UA	G212	C	2015/11/18	Chloride, total	mg/L	38.0
UA	G212	C	2016/02/19	Chloride, total	mg/L	41.0
UA	G212	C	2016/05/11	Chloride, total	mg/L	37.0
UA	G212	C	2016/08/06	Chloride, total	mg/L	37.0
UA	G212	C	2016/11/23	Chloride, total	mg/L	42.0
UA	G212	C	2017/02/15	Chloride, total	mg/L	37.0
UA	G212	C	2017/05/22	Chloride, total	mg/L	39.0
UA	G212	C	2017/07/15	Chloride, total	mg/L	44.0
UA	G212	C	2017/10/31	Chloride, total	mg/L	42.0
UA	G212	C	2018/05/14	Chloride, total	mg/L	40.0
UA	G212	C	2018/11/02	Chloride, total	mg/L	43.0
UA	G212	C	2019/01/16	Chloride, total	mg/L	43.0
UA	G212	C	2019/08/14	Chloride, total	mg/L	43.0
UA	G212	C	2020/01/22	Chloride, total	mg/L	42.0
UA	G212	C	2020/08/13	Chloride, total	mg/L	42.0
UA	G212	C	2020/10/13	Chloride, total	mg/L	48.0
UA	G212	C	2021/01/26	Chloride, total	mg/L	41.0
UA	G212	C	2021/05/19	Chloride, total	mg/L	44.0
UA	G212	C	2021/08/19	Chloride, total	mg/L	41.0
UA	G212	C	2021/10/27	Chloride, total	mg/L	38.0
UA	G212	C	2022/02/11	Chloride, total	mg/L	46.0
UA	G212	C	2022/05/11	Chloride, total	mg/L	47.0
UA	G212	C	2022/08/24	Chloride, total	mg/L	43.0
UA	G212	C	2022/11/08	Chloride, total	mg/L	48.0
UA	G212	C	2023/02/14	Chloride, total	mg/L	45.0
UA	G212	C	2023/06/07	Chloride, total	mg/L	41.0
UA	G212	C	2023/08/10	Chloride, total	mg/L	46.0
UA	G212	C	2023/11/16	Chloride, total	mg/L	47.0
UA	G212	C	2023/06/07	Ferrous Iron, dissolved	mg/L	0.120
UA	G212	C	2010/11/18	Iron, dissolved	mg/L	<0.1
UA	G212	C	2011/01/26	Iron, dissolved	mg/L	0.0180
UA	G212	C	2011/03/10	Iron, dissolved	mg/L	<0.01
UA	G212	C	2011/05/05	Iron, dissolved	mg/L	<0.01
UA	G212	C	2011/07/26	Iron, dissolved	mg/L	<0.01
UA	G212	C	2011/09/20	Iron, dissolved	mg/L	<0.01
UA	G212	C	2011/11/11	Iron, dissolved	mg/L	<0.01

UA	G212	C	2012/01/31	Iron, dissolved	mg/L	0.0110
UA	G212	C	2012/05/23	Iron, dissolved	mg/L	0.0190
UA	G212	C	2012/07/25	Iron, dissolved	mg/L	<0.01
UA	G212	C	2012/11/15	Iron, dissolved	mg/L	0.0120
UA	G212	C	2013/02/04	Iron, dissolved	mg/L	0.0150
UA	G212	C	2013/05/20	Iron, dissolved	mg/L	<0.01
UA	G212	C	2013/07/23	Iron, dissolved	mg/L	<0.01
UA	G212	C	2013/10/14	Iron, dissolved	mg/L	<0.01
UA	G212	C	2014/02/20	Iron, dissolved	mg/L	0.0240
UA	G212	C	2014/05/14	Iron, dissolved	mg/L	<0.01
UA	G212	C	2014/08/11	Iron, dissolved	mg/L	<0.01
UA	G212	C	2014/10/15	Iron, dissolved	mg/L	<0.01
UA	G212	C	2015/01/21	Iron, dissolved	mg/L	<0.01
UA	G212	C	2015/04/09	Iron, dissolved	mg/L	<0.01
UA	G212	C	2015/07/22	Iron, dissolved	mg/L	<0.01
UA	G212	C	2015/10/07	Iron, dissolved	mg/L	<0.01
UA	G212	C	2016/02/19	Iron, dissolved	mg/L	0.0240
UA	G212	C	2016/05/11	Iron, dissolved	mg/L	<0.01
UA	G212	C	2016/07/26	Iron, dissolved	mg/L	0.0160
UA	G212	C	2016/11/23	Iron, dissolved	mg/L	<0.01
UA	G212	C	2017/02/13	Iron, dissolved	mg/L	<0.01
UA	G212	C	2017/05/21	Iron, dissolved	mg/L	0.0170
UA	G212	C	2017/07/24	Iron, dissolved	mg/L	<0.01
UA	G212	C	2017/10/31	Iron, dissolved	mg/L	0.260
UA	G212	C	2018/01/27	Iron, dissolved	mg/L	0.110
UA	G212	C	2018/05/14	Iron, dissolved	mg/L	0.0210
UA	G212	C	2018/08/08	Iron, dissolved	mg/L	0.0160
UA	G212	C	2018/11/02	Iron, dissolved	mg/L	<0.1
UA	G212	C	2019/01/16	Iron, dissolved	mg/L	<0.01
UA	G212	C	2019/05/02	Iron, dissolved	mg/L	<0.01
UA	G212	C	2019/08/14	Iron, dissolved	mg/L	<0.01
UA	G212	C	2019/10/23	Iron, dissolved	mg/L	<0.01
UA	G212	C	2020/01/22	Iron, dissolved	mg/L	0.0110
UA	G212	C	2020/05/04	Iron, dissolved	mg/L	<0.01
UA	G212	C	2020/08/13	Iron, dissolved	mg/L	<0.01
UA	G212	C	2020/10/13	Iron, dissolved	mg/L	<0.01
UA	G212	C	2021/01/26	Iron, dissolved	mg/L	<0.01
UA	G212	C	2021/05/19	Iron, dissolved	mg/L	<0.01
UA	G212	C	2021/08/19	Iron, dissolved	mg/L	<0.01
UA	G212	C	2021/10/27	Iron, dissolved	mg/L	<0.01
UA	G212	C	2022/02/11	Iron, dissolved	mg/L	<0.01
UA	G212	C	2022/05/11	Iron, dissolved	mg/L	<0.00072
UA	G212	C	2022/08/24	Iron, dissolved	mg/L	<0.00072
UA	G212	C	2022/11/08	Iron, dissolved	mg/L	<0.00072
UA	G212	C	2023/02/14	Iron, dissolved	mg/L	<0.00072
UA	G212	C	2023/06/07	Iron, dissolved	mg/L	<0.00072
UA	G212	C	2023/08/10	Iron, dissolved	mg/L	<0.0115
UA	G212	C	2023/11/16	Iron, dissolved	mg/L	<0.0115
UA	G212	C	2010/11/18	Magnesium, total	mg/L	25.0
UA	G212	C	2011/01/26	Magnesium, total	mg/L	26.0

UA	G212	C	2011/03/10	Magnesium, total	mg/L	28.0
UA	G212	C	2011/05/05	Magnesium, total	mg/L	<100
UA	G212	C	2011/07/26	Magnesium, total	mg/L	29.0
UA	G212	C	2011/09/20	Magnesium, total	mg/L	27.0
UA	G212	C	2012/01/31	Magnesium, total	mg/L	27.0
UA	G212	C	2013/02/04	Magnesium, total	mg/L	27.0
UA	G212	C	2014/02/20	Magnesium, total	mg/L	27.0
UA	G212	C	2015/04/09	Magnesium, total	mg/L	30.0
UA	G212	C	2017/07/15	Magnesium, total	mg/L	27.0
UA	G212	C	2020/01/22	Magnesium, total	mg/L	29.0
UA	G212	C	2020/08/13	Magnesium, total	mg/L	26.0
UA	G212	C	2021/01/26	Magnesium, total	mg/L	29.0
UA	G212	C	2021/08/19	Magnesium, total	mg/L	28.0
UA	G212	C	2022/02/11	Magnesium, total	mg/L	28.0
UA	G212	C	2022/05/11	Magnesium, total	mg/L	26.0
UA	G212	C	2022/08/24	Magnesium, total	mg/L	30.0
UA	G212	C	2023/02/14	Magnesium, total	mg/L	27.0
UA	G212	C	2023/06/07	Magnesium, total	mg/L	27.0
UA	G212	C	2023/08/10	Magnesium, total	mg/L	26.3
UA	G212	C	2023/11/16	Magnesium, total	mg/L	26.6
UA	G212	C	2010/11/18	Manganese, dissolved	mg/L	0.0150
UA	G212	C	2011/01/26	Manganese, dissolved	mg/L	0.0200
UA	G212	C	2011/03/10	Manganese, dissolved	mg/L	0.00830
UA	G212	C	2011/05/05	Manganese, dissolved	mg/L	0.00170
UA	G212	C	2011/07/26	Manganese, dissolved	mg/L	0.00150
UA	G212	C	2011/09/20	Manganese, dissolved	mg/L	0.00280
UA	G212	C	2011/11/11	Manganese, dissolved	mg/L	0.00150
UA	G212	C	2012/01/31	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2012/05/23	Manganese, dissolved	mg/L	0.00310
UA	G212	C	2012/07/25	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2012/11/15	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2013/02/04	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2013/05/20	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2013/07/23	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2013/10/14	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2014/02/20	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2014/05/14	Manganese, dissolved	mg/L	0.0350
UA	G212	C	2014/08/11	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2014/10/15	Manganese, dissolved	mg/L	0.0110
UA	G212	C	2015/01/21	Manganese, dissolved	mg/L	0.00230
UA	G212	C	2015/04/09	Manganese, dissolved	mg/L	<0.002
UA	G212	C	2015/07/22	Manganese, dissolved	mg/L	0.0250
UA	G212	C	2015/10/07	Manganese, dissolved	mg/L	0.00410
UA	G212	C	2016/02/19	Manganese, dissolved	mg/L	0.00280
UA	G212	C	2016/05/11	Manganese, dissolved	mg/L	0.00210
UA	G212	C	2016/07/26	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2016/11/23	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2017/02/13	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2017/05/21	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2017/07/24	Manganese, dissolved	mg/L	<0.001

UA	G212	C	2017/10/31	Manganese, dissolved	mg/L	0.0190
UA	G212	C	2018/01/27	Manganese, dissolved	mg/L	0.00810
UA	G212	C	2018/05/14	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2018/08/08	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2018/11/02	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2019/01/16	Manganese, dissolved	mg/L	0.00550
UA	G212	C	2019/05/02	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2019/08/14	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2019/10/23	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2020/01/22	Manganese, dissolved	mg/L	0.00130
UA	G212	C	2020/05/04	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2020/08/13	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2020/10/13	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2021/01/26	Manganese, dissolved	mg/L	0.00540
UA	G212	C	2021/05/19	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2021/08/19	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2021/10/27	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2022/02/11	Manganese, dissolved	mg/L	<0.001
UA	G212	C	2022/05/11	Manganese, dissolved	mg/L	<0.00023
UA	G212	C	2022/08/24	Manganese, dissolved	mg/L	0.00110
UA	G212	C	2022/11/08	Manganese, dissolved	mg/L	<0.00023
UA	G212	C	2023/02/14	Manganese, dissolved	mg/L	<0.00023
UA	G212	C	2023/06/07	Manganese, dissolved	mg/L	<0.00023
UA	G212	C	2023/08/10	Manganese, dissolved	mg/L	0.00240
UA	G212	C	2023/11/16	Manganese, dissolved	mg/L	0.00240
UA	G212	C	2023/08/10	Phosphate, dissolved	mg/L	0.0340
UA	G212	C	2010/11/18	Potassium, total	mg/L	2.00
UA	G212	C	2011/01/26	Potassium, total	mg/L	0.490
UA	G212	C	2011/03/10	Potassium, total	mg/L	0.270
UA	G212	C	2011/05/05	Potassium, total	mg/L	0.360
UA	G212	C	2011/07/26	Potassium, total	mg/L	0.440
UA	G212	C	2011/09/20	Potassium, total	mg/L	0.550
UA	G212	C	2012/01/31	Potassium, total	mg/L	0.380
UA	G212	C	2013/02/04	Potassium, total	mg/L	0.430
UA	G212	C	2014/02/20	Potassium, total	mg/L	1.30
UA	G212	C	2015/04/09	Potassium, total	mg/L	0.370
UA	G212	C	2017/07/15	Potassium, total	mg/L	0.390
UA	G212	C	2020/01/22	Potassium, total	mg/L	0.340
UA	G212	C	2020/08/13	Potassium, total	mg/L	0.200
UA	G212	C	2021/01/26	Potassium, total	mg/L	0.240
UA	G212	C	2021/08/19	Potassium, total	mg/L	0.260
UA	G212	C	2022/02/11	Potassium, total	mg/L	0.650
UA	G212	C	2022/05/11	Potassium, total	mg/L	0.210
UA	G212	C	2022/08/24	Potassium, total	mg/L	0.230
UA	G212	C	2023/02/14	Potassium, total	mg/L	0.260
UA	G212	C	2023/06/07	Potassium, total	mg/L	0.250
UA	G212	C	2023/08/10	Potassium, total	mg/L	0.278
UA	G212	C	2023/11/16	Potassium, total	mg/L	0.301
UA	G212	C	2023/06/07	Silicon, dissolved	mg/L	7.90
UA	G212	C	2023/08/10	Silicon, dissolved	mg/L	7.27

UA	G212	C	2010/11/18	Sodium, total	mg/L	53.0
UA	G212	C	2011/01/26	Sodium, total	mg/L	58.0
UA	G212	C	2011/03/10	Sodium, total	mg/L	60.0
UA	G212	C	2011/05/05	Sodium, total	mg/L	<100
UA	G212	C	2011/07/26	Sodium, total	mg/L	59.0
UA	G212	C	2011/09/20	Sodium, total	mg/L	59.0
UA	G212	C	2012/01/31	Sodium, total	mg/L	83.0
UA	G212	C	2013/02/04	Sodium, total	mg/L	57.0
UA	G212	C	2014/02/20	Sodium, total	mg/L	63.0
UA	G212	C	2015/04/09	Sodium, total	mg/L	67.0
UA	G212	C	2017/07/15	Sodium, total	mg/L	57.0
UA	G212	C	2020/01/22	Sodium, total	mg/L	59.0
UA	G212	C	2020/08/13	Sodium, total	mg/L	63.0
UA	G212	C	2021/01/26	Sodium, total	mg/L	63.0
UA	G212	C	2021/08/19	Sodium, total	mg/L	62.0
UA	G212	C	2022/02/11	Sodium, total	mg/L	68.0
UA	G212	C	2022/05/11	Sodium, total	mg/L	60.0
UA	G212	C	2022/08/24	Sodium, total	mg/L	66.0
UA	G212	C	2023/02/14	Sodium, total	mg/L	59.0
UA	G212	C	2023/06/07	Sodium, total	mg/L	58.0
UA	G212	C	2023/08/10	Sodium, total	mg/L	59.6
UA	G212	C	2023/11/16	Sodium, total	mg/L	59.7
UA	G212	C	2010/11/18	Sulfate, total	mg/L	53.0
UA	G212	C	2011/01/26	Sulfate, total	mg/L	53.0
UA	G212	C	2011/03/10	Sulfate, total	mg/L	55.0
UA	G212	C	2011/05/05	Sulfate, total	mg/L	74.0
UA	G212	C	2011/07/26	Sulfate, total	mg/L	55.0
UA	G212	C	2011/09/20	Sulfate, total	mg/L	53.0
UA	G212	C	2011/11/11	Sulfate, total	mg/L	51.0
UA	G212	C	2012/01/31	Sulfate, total	mg/L	51.0
UA	G212	C	2012/05/23	Sulfate, total	mg/L	58.0
UA	G212	C	2012/07/25	Sulfate, total	mg/L	50.0
UA	G212	C	2012/11/15	Sulfate, total	mg/L	54.0
UA	G212	C	2013/02/04	Sulfate, total	mg/L	51.0
UA	G212	C	2013/05/20	Sulfate, total	mg/L	54.0
UA	G212	C	2013/07/23	Sulfate, total	mg/L	65.0
UA	G212	C	2013/10/14	Sulfate, total	mg/L	5.50
UA	G212	C	2014/02/20	Sulfate, total	mg/L	53.0
UA	G212	C	2014/05/14	Sulfate, total	mg/L	54.0
UA	G212	C	2014/08/11	Sulfate, total	mg/L	54.0
UA	G212	C	2014/10/15	Sulfate, total	mg/L	73.0
UA	G212	C	2015/01/21	Sulfate, total	mg/L	59.0
UA	G212	C	2015/04/09	Sulfate, total	mg/L	66.0
UA	G212	C	2015/07/22	Sulfate, total	mg/L	56.0
UA	G212	C	2015/10/07	Sulfate, total	mg/L	65.0
UA	G212	C	2015/11/18	Sulfate, total	mg/L	54.0
UA	G212	C	2016/02/19	Sulfate, total	mg/L	59.0
UA	G212	C	2016/05/11	Sulfate, total	mg/L	59.0
UA	G212	C	2016/08/06	Sulfate, total	mg/L	55.0
UA	G212	C	2016/11/23	Sulfate, total	mg/L	54.0

UA	G212	C	2017/02/15	Sulfate, total	mg/L	55.0
UA	G212	C	2017/05/22	Sulfate, total	mg/L	57.0
UA	G212	C	2017/07/15	Sulfate, total	mg/L	53.0
UA	G212	C	2017/10/31	Sulfate, total	mg/L	55.0
UA	G212	C	2018/05/14	Sulfate, total	mg/L	52.0
UA	G212	C	2018/11/02	Sulfate, total	mg/L	49.0
UA	G212	C	2019/01/16	Sulfate, total	mg/L	53.0
UA	G212	C	2019/08/14	Sulfate, total	mg/L	51.0
UA	G212	C	2020/01/22	Sulfate, total	mg/L	58.0
UA	G212	C	2020/08/13	Sulfate, total	mg/L	53.0
UA	G212	C	2020/10/13	Sulfate, total	mg/L	54.0
UA	G212	C	2021/01/26	Sulfate, total	mg/L	55.0
UA	G212	C	2021/05/19	Sulfate, total	mg/L	55.0
UA	G212	C	2021/08/19	Sulfate, total	mg/L	51.0
UA	G212	C	2021/10/27	Sulfate, total	mg/L	50.0
UA	G212	C	2022/02/11	Sulfate, total	mg/L	57.0
UA	G212	C	2022/05/11	Sulfate, total	mg/L	53.0
UA	G212	C	2022/08/24	Sulfate, total	mg/L	54.0
UA	G212	C	2022/11/08	Sulfate, total	mg/L	53.0
UA	G212	C	2023/02/14	Sulfate, total	mg/L	54.0
UA	G212	C	2023/06/07	Sulfate, total	mg/L	54.0
UA	G212	C	2023/08/10	Sulfate, total	mg/L	65.0
UA	G212	C	2023/11/16	Sulfate, total	mg/L	63.0
UA	G212	C	2015/11/18	Temperature (Celsius)	degrees C	16.4
UA	G212	C	2016/02/19	Temperature (Celsius)	degrees C	13.9
UA	G212	C	2016/05/11	Temperature (Celsius)	degrees C	16.7
UA	G212	C	2016/08/06	Temperature (Celsius)	degrees C	18.0
UA	G212	C	2016/11/23	Temperature (Celsius)	degrees C	13.7
UA	G212	C	2017/02/15	Temperature (Celsius)	degrees C	15.0
UA	G212	C	2017/05/22	Temperature (Celsius)	degrees C	15.6
UA	G212	C	2017/07/15	Temperature (Celsius)	degrees C	17.0
UA	G212	C	2017/10/31	Temperature (Celsius)	degrees C	12.6
UA	G212	C	2018/05/14	Temperature (Celsius)	degrees C	13.8
UA	G212	C	2018/11/02	Temperature (Celsius)	degrees C	14.7
UA	G212	C	2019/01/16	Temperature (Celsius)	degrees C	12.3
UA	G212	C	2019/08/14	Temperature (Celsius)	degrees C	17.0
UA	G212	C	2020/01/22	Temperature (Celsius)	degrees C	11.7
UA	G212	C	2020/08/13	Temperature (Celsius)	degrees C	18.7
UA	G212	C	2021/01/26	Temperature (Celsius)	degrees C	11.4
UA	G212	C	2021/06/29	Temperature (Celsius)	degrees C	17.9
UA	G212	C	2021/08/19	Temperature (Celsius)	degrees C	19.5
UA	G212	C	2022/02/11	Temperature (Celsius)	degrees C	10.2
UA	G212	C	2022/05/11	Temperature (Celsius)	degrees C	18.0
UA	G212	C	2022/08/24	Temperature (Celsius)	degrees C	19.2
UA	G212	C	2022/11/08	Temperature (Celsius)	degrees C	17.1
UA	G212	C	2023/02/14	Temperature (Celsius)	degrees C	13.0
UA	G212	C	2023/06/07	Temperature (Celsius)	degrees C	16.4
UA	G212	C	2023/08/10	Temperature (Celsius)	degrees C	17.6
UA	G212	C	2023/11/16	Temperature (Celsius)	degrees C	16.8
UA	G212	C	2010/11/18	Total Dissolved Solids	mg/L	360

UA	G212	C	2011/01/26	Total Dissolved Solids	mg/L	390
UA	G212	C	2011/03/10	Total Dissolved Solids	mg/L	430
UA	G212	C	2011/05/05	Total Dissolved Solids	mg/L	430
UA	G212	C	2011/07/26	Total Dissolved Solids	mg/L	410
UA	G212	C	2011/09/20	Total Dissolved Solids	mg/L	420
UA	G212	C	2011/11/11	Total Dissolved Solids	mg/L	420
UA	G212	C	2012/01/31	Total Dissolved Solids	mg/L	410
UA	G212	C	2012/05/23	Total Dissolved Solids	mg/L	410
UA	G212	C	2012/07/25	Total Dissolved Solids	mg/L	410
UA	G212	C	2012/11/15	Total Dissolved Solids	mg/L	420
UA	G212	C	2013/02/04	Total Dissolved Solids	mg/L	420
UA	G212	C	2013/05/20	Total Dissolved Solids	mg/L	360
UA	G212	C	2013/07/23	Total Dissolved Solids	mg/L	390
UA	G212	C	2013/10/14	Total Dissolved Solids	mg/L	380
UA	G212	C	2014/02/20	Total Dissolved Solids	mg/L	440
UA	G212	C	2014/05/14	Total Dissolved Solids	mg/L	580
UA	G212	C	2014/08/11	Total Dissolved Solids	mg/L	410
UA	G212	C	2014/10/15	Total Dissolved Solids	mg/L	400
UA	G212	C	2015/01/21	Total Dissolved Solids	mg/L	400
UA	G212	C	2015/04/09	Total Dissolved Solids	mg/L	410
UA	G212	C	2015/07/22	Total Dissolved Solids	mg/L	460
UA	G212	C	2015/10/07	Total Dissolved Solids	mg/L	410
UA	G212	C	2015/11/18	Total Dissolved Solids	mg/L	380
UA	G212	C	2016/02/19	Total Dissolved Solids	mg/L	380
UA	G212	C	2016/05/11	Total Dissolved Solids	mg/L	400
UA	G212	C	2016/08/06	Total Dissolved Solids	mg/L	330
UA	G212	C	2016/11/23	Total Dissolved Solids	mg/L	340
UA	G212	C	2017/02/15	Total Dissolved Solids	mg/L	420
UA	G212	C	2017/05/22	Total Dissolved Solids	mg/L	360
UA	G212	C	2017/07/15	Total Dissolved Solids	mg/L	430
UA	G212	C	2017/10/31	Total Dissolved Solids	mg/L	340
UA	G212	C	2018/05/14	Total Dissolved Solids	mg/L	350
UA	G212	C	2018/11/02	Total Dissolved Solids	mg/L	600
UA	G212	C	2019/01/16	Total Dissolved Solids	mg/L	440
UA	G212	C	2019/08/14	Total Dissolved Solids	mg/L	380
UA	G212	C	2020/01/22	Total Dissolved Solids	mg/L	340
UA	G212	C	2020/08/13	Total Dissolved Solids	mg/L	430
UA	G212	C	2020/10/13	Total Dissolved Solids	mg/L	410
UA	G212	C	2021/01/26	Total Dissolved Solids	mg/L	400
UA	G212	C	2021/05/19	Total Dissolved Solids	mg/L	520
UA	G212	C	2021/08/19	Total Dissolved Solids	mg/L	420
UA	G212	C	2021/10/27	Total Dissolved Solids	mg/L	380
UA	G212	C	2022/02/11	Total Dissolved Solids	mg/L	330
UA	G212	C	2022/05/11	Total Dissolved Solids	mg/L	400
UA	G212	C	2022/08/24	Total Dissolved Solids	mg/L	530
UA	G212	C	2022/11/08	Total Dissolved Solids	mg/L	400
UA	G212	C	2023/02/14	Total Dissolved Solids	mg/L	520
UA	G212	C	2023/06/07	Total Dissolved Solids	mg/L	480
UA	G212	C	2023/08/10	Total Dissolved Solids	mg/L	412
UA	G212	C	2023/11/16	Total Dissolved Solids	mg/L	434

UA	G213	C	2010/11/18	pH (field)	SU	7.2
UA	G213	C	2011/01/26	pH (field)	SU	7.3
UA	G213	C	2011/03/10	pH (field)	SU	7.3
UA	G213	C	2011/05/05	pH (field)	SU	7.2
UA	G213	C	2011/07/26	pH (field)	SU	7.3
UA	G213	C	2011/09/20	pH (field)	SU	7.2
UA	G213	C	2011/11/11	pH (field)	SU	7.3
UA	G213	C	2012/01/30	pH (field)	SU	7.5
UA	G213	C	2012/05/23	pH (field)	SU	7.2
UA	G213	C	2012/07/25	pH (field)	SU	6.7
UA	G213	C	2012/11/15	pH (field)	SU	7.4
UA	G213	C	2013/02/04	pH (field)	SU	7.4
UA	G213	C	2013/05/20	pH (field)	SU	7.6
UA	G213	C	2013/07/23	pH (field)	SU	7.0
UA	G213	C	2013/10/14	pH (field)	SU	7.2
UA	G213	C	2014/02/20	pH (field)	SU	7.5
UA	G213	C	2014/05/14	pH (field)	SU	7.1
UA	G213	C	2014/08/11	pH (field)	SU	7.1
UA	G213	C	2014/10/15	pH (field)	SU	7.2
UA	G213	C	2015/01/21	pH (field)	SU	7.5
UA	G213	C	2015/04/09	pH (field)	SU	7.0
UA	G213	C	2015/07/22	pH (field)	SU	7.0
UA	G213	C	2015/10/07	pH (field)	SU	7.0
UA	G213	C	2020/10/13	pH (field)	SU	6.7
UA	G213	C	2021/01/27	pH (field)	SU	7.2
UA	G213	C	2021/05/19	pH (field)	SU	7.2
UA	G213	C	2021/08/19	pH (field)	SU	7.2
UA	G213	C	2021/10/27	pH (field)	SU	7.2
UA	G213	C	2022/02/09	pH (field)	SU	7.0
UA	G213	C	2022/05/11	pH (field)	SU	7.2
UA	G213	C	2022/08/24	pH (field)	SU	6.9
UA	G213	C	2022/11/08	pH (field)	SU	6.9
UA	G213	C	2023/02/15	pH (field)	SU	7.5
UA	G213	C	2023/06/07	pH (field)	SU	7.2
UA	G213	C	2023/08/10	pH (field)	SU	7.2
UA	G213	C	2023/11/16	pH (field)	SU	7.1
UA	G213	C	2022/02/09	Oxidation Reduction Potential	mV	62.8
UA	G213	C	2022/05/11	Oxidation Reduction Potential	mV	61.7
UA	G213	C	2022/08/24	Oxidation Reduction Potential	mV	111
UA	G213	C	2022/11/08	Oxidation Reduction Potential	mV	146
UA	G213	C	2023/02/15	Oxidation Reduction Potential	mV	140
UA	G213	C	2023/06/07	Oxidation Reduction Potential	mV	-1.50
UA	G213	C	2023/08/10	Oxidation Reduction Potential	mV	102
UA	G213	C	2023/11/16	Oxidation Reduction Potential	mV	84.0
UA	G213	C	2022/02/09	Eh	V	0.26
UA	G213	C	2022/05/11	Eh	V	0.26
UA	G213	C	2022/08/24	Eh	V	0.30
UA	G213	C	2022/11/08	Eh	V	0.34
UA	G213	C	2023/02/15	Eh	V	0.34
UA	G213	C	2023/06/07	Eh	V	0.19

UA	G213	C	2023/08/10	Eh	V	0.30
UA	G213	C	2023/11/16	Eh	V	0.28
UA	G213	C	2010/12/14	Alkalinity, bicarbonate	mg/L CaCO3	220
UA	G213	C	2011/01/26	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	G213	C	2011/03/10	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G213	C	2011/05/05	Alkalinity, bicarbonate	mg/L CaCO3	260
UA	G213	C	2011/07/26	Alkalinity, bicarbonate	mg/L CaCO3	1,200
UA	G213	C	2011/09/20	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G213	C	2012/01/30	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	G213	C	2013/02/04	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G213	C	2014/02/20	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G213	C	2014/08/11	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	G213	C	2014/10/15	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G213	C	2015/01/21	Alkalinity, bicarbonate	mg/L CaCO3	260
UA	G213	C	2015/04/09	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	G213	C	2023/02/15	Alkalinity, bicarbonate	mg/L CaCO3	250
UA	G213	C	2023/06/07	Alkalinity, bicarbonate	mg/L CaCO3	240
UA	G213	C	2023/08/10	Alkalinity, bicarbonate	mg/L CaCO3	228
UA	G213	C	2023/11/16	Alkalinity, bicarbonate	mg/L CaCO3	226
UA	G213	C	2010/11/18	Barium, total	mg/L	0.240
UA	G213	C	2011/01/26	Barium, total	mg/L	0.0480
UA	G213	C	2011/03/10	Barium, total	mg/L	0.0420
UA	G213	C	2011/05/05	Barium, total	mg/L	0.0420
UA	G213	C	2011/07/26	Barium, total	mg/L	0.0400
UA	G213	C	2011/09/20	Barium, total	mg/L	0.0490
UA	G213	C	2012/01/30	Barium, total	mg/L	0.0440
UA	G213	C	2013/02/04	Barium, total	mg/L	0.0510
UA	G213	C	2014/02/20	Barium, total	mg/L	0.120
UA	G213	C	2015/04/09	Barium, total	mg/L	0.0640
UA	G213	C	2015/07/22	Barium, total	mg/L	0.160
UA	G213	C	2015/10/07	Barium, total	mg/L	0.100
UA	G213	C	2020/10/13	Barium, total	mg/L	0.0470
UA	G213	C	2021/01/27	Barium, total	mg/L	0.0390
UA	G213	C	2021/05/19	Barium, total	mg/L	0.0590
UA	G213	C	2021/08/19	Barium, total	mg/L	0.0450
UA	G213	C	2021/10/27	Barium, total	mg/L	0.0490
UA	G213	C	2022/02/09	Barium, total	mg/L	0.0550
UA	G213	C	2022/05/11	Barium, total	mg/L	0.0530
UA	G213	C	2022/08/24	Barium, total	mg/L	0.0460
UA	G213	C	2022/11/08	Barium, total	mg/L	0.0430
UA	G213	C	2023/02/15	Barium, total	mg/L	0.0550
UA	G213	C	2023/06/07	Barium, total	mg/L	0.0540
UA	G213	C	2023/08/10	Barium, total	mg/L	0.0541
UA	G213	C	2023/11/16	Barium, total	mg/L	0.0469
UA	G213	C	2010/11/18	Calcium, total	mg/L	74.0
UA	G213	C	2011/01/26	Calcium, total	mg/L	65.0
UA	G213	C	2011/03/10	Calcium, total	mg/L	63.0
UA	G213	C	2011/05/05	Calcium, total	mg/L	<100
UA	G213	C	2011/07/26	Calcium, total	mg/L	62.0
UA	G213	C	2011/09/20	Calcium, total	mg/L	66.0

UA	G213	C	2011/11/11	Calcium, total	mg/L	64.0
UA	G213	C	2012/01/30	Calcium, total	mg/L	84.0
UA	G213	C	2012/05/23	Calcium, total	mg/L	63.0
UA	G213	C	2012/07/25	Calcium, total	mg/L	69.0
UA	G213	C	2012/11/15	Calcium, total	mg/L	72.0
UA	G213	C	2013/02/04	Calcium, total	mg/L	60.0
UA	G213	C	2013/05/20	Calcium, total	mg/L	66.0
UA	G213	C	2013/07/23	Calcium, total	mg/L	62.0
UA	G213	C	2013/10/14	Calcium, total	mg/L	63.0
UA	G213	C	2014/02/20	Calcium, total	mg/L	68.0
UA	G213	C	2014/05/14	Calcium, total	mg/L	75.0
UA	G213	C	2014/08/11	Calcium, total	mg/L	68.0
UA	G213	C	2014/10/15	Calcium, total	mg/L	64.0
UA	G213	C	2015/01/21	Calcium, total	mg/L	66.0
UA	G213	C	2015/04/09	Calcium, total	mg/L	70.0
UA	G213	C	2023/02/15	Calcium, total	mg/L	68.0
UA	G213	C	2023/06/07	Calcium, total	mg/L	65.0
UA	G213	C	2023/08/10	Calcium, total	mg/L	65.6
UA	G213	C	2023/11/16	Calcium, total	mg/L	64.7
UA	G213	C	2010/11/18	Chloride, total	mg/L	41.0
UA	G213	C	2011/01/26	Chloride, total	mg/L	40.0
UA	G213	C	2011/03/10	Chloride, total	mg/L	39.0
UA	G213	C	2011/05/05	Chloride, total	mg/L	40.0
UA	G213	C	2011/07/26	Chloride, total	mg/L	39.0
UA	G213	C	2011/09/20	Chloride, total	mg/L	40.0
UA	G213	C	2011/11/11	Chloride, total	mg/L	38.0
UA	G213	C	2012/01/30	Chloride, total	mg/L	38.0
UA	G213	C	2012/05/23	Chloride, total	mg/L	43.0
UA	G213	C	2012/07/25	Chloride, total	mg/L	37.0
UA	G213	C	2012/11/15	Chloride, total	mg/L	43.0
UA	G213	C	2013/02/04	Chloride, total	mg/L	40.0
UA	G213	C	2013/05/20	Chloride, total	mg/L	42.0
UA	G213	C	2013/07/23	Chloride, total	mg/L	56.0
UA	G213	C	2013/10/14	Chloride, total	mg/L	4.40
UA	G213	C	2014/02/20	Chloride, total	mg/L	42.0
UA	G213	C	2014/05/14	Chloride, total	mg/L	42.0
UA	G213	C	2014/08/11	Chloride, total	mg/L	41.0
UA	G213	C	2014/10/15	Chloride, total	mg/L	41.0
UA	G213	C	2015/01/21	Chloride, total	mg/L	44.0
UA	G213	C	2015/04/09	Chloride, total	mg/L	47.0
UA	G213	C	2015/07/22	Chloride, total	mg/L	42.0
UA	G213	C	2015/10/07	Chloride, total	mg/L	40.0
UA	G213	C	2020/10/13	Chloride, total	mg/L	44.0
UA	G213	C	2021/01/27	Chloride, total	mg/L	45.0
UA	G213	C	2021/05/19	Chloride, total	mg/L	41.0
UA	G213	C	2021/08/19	Chloride, total	mg/L	41.0
UA	G213	C	2021/10/27	Chloride, total	mg/L	40.0
UA	G213	C	2022/02/09	Chloride, total	mg/L	46.0
UA	G213	C	2022/05/11	Chloride, total	mg/L	45.0
UA	G213	C	2022/08/24	Chloride, total	mg/L	44.0

UA	G213	C	2022/11/08	Chloride, total	mg/L	44.0
UA	G213	C	2023/02/15	Chloride, total	mg/L	39.0
UA	G213	C	2023/06/07	Chloride, total	mg/L	45.0
UA	G213	C	2023/08/10	Chloride, total	mg/L	46.0
UA	G213	C	2023/11/16	Chloride, total	mg/L	52.0
UA	G213	C	2023/06/07	Ferrous Iron, dissolved	mg/L	0.0730
UA	G213	C	2010/11/18	Iron, dissolved	mg/L	<0.1
UA	G213	C	2011/01/26	Iron, dissolved	mg/L	<0.01
UA	G213	C	2011/03/10	Iron, dissolved	mg/L	0.0300
UA	G213	C	2011/05/05	Iron, dissolved	mg/L	<0.01
UA	G213	C	2011/07/26	Iron, dissolved	mg/L	<0.01
UA	G213	C	2011/09/20	Iron, dissolved	mg/L	<0.01
UA	G213	C	2011/11/11	Iron, dissolved	mg/L	<0.01
UA	G213	C	2012/01/30	Iron, dissolved	mg/L	0.0110
UA	G213	C	2012/05/23	Iron, dissolved	mg/L	0.0240
UA	G213	C	2012/07/25	Iron, dissolved	mg/L	<0.01
UA	G213	C	2012/11/15	Iron, dissolved	mg/L	0.0240
UA	G213	C	2013/02/04	Iron, dissolved	mg/L	0.0180
UA	G213	C	2013/05/20	Iron, dissolved	mg/L	0.0160
UA	G213	C	2013/07/23	Iron, dissolved	mg/L	0.0130
UA	G213	C	2013/10/14	Iron, dissolved	mg/L	0.0120
UA	G213	C	2014/02/20	Iron, dissolved	mg/L	0.0350
UA	G213	C	2014/05/14	Iron, dissolved	mg/L	0.0170
UA	G213	C	2014/08/11	Iron, dissolved	mg/L	0.0170
UA	G213	C	2014/10/15	Iron, dissolved	mg/L	0.0300
UA	G213	C	2015/01/21	Iron, dissolved	mg/L	0.0250
UA	G213	C	2015/04/09	Iron, dissolved	mg/L	0.0380
UA	G213	C	2015/07/22	Iron, dissolved	mg/L	<0.01
UA	G213	C	2015/10/07	Iron, dissolved	mg/L	0.0160
UA	G213	C	2016/02/09	Iron, dissolved	mg/L	0.0290
UA	G213	C	2016/05/11	Iron, dissolved	mg/L	<0.01
UA	G213	C	2016/07/26	Iron, dissolved	mg/L	0.0190
UA	G213	C	2016/11/23	Iron, dissolved	mg/L	0.0140
UA	G213	C	2017/02/14	Iron, dissolved	mg/L	<0.01
UA	G213	C	2017/05/21	Iron, dissolved	mg/L	0.0580
UA	G213	C	2017/07/24	Iron, dissolved	mg/L	0.0230
UA	G213	C	2017/10/31	Iron, dissolved	mg/L	0.140
UA	G213	C	2018/01/27	Iron, dissolved	mg/L	0.0570
UA	G213	C	2018/05/15	Iron, dissolved	mg/L	0.0150
UA	G213	C	2018/08/08	Iron, dissolved	mg/L	0.0380
UA	G213	C	2018/11/01	Iron, dissolved	mg/L	<0.1
UA	G213	C	2019/01/16	Iron, dissolved	mg/L	0.0130
UA	G213	C	2019/05/02	Iron, dissolved	mg/L	0.0290
UA	G213	C	2019/08/26	Iron, dissolved	mg/L	<0.01
UA	G213	C	2019/10/23	Iron, dissolved	mg/L	<0.01
UA	G213	C	2020/01/23	Iron, dissolved	mg/L	<0.01
UA	G213	C	2020/05/04	Iron, dissolved	mg/L	<0.01
UA	G213	C	2020/08/13	Iron, dissolved	mg/L	<0.01
UA	G213	C	2020/10/13	Iron, dissolved	mg/L	<0.01
UA	G213	C	2021/01/27	Iron, dissolved	mg/L	<0.01

UA	G213	C	2021/05/19	Iron, dissolved	mg/L	<0.01
UA	G213	C	2021/08/19	Iron, dissolved	mg/L	<0.01
UA	G213	C	2021/10/27	Iron, dissolved	mg/L	<0.01
UA	G213	C	2022/02/09	Iron, dissolved	mg/L	<0.01
UA	G213	C	2022/05/11	Iron, dissolved	mg/L	0.000860
UA	G213	C	2022/08/24	Iron, dissolved	mg/L	<0.00072
UA	G213	C	2022/11/08	Iron, dissolved	mg/L	0.00440
UA	G213	C	2023/02/15	Iron, dissolved	mg/L	<0.00072
UA	G213	C	2023/06/07	Iron, dissolved	mg/L	0.0210
UA	G213	C	2023/08/10	Iron, dissolved	mg/L	0.0220
UA	G213	C	2023/11/16	Iron, dissolved	mg/L	<0.0115
UA	G213	C	2010/11/18	Magnesium, total	mg/L	38.0
UA	G213	C	2011/01/26	Magnesium, total	mg/L	31.0
UA	G213	C	2011/03/10	Magnesium, total	mg/L	31.0
UA	G213	C	2011/05/05	Magnesium, total	mg/L	<100
UA	G213	C	2011/07/26	Magnesium, total	mg/L	31.0
UA	G213	C	2011/09/20	Magnesium, total	mg/L	30.0
UA	G213	C	2012/01/30	Magnesium, total	mg/L	32.0
UA	G213	C	2013/02/04	Magnesium, total	mg/L	30.0
UA	G213	C	2014/02/20	Magnesium, total	mg/L	32.0
UA	G213	C	2015/04/09	Magnesium, total	mg/L	34.0
UA	G213	C	2023/02/15	Magnesium, total	mg/L	29.0
UA	G213	C	2023/06/07	Magnesium, total	mg/L	30.0
UA	G213	C	2023/08/10	Magnesium, total	mg/L	29.3
UA	G213	C	2023/11/16	Magnesium, total	mg/L	30.1
UA	G213	C	2010/11/18	Manganese, dissolved	mg/L	0.0140
UA	G213	C	2011/01/26	Manganese, dissolved	mg/L	0.00710
UA	G213	C	2011/03/10	Manganese, dissolved	mg/L	0.00280
UA	G213	C	2011/05/05	Manganese, dissolved	mg/L	0.00320
UA	G213	C	2011/07/26	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2011/09/20	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2011/11/11	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2012/01/30	Manganese, dissolved	mg/L	0.00120
UA	G213	C	2012/05/23	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2012/07/25	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2012/11/15	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2013/02/04	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2013/05/20	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2013/07/23	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2013/10/14	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2014/02/20	Manganese, dissolved	mg/L	0.00110
UA	G213	C	2014/05/14	Manganese, dissolved	mg/L	0.0380
UA	G213	C	2014/08/11	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2014/10/15	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2015/01/21	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2015/04/09	Manganese, dissolved	mg/L	0.00250
UA	G213	C	2015/07/22	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2015/10/07	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2016/02/09	Manganese, dissolved	mg/L	0.00360
UA	G213	C	2016/05/11	Manganese, dissolved	mg/L	0.00220

UA	G213	C	2016/07/26	Manganese, dissolved	mg/L	0.00330
UA	G213	C	2016/11/23	Manganese, dissolved	mg/L	0.0170
UA	G213	C	2017/02/14	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2017/05/21	Manganese, dissolved	mg/L	0.0410
UA	G213	C	2017/07/24	Manganese, dissolved	mg/L	0.00670
UA	G213	C	2017/10/31	Manganese, dissolved	mg/L	0.00960
UA	G213	C	2018/01/27	Manganese, dissolved	mg/L	0.00600
UA	G213	C	2018/05/15	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2018/08/08	Manganese, dissolved	mg/L	0.0120
UA	G213	C	2018/11/01	Manganese, dissolved	mg/L	0.00140
UA	G213	C	2019/01/16	Manganese, dissolved	mg/L	0.0240
UA	G213	C	2019/05/02	Manganese, dissolved	mg/L	0.00120
UA	G213	C	2019/08/26	Manganese, dissolved	mg/L	0.00310
UA	G213	C	2019/10/23	Manganese, dissolved	mg/L	0.00110
UA	G213	C	2020/01/23	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2020/05/04	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2020/08/13	Manganese, dissolved	mg/L	0.00180
UA	G213	C	2020/10/13	Manganese, dissolved	mg/L	0.00190
UA	G213	C	2021/01/27	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2021/05/19	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2021/08/19	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2021/10/27	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2022/02/09	Manganese, dissolved	mg/L	<0.001
UA	G213	C	2022/05/11	Manganese, dissolved	mg/L	<0.00023
UA	G213	C	2022/08/24	Manganese, dissolved	mg/L	0.000660
UA	G213	C	2022/11/08	Manganese, dissolved	mg/L	0.000970
UA	G213	C	2023/02/15	Manganese, dissolved	mg/L	<0.00023
UA	G213	C	2023/06/07	Manganese, dissolved	mg/L	0.0210
UA	G213	C	2023/08/10	Manganese, dissolved	mg/L	0.00590
UA	G213	C	2023/11/16	Manganese, dissolved	mg/L	0.00470
UA	G213	C	2023/08/10	Phosphate, dissolved	mg/L	0.0250
UA	G213	C	2010/11/18	Potassium, total	mg/L	4.90
UA	G213	C	2011/01/26	Potassium, total	mg/L	0.580
UA	G213	C	2011/03/10	Potassium, total	mg/L	0.330
UA	G213	C	2011/05/05	Potassium, total	mg/L	0.420
UA	G213	C	2011/07/26	Potassium, total	mg/L	0.440
UA	G213	C	2011/09/20	Potassium, total	mg/L	0.640
UA	G213	C	2012/01/30	Potassium, total	mg/L	1.50
UA	G213	C	2013/02/04	Potassium, total	mg/L	0.570
UA	G213	C	2014/02/20	Potassium, total	mg/L	2.70
UA	G213	C	2015/04/09	Potassium, total	mg/L	0.700
UA	G213	C	2023/02/15	Potassium, total	mg/L	0.340
UA	G213	C	2023/06/07	Potassium, total	mg/L	0.370
UA	G213	C	2023/08/10	Potassium, total	mg/L	0.468
UA	G213	C	2023/11/16	Potassium, total	mg/L	0.429
UA	G213	C	2023/06/07	Silicon, dissolved	mg/L	9.00
UA	G213	C	2023/08/10	Silicon, dissolved	mg/L	8.38
UA	G213	C	2010/11/18	Sodium, total	mg/L	31.0
UA	G213	C	2011/01/26	Sodium, total	mg/L	42.0
UA	G213	C	2011/03/10	Sodium, total	mg/L	43.0

UA	G213	C	2011/05/05	Sodium, total	mg/L	<100
UA	G213	C	2011/07/26	Sodium, total	mg/L	43.0
UA	G213	C	2011/09/20	Sodium, total	mg/L	41.0
UA	G213	C	2012/01/30	Sodium, total	mg/L	72.0
UA	G213	C	2013/02/04	Sodium, total	mg/L	38.0
UA	G213	C	2014/02/20	Sodium, total	mg/L	44.0
UA	G213	C	2015/04/09	Sodium, total	mg/L	43.0
UA	G213	C	2023/02/15	Sodium, total	mg/L	34.0
UA	G213	C	2023/06/07	Sodium, total	mg/L	37.0
UA	G213	C	2023/08/10	Sodium, total	mg/L	36.6
UA	G213	C	2023/11/16	Sodium, total	mg/L	35.7
UA	G213	C	2010/11/18	Sulfate, total	mg/L	51.0
UA	G213	C	2011/01/26	Sulfate, total	mg/L	47.0
UA	G213	C	2011/03/10	Sulfate, total	mg/L	46.0
UA	G213	C	2011/05/05	Sulfate, total	mg/L	47.0
UA	G213	C	2011/07/26	Sulfate, total	mg/L	48.0
UA	G213	C	2011/09/20	Sulfate, total	mg/L	48.0
UA	G213	C	2011/11/11	Sulfate, total	mg/L	46.0
UA	G213	C	2012/01/30	Sulfate, total	mg/L	45.0
UA	G213	C	2012/05/23	Sulfate, total	mg/L	52.0
UA	G213	C	2012/07/25	Sulfate, total	mg/L	48.0
UA	G213	C	2012/11/15	Sulfate, total	mg/L	50.0
UA	G213	C	2013/02/04	Sulfate, total	mg/L	49.0
UA	G213	C	2013/05/20	Sulfate, total	mg/L	50.0
UA	G213	C	2013/07/23	Sulfate, total	mg/L	61.0
UA	G213	C	2013/10/14	Sulfate, total	mg/L	5.30
UA	G213	C	2014/02/20	Sulfate, total	mg/L	51.0
UA	G213	C	2014/05/14	Sulfate, total	mg/L	52.0
UA	G213	C	2014/08/11	Sulfate, total	mg/L	50.0
UA	G213	C	2014/10/15	Sulfate, total	mg/L	50.0
UA	G213	C	2015/01/21	Sulfate, total	mg/L	55.0
UA	G213	C	2015/04/09	Sulfate, total	mg/L	57.0
UA	G213	C	2015/07/22	Sulfate, total	mg/L	50.0
UA	G213	C	2015/10/07	Sulfate, total	mg/L	51.0
UA	G213	C	2020/10/13	Sulfate, total	mg/L	55.0
UA	G213	C	2021/01/27	Sulfate, total	mg/L	55.0
UA	G213	C	2021/05/19	Sulfate, total	mg/L	56.0
UA	G213	C	2021/08/19	Sulfate, total	mg/L	54.0
UA	G213	C	2021/10/27	Sulfate, total	mg/L	57.0
UA	G213	C	2022/02/09	Sulfate, total	mg/L	59.0
UA	G213	C	2022/05/11	Sulfate, total	mg/L	61.0
UA	G213	C	2022/08/24	Sulfate, total	mg/L	57.0
UA	G213	C	2022/11/08	Sulfate, total	mg/L	56.0
UA	G213	C	2023/02/15	Sulfate, total	mg/L	54.0
UA	G213	C	2023/06/07	Sulfate, total	mg/L	59.0
UA	G213	C	2023/08/10	Sulfate, total	mg/L	68.0
UA	G213	C	2023/11/16	Sulfate, total	mg/L	79.0
UA	G213	C	2022/02/09	Temperature (Celsius)	degrees C	12.2
UA	G213	C	2022/05/11	Temperature (Celsius)	degrees C	17.8
UA	G213	C	2022/08/24	Temperature (Celsius)	degrees C	18.9

UA	G213	C	2022/11/08	Temperature (Celsius)	degrees C	17.6
UA	G213	C	2023/02/15	Temperature (Celsius)	degrees C	13.4
UA	G213	C	2023/06/07	Temperature (Celsius)	degrees C	17.6
UA	G213	C	2023/08/10	Temperature (Celsius)	degrees C	17.6
UA	G213	C	2023/11/16	Temperature (Celsius)	degrees C	16.5
UA	G213	C	2010/11/18	Total Dissolved Solids	mg/L	400
UA	G213	C	2011/01/26	Total Dissolved Solids	mg/L	410
UA	G213	C	2011/03/10	Total Dissolved Solids	mg/L	410
UA	G213	C	2011/05/05	Total Dissolved Solids	mg/L	380
UA	G213	C	2011/07/26	Total Dissolved Solids	mg/L	390
UA	G213	C	2011/09/20	Total Dissolved Solids	mg/L	390
UA	G213	C	2011/11/11	Total Dissolved Solids	mg/L	390
UA	G213	C	2012/01/30	Total Dissolved Solids	mg/L	380
UA	G213	C	2012/05/23	Total Dissolved Solids	mg/L	390
UA	G213	C	2012/07/25	Total Dissolved Solids	mg/L	390
UA	G213	C	2012/11/15	Total Dissolved Solids	mg/L	410
UA	G213	C	2013/02/04	Total Dissolved Solids	mg/L	420
UA	G213	C	2013/05/20	Total Dissolved Solids	mg/L	380
UA	G213	C	2013/07/23	Total Dissolved Solids	mg/L	370
UA	G213	C	2013/10/14	Total Dissolved Solids	mg/L	380
UA	G213	C	2014/02/20	Total Dissolved Solids	mg/L	400
UA	G213	C	2014/05/14	Total Dissolved Solids	mg/L	460
UA	G213	C	2014/08/11	Total Dissolved Solids	mg/L	390
UA	G213	C	2014/10/15	Total Dissolved Solids	mg/L	400
UA	G213	C	2015/01/21	Total Dissolved Solids	mg/L	390
UA	G213	C	2015/04/09	Total Dissolved Solids	mg/L	420
UA	G213	C	2015/07/22	Total Dissolved Solids	mg/L	440
UA	G213	C	2015/10/07	Total Dissolved Solids	mg/L	400
UA	G213	C	2020/10/13	Total Dissolved Solids	mg/L	360
UA	G213	C	2021/01/27	Total Dissolved Solids	mg/L	400
UA	G213	C	2021/05/19	Total Dissolved Solids	mg/L	560
UA	G213	C	2021/08/19	Total Dissolved Solids	mg/L	410
UA	G213	C	2021/10/27	Total Dissolved Solids	mg/L	330
UA	G213	C	2022/02/09	Total Dissolved Solids	mg/L	360
UA	G213	C	2022/05/11	Total Dissolved Solids	mg/L	390
UA	G213	C	2022/08/24	Total Dissolved Solids	mg/L	470
UA	G213	C	2022/11/08	Total Dissolved Solids	mg/L	360
UA	G213	C	2023/02/15	Total Dissolved Solids	mg/L	510
UA	G213	C	2023/06/07	Total Dissolved Solids	mg/L	500
UA	G213	C	2023/08/10	Total Dissolved Solids	mg/L	402
UA	G213	C	2023/11/16	Total Dissolved Solids	mg/L	420
UA	G215	C	2010/11/18	pH (field)	SU	7.2
UA	G215	C	2011/01/27	pH (field)	SU	7.2
UA	G215	C	2011/03/10	pH (field)	SU	7.2
UA	G215	C	2011/05/05	pH (field)	SU	7.0
UA	G215	C	2011/07/26	pH (field)	SU	7.0
UA	G215	C	2011/09/20	pH (field)	SU	7.2
UA	G215	C	2011/11/11	pH (field)	SU	7.3
UA	G215	C	2012/01/26	pH (field)	SU	7.4
UA	G215	C	2012/05/23	pH (field)	SU	7.0

UA	G215	C	2012/07/25	pH (field)	SU	6.7
UA	G215	C	2012/11/15	pH (field)	SU	7.4
UA	G215	C	2013/02/04	pH (field)	SU	7.3
UA	G215	C	2013/05/21	pH (field)	SU	7.1
UA	G215	C	2013/07/23	pH (field)	SU	7.0
UA	G215	C	2013/10/15	pH (field)	SU	7.2
UA	G215	C	2014/02/20	pH (field)	SU	6.9
UA	G215	C	2014/05/14	pH (field)	SU	7.0
UA	G215	C	2014/08/12	pH (field)	SU	7.4
UA	G215	C	2014/10/15	pH (field)	SU	7.3
UA	G215	C	2015/01/21	pH (field)	SU	7.3
UA	G215	C	2015/04/09	pH (field)	SU	6.8
UA	G215	C	2015/07/22	pH (field)	SU	6.9
UA	G215	C	2015/10/07	pH (field)	SU	6.8
UA	G215	C	2015/11/24	pH (field)	SU	7.2
UA	G215	C	2016/02/18	pH (field)	SU	7.2
UA	G215	C	2016/05/11	pH (field)	SU	6.9
UA	G215	C	2016/07/30	pH (field)	SU	6.9
UA	G215	C	2016/11/23	pH (field)	SU	6.9
UA	G215	C	2017/02/18	pH (field)	SU	7.3
UA	G215	C	2017/05/22	pH (field)	SU	7.4
UA	G215	C	2017/07/15	pH (field)	SU	7.0
UA	G215	C	2017/10/31	pH (field)	SU	7.2
UA	G215	C	2018/05/15	pH (field)	SU	6.9
UA	G215	C	2018/11/02	pH (field)	SU	6.8
UA	G215	C	2019/01/16	pH (field)	SU	6.9
UA	G215	C	2019/08/14	pH (field)	SU	7.0
UA	G215	C	2020/01/22	pH (field)	SU	7.1
UA	G215	C	2020/08/13	pH (field)	SU	7.2
UA	G215	C	2020/10/14	pH (field)	SU	7.0
UA	G215	C	2021/01/26	pH (field)	SU	6.8
UA	G215	C	2021/05/19	pH (field)	SU	7.0
UA	G215	C	2021/06/29	pH (field)	SU	7.1
UA	G215	C	2021/08/19	pH (field)	SU	7.0
UA	G215	C	2021/10/27	pH (field)	SU	7.0
UA	G215	C	2021/11/29	pH (field)	SU	6.9
UA	G215	C	2022/02/09	pH (field)	SU	6.9
UA	G215	C	2022/05/11	pH (field)	SU	7.0
UA	G215	C	2022/08/23	pH (field)	SU	6.8
UA	G215	C	2022/11/07	pH (field)	SU	6.9
UA	G215	C	2023/02/15	pH (field)	SU	7.1
UA	G215	C	2023/06/01	pH (field)	SU	7.0
UA	G215	C	2023/08/10	pH (field)	SU	7.0
UA	G215	C	2023/11/16	pH (field)	SU	6.9
UA	G215	C	2015/11/24	Oxidation Reduction Potential	mV	-59.0
UA	G215	C	2016/02/18	Oxidation Reduction Potential	mV	-2.00
UA	G215	C	2016/05/11	Oxidation Reduction Potential	mV	5.00
UA	G215	C	2016/07/30	Oxidation Reduction Potential	mV	56.0
UA	G215	C	2016/11/23	Oxidation Reduction Potential	mV	61.0
UA	G215	C	2017/02/18	Oxidation Reduction Potential	mV	71.0

UA	G215	C	2017/05/22	Oxidation Reduction Potential	mV	84.0
UA	G215	C	2017/07/15	Oxidation Reduction Potential	mV	61.0
UA	G215	C	2017/10/31	Oxidation Reduction Potential	mV	129
UA	G215	C	2018/05/15	Oxidation Reduction Potential	mV	42.0
UA	G215	C	2018/11/02	Oxidation Reduction Potential	mV	52.0
UA	G215	C	2019/01/16	Oxidation Reduction Potential	mV	61.0
UA	G215	C	2019/08/14	Oxidation Reduction Potential	mV	56.0
UA	G215	C	2020/01/22	Oxidation Reduction Potential	mV	0.500
UA	G215	C	2020/08/13	Oxidation Reduction Potential	mV	-35.2
UA	G215	C	2021/01/26	Oxidation Reduction Potential	mV	-2.90
UA	G215	C	2021/06/29	Oxidation Reduction Potential	mV	-34.2
UA	G215	C	2021/08/19	Oxidation Reduction Potential	mV	-26.4
UA	G215	C	2021/11/29	Oxidation Reduction Potential	mV	-14.2
UA	G215	C	2022/02/09	Oxidation Reduction Potential	mV	26.2
UA	G215	C	2022/05/11	Oxidation Reduction Potential	mV	-11.7
UA	G215	C	2022/08/23	Oxidation Reduction Potential	mV	-40.0
UA	G215	C	2022/11/07	Oxidation Reduction Potential	mV	7.80
UA	G215	C	2023/02/15	Oxidation Reduction Potential	mV	-31.0
UA	G215	C	2023/06/01	Oxidation Reduction Potential	mV	-16.0
UA	G215	C	2023/08/10	Oxidation Reduction Potential	mV	93.0
UA	G215	C	2023/11/16	Oxidation Reduction Potential	mV	-12.0
UA	G215	C	2015/11/24	Eh	V	0.14
UA	G215	C	2016/02/18	Eh	V	0.19
UA	G215	C	2016/05/11	Eh	V	0.20
UA	G215	C	2016/07/30	Eh	V	0.25
UA	G215	C	2016/11/23	Eh	V	0.26
UA	G215	C	2017/02/18	Eh	V	0.27
UA	G215	C	2017/05/22	Eh	V	0.28
UA	G215	C	2017/07/15	Eh	V	0.25
UA	G215	C	2017/10/31	Eh	V	0.33
UA	G215	C	2018/05/15	Eh	V	0.24
UA	G215	C	2018/11/02	Eh	V	0.25
UA	G215	C	2019/01/16	Eh	V	0.26
UA	G215	C	2019/08/14	Eh	V	0.25
UA	G215	C	2020/01/22	Eh	V	0.20
UA	G215	C	2020/08/13	Eh	V	0.16
UA	G215	C	2021/01/26	Eh	V	0.19
UA	G215	C	2021/06/29	Eh	V	0.16
UA	G215	C	2021/08/19	Eh	V	0.16
UA	G215	C	2021/11/29	Eh	V	0.18
UA	G215	C	2022/02/09	Eh	V	0.22
UA	G215	C	2022/05/11	Eh	V	0.18
UA	G215	C	2022/08/23	Eh	V	0.15
UA	G215	C	2022/11/07	Eh	V	0.20
UA	G215	C	2023/02/15	Eh	V	0.17
UA	G215	C	2023/06/01	Eh	V	0.18
UA	G215	C	2023/08/10	Eh	V	0.29
UA	G215	C	2023/11/16	Eh	V	0.18
UA	G215	C	2010/12/21	Alkalinity, bicarbonate	mg/L CaCO3	280
UA	G215	C	2011/01/27	Alkalinity, bicarbonate	mg/L CaCO3	340

UA	G215	C	2011/03/10	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	G215	C	2011/05/05	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	G215	C	2011/07/26	Alkalinity, bicarbonate	mg/L CaCO3	1,800
UA	G215	C	2011/09/20	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	G215	C	2012/01/26	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G215	C	2013/02/04	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G215	C	2014/02/20	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G215	C	2014/08/12	Alkalinity, bicarbonate	mg/L CaCO3	330
UA	G215	C	2014/10/15	Alkalinity, bicarbonate	mg/L CaCO3	330
UA	G215	C	2015/01/21	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	G215	C	2015/04/09	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	G215	C	2017/07/15	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G215	C	2020/01/22	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G215	C	2020/08/13	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G215	C	2021/01/26	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G215	C	2021/08/19	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G215	C	2022/02/09	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G215	C	2022/05/11	Alkalinity, bicarbonate	mg/L CaCO3	450
UA	G215	C	2022/08/23	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G215	C	2023/02/15	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	G215	C	2023/06/01	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	G215	C	2023/08/10	Alkalinity, bicarbonate	mg/L CaCO3	333
UA	G215	C	2023/11/16	Alkalinity, bicarbonate	mg/L CaCO3	343
UA	G215	C	2022/08/23	Alkalinity, carbonate	mg/L CaCO3	10.0
UA	G215	C	2010/11/18	Barium, total	mg/L	0.140
UA	G215	C	2011/01/27	Barium, total	mg/L	0.0880
UA	G215	C	2011/03/10	Barium, total	mg/L	0.0830
UA	G215	C	2011/05/05	Barium, total	mg/L	0.0880
UA	G215	C	2011/07/26	Barium, total	mg/L	0.0950
UA	G215	C	2011/09/20	Barium, total	mg/L	0.0950
UA	G215	C	2012/01/26	Barium, total	mg/L	0.0890
UA	G215	C	2013/02/04	Barium, total	mg/L	0.0850
UA	G215	C	2014/02/20	Barium, total	mg/L	0.110
UA	G215	C	2015/04/09	Barium, total	mg/L	0.170
UA	G215	C	2015/07/22	Barium, total	mg/L	0.170
UA	G215	C	2015/10/07	Barium, total	mg/L	0.150
UA	G215	C	2015/11/24	Barium, total	mg/L	0.230
UA	G215	C	2016/02/18	Barium, total	mg/L	0.0950
UA	G215	C	2016/05/11	Barium, total	mg/L	0.0880
UA	G215	C	2016/07/30	Barium, total	mg/L	0.0960
UA	G215	C	2016/11/23	Barium, total	mg/L	0.0820
UA	G215	C	2017/02/18	Barium, total	mg/L	0.0950
UA	G215	C	2017/05/22	Barium, total	mg/L	0.150
UA	G215	C	2017/07/15	Barium, total	mg/L	0.130
UA	G215	C	2020/10/14	Barium, total	mg/L	0.120
UA	G215	C	2021/01/26	Barium, total	mg/L	0.100
UA	G215	C	2021/05/19	Barium, total	mg/L	0.0840
UA	G215	C	2021/08/19	Barium, total	mg/L	0.0580
UA	G215	C	2021/10/27	Barium, total	mg/L	0.0540
UA	G215	C	2022/02/09	Barium, total	mg/L	0.0510

UA	G215	C	2022/05/11	Barium, total	mg/L	0.0440
UA	G215	C	2022/08/23	Barium, total	mg/L	0.0440
UA	G215	C	2022/11/07	Barium, total	mg/L	0.0430
UA	G215	C	2023/02/15	Barium, total	mg/L	0.0410
UA	G215	C	2023/06/01	Barium, total	mg/L	0.0450
UA	G215	C	2023/08/10	Barium, total	mg/L	0.0402
UA	G215	C	2023/11/16	Barium, total	mg/L	0.0585
UA	G215	C	2010/11/18	Calcium, total	mg/L	130
UA	G215	C	2011/01/27	Calcium, total	mg/L	96.0
UA	G215	C	2011/03/10	Calcium, total	mg/L	85.0
UA	G215	C	2011/05/05	Calcium, total	mg/L	<100
UA	G215	C	2011/07/26	Calcium, total	mg/L	84.0
UA	G215	C	2011/09/20	Calcium, total	mg/L	91.0
UA	G215	C	2011/11/11	Calcium, total	mg/L	84.0
UA	G215	C	2012/01/26	Calcium, total	mg/L	86.0
UA	G215	C	2012/05/23	Calcium, total	mg/L	95.0
UA	G215	C	2012/07/25	Calcium, total	mg/L	91.0
UA	G215	C	2012/11/15	Calcium, total	mg/L	90.0
UA	G215	C	2013/02/04	Calcium, total	mg/L	87.0
UA	G215	C	2013/05/21	Calcium, total	mg/L	89.0
UA	G215	C	2013/07/23	Calcium, total	mg/L	88.0
UA	G215	C	2013/10/15	Calcium, total	mg/L	98.0
UA	G215	C	2014/02/20	Calcium, total	mg/L	96.0
UA	G215	C	2014/05/14	Calcium, total	mg/L	120
UA	G215	C	2014/08/12	Calcium, total	mg/L	100
UA	G215	C	2014/10/15	Calcium, total	mg/L	110
UA	G215	C	2015/01/21	Calcium, total	mg/L	110
UA	G215	C	2015/04/09	Calcium, total	mg/L	120
UA	G215	C	2015/11/24	Calcium, total	mg/L	110
UA	G215	C	2016/02/18	Calcium, total	mg/L	100
UA	G215	C	2016/05/11	Calcium, total	mg/L	89.0
UA	G215	C	2016/07/30	Calcium, total	mg/L	89.0
UA	G215	C	2016/11/23	Calcium, total	mg/L	68.0
UA	G215	C	2017/02/18	Calcium, total	mg/L	86.0
UA	G215	C	2017/05/22	Calcium, total	mg/L	82.0
UA	G215	C	2017/07/15	Calcium, total	mg/L	79.0
UA	G215	C	2017/10/31	Calcium, total	mg/L	90.0
UA	G215	C	2018/05/15	Calcium, total	mg/L	130
UA	G215	C	2018/11/02	Calcium, total	mg/L	120
UA	G215	C	2019/01/16	Calcium, total	mg/L	120
UA	G215	C	2019/08/14	Calcium, total	mg/L	100
UA	G215	C	2020/01/22	Calcium, total	mg/L	99.0
UA	G215	C	2020/08/13	Calcium, total	mg/L	110
UA	G215	C	2021/01/26	Calcium, total	mg/L	180
UA	G215	C	2021/06/29	Calcium, total	mg/L	180
UA	G215	C	2021/08/19	Calcium, total	mg/L	180
UA	G215	C	2022/02/09	Calcium, total	mg/L	190
UA	G215	C	2022/05/11	Calcium, total	mg/L	200
UA	G215	C	2022/08/23	Calcium, total	mg/L	190
UA	G215	C	2023/02/15	Calcium, total	mg/L	200

UA	G215	C	2023/06/01	Calcium, total	mg/L	180
UA	G215	C	2023/08/10	Calcium, total	mg/L	171
UA	G215	C	2023/11/16	Calcium, total	mg/L	180
UA	G215	C	2010/11/18	Chloride, total	mg/L	73.0
UA	G215	C	2011/01/27	Chloride, total	mg/L	78.0
UA	G215	C	2011/03/10	Chloride, total	mg/L	63.0
UA	G215	C	2011/05/05	Chloride, total	mg/L	68.0
UA	G215	C	2011/07/26	Chloride, total	mg/L	69.0
UA	G215	C	2011/09/20	Chloride, total	mg/L	61.0
UA	G215	C	2011/11/11	Chloride, total	mg/L	56.0
UA	G215	C	2012/01/26	Chloride, total	mg/L	56.0
UA	G215	C	2012/05/23	Chloride, total	mg/L	41.0
UA	G215	C	2012/07/25	Chloride, total	mg/L	40.0
UA	G215	C	2012/11/15	Chloride, total	mg/L	41.0
UA	G215	C	2013/02/04	Chloride, total	mg/L	43.0
UA	G215	C	2013/05/21	Chloride, total	mg/L	38.0
UA	G215	C	2013/07/23	Chloride, total	mg/L	44.0
UA	G215	C	2013/10/15	Chloride, total	mg/L	48.0
UA	G215	C	2014/02/20	Chloride, total	mg/L	56.0
UA	G215	C	2014/05/14	Chloride, total	mg/L	50.0
UA	G215	C	2014/08/12	Chloride, total	mg/L	52.0
UA	G215	C	2014/10/15	Chloride, total	mg/L	54.0
UA	G215	C	2015/01/21	Chloride, total	mg/L	60.0
UA	G215	C	2015/04/09	Chloride, total	mg/L	53.0
UA	G215	C	2015/07/22	Chloride, total	mg/L	45.0
UA	G215	C	2015/10/07	Chloride, total	mg/L	46.0
UA	G215	C	2015/11/24	Chloride, total	mg/L	47.0
UA	G215	C	2016/02/18	Chloride, total	mg/L	52.0
UA	G215	C	2016/05/11	Chloride, total	mg/L	43.0
UA	G215	C	2016/07/30	Chloride, total	mg/L	47.0
UA	G215	C	2016/11/23	Chloride, total	mg/L	48.0
UA	G215	C	2017/02/18	Chloride, total	mg/L	46.0
UA	G215	C	2017/05/22	Chloride, total	mg/L	42.0
UA	G215	C	2017/07/15	Chloride, total	mg/L	55.0
UA	G215	C	2017/10/31	Chloride, total	mg/L	48.0
UA	G215	C	2018/05/15	Chloride, total	mg/L	70.0
UA	G215	C	2018/11/02	Chloride, total	mg/L	55.0
UA	G215	C	2019/01/16	Chloride, total	mg/L	61.0
UA	G215	C	2019/08/14	Chloride, total	mg/L	49.0
UA	G215	C	2020/01/22	Chloride, total	mg/L	48.0
UA	G215	C	2020/08/13	Chloride, total	mg/L	70.0
UA	G215	C	2020/10/14	Chloride, total	mg/L	8.00
UA	G215	C	2021/01/26	Chloride, total	mg/L	120
UA	G215	C	2021/05/19	Chloride, total	mg/L	130
UA	G215	C	2021/06/29	Chloride, total	mg/L	110
UA	G215	C	2021/08/19	Chloride, total	mg/L	110
UA	G215	C	2021/10/27	Chloride, total	mg/L	140
UA	G215	C	2022/02/09	Chloride, total	mg/L	130
UA	G215	C	2022/05/11	Chloride, total	mg/L	130
UA	G215	C	2022/08/23	Chloride, total	mg/L	150

UA	G215	C	2022/11/07	Chloride, total	mg/L	120
UA	G215	C	2023/02/15	Chloride, total	mg/L	130
UA	G215	C	2023/06/01	Chloride, total	mg/L	130
UA	G215	C	2023/08/10	Chloride, total	mg/L	127
UA	G215	C	2023/11/16	Chloride, total	mg/L	138
UA	G215	C	2023/06/01	Ferrous Iron, dissolved	mg/L	0.920
UA	G215	C	2010/11/18	Iron, dissolved	mg/L	<0.1
UA	G215	C	2011/01/27	Iron, dissolved	mg/L	<0.01
UA	G215	C	2011/03/10	Iron, dissolved	mg/L	0.0220
UA	G215	C	2011/05/05	Iron, dissolved	mg/L	0.0960
UA	G215	C	2011/07/26	Iron, dissolved	mg/L	0.150
UA	G215	C	2011/09/20	Iron, dissolved	mg/L	0.200
UA	G215	C	2011/11/11	Iron, dissolved	mg/L	0.280
UA	G215	C	2012/01/26	Iron, dissolved	mg/L	0.430
UA	G215	C	2012/05/23	Iron, dissolved	mg/L	0.160
UA	G215	C	2012/07/25	Iron, dissolved	mg/L	0.400
UA	G215	C	2012/11/15	Iron, dissolved	mg/L	1.20
UA	G215	C	2013/02/04	Iron, dissolved	mg/L	0.260
UA	G215	C	2013/05/21	Iron, dissolved	mg/L	0.210
UA	G215	C	2013/07/23	Iron, dissolved	mg/L	3.20
UA	G215	C	2013/10/15	Iron, dissolved	mg/L	0.230
UA	G215	C	2014/02/20	Iron, dissolved	mg/L	0.300
UA	G215	C	2014/05/14	Iron, dissolved	mg/L	0.310
UA	G215	C	2014/08/12	Iron, dissolved	mg/L	0.380
UA	G215	C	2014/10/15	Iron, dissolved	mg/L	0.440
UA	G215	C	2015/01/21	Iron, dissolved	mg/L	0.490
UA	G215	C	2015/04/09	Iron, dissolved	mg/L	0.0760
UA	G215	C	2015/07/22	Iron, dissolved	mg/L	0.250
UA	G215	C	2015/10/07	Iron, dissolved	mg/L	0.390
UA	G215	C	2016/02/18	Iron, dissolved	mg/L	0.460
UA	G215	C	2016/05/11	Iron, dissolved	mg/L	0.0250
UA	G215	C	2016/07/25	Iron, dissolved	mg/L	0.240
UA	G215	C	2016/11/23	Iron, dissolved	mg/L	0.490
UA	G215	C	2017/02/14	Iron, dissolved	mg/L	2.90
UA	G215	C	2017/05/24	Iron, dissolved	mg/L	0.170
UA	G215	C	2017/07/25	Iron, dissolved	mg/L	0.150
UA	G215	C	2017/10/31	Iron, dissolved	mg/L	6.10
UA	G215	C	2018/01/27	Iron, dissolved	mg/L	2.60
UA	G215	C	2018/05/15	Iron, dissolved	mg/L	1.20
UA	G215	C	2018/08/08	Iron, dissolved	mg/L	0.610
UA	G215	C	2018/11/02	Iron, dissolved	mg/L	0.760
UA	G215	C	2019/01/16	Iron, dissolved	mg/L	0.0280
UA	G215	C	2019/05/02	Iron, dissolved	mg/L	0.0290
UA	G215	C	2019/08/14	Iron, dissolved	mg/L	0.520
UA	G215	C	2019/10/23	Iron, dissolved	mg/L	0.510
UA	G215	C	2020/01/22	Iron, dissolved	mg/L	0.300
UA	G215	C	2020/05/04	Iron, dissolved	mg/L	0.370
UA	G215	C	2020/08/13	Iron, dissolved	mg/L	<0.01
UA	G215	C	2020/10/14	Iron, dissolved	mg/L	0.830
UA	G215	C	2021/01/26	Iron, dissolved	mg/L	1.20

UA	G215	C	2021/05/19	Iron, dissolved	mg/L	0.590
UA	G215	C	2021/08/19	Iron, dissolved	mg/L	1.10
UA	G215	C	2021/10/27	Iron, dissolved	mg/L	<0.01
UA	G215	C	2022/02/09	Iron, dissolved	mg/L	0.870
UA	G215	C	2022/05/11	Iron, dissolved	mg/L	0.620
UA	G215	C	2022/08/23	Iron, dissolved	mg/L	0.890
UA	G215	C	2022/11/07	Iron, dissolved	mg/L	1.00
UA	G215	C	2023/02/15	Iron, dissolved	mg/L	1.00
UA	G215	C	2023/06/01	Iron, dissolved	mg/L	0.720
UA	G215	C	2023/08/10	Iron, dissolved	mg/L	0.882
UA	G215	C	2023/11/16	Iron, dissolved	mg/L	0.700
UA	G215	C	2010/11/18	Magnesium, total	mg/L	45.0
UA	G215	C	2011/01/27	Magnesium, total	mg/L	36.0
UA	G215	C	2011/03/10	Magnesium, total	mg/L	36.0
UA	G215	C	2011/05/05	Magnesium, total	mg/L	<100
UA	G215	C	2011/07/26	Magnesium, total	mg/L	38.0
UA	G215	C	2011/09/20	Magnesium, total	mg/L	38.0
UA	G215	C	2012/01/26	Magnesium, total	mg/L	39.0
UA	G215	C	2013/02/04	Magnesium, total	mg/L	38.0
UA	G215	C	2014/02/20	Magnesium, total	mg/L	44.0
UA	G215	C	2015/04/09	Magnesium, total	mg/L	50.0
UA	G215	C	2017/07/15	Magnesium, total	mg/L	35.0
UA	G215	C	2020/01/22	Magnesium, total	mg/L	41.0
UA	G215	C	2020/08/13	Magnesium, total	mg/L	45.0
UA	G215	C	2021/01/26	Magnesium, total	mg/L	74.0
UA	G215	C	2021/08/19	Magnesium, total	mg/L	84.0
UA	G215	C	2022/02/09	Magnesium, total	mg/L	89.0
UA	G215	C	2022/05/11	Magnesium, total	mg/L	90.0
UA	G215	C	2022/08/23	Magnesium, total	mg/L	93.0
UA	G215	C	2023/02/15	Magnesium, total	mg/L	89.0
UA	G215	C	2023/06/01	Magnesium, total	mg/L	88.0
UA	G215	C	2023/08/10	Magnesium, total	mg/L	86.5
UA	G215	C	2023/11/16	Magnesium, total	mg/L	95.3
UA	G215	C	2010/11/18	Manganese, dissolved	mg/L	0.430
UA	G215	C	2011/01/27	Manganese, dissolved	mg/L	0.230
UA	G215	C	2011/03/10	Manganese, dissolved	mg/L	0.320
UA	G215	C	2011/05/05	Manganese, dissolved	mg/L	0.240
UA	G215	C	2011/07/26	Manganese, dissolved	mg/L	0.310
UA	G215	C	2011/09/20	Manganese, dissolved	mg/L	0.310
UA	G215	C	2011/11/11	Manganese, dissolved	mg/L	0.300
UA	G215	C	2012/01/26	Manganese, dissolved	mg/L	0.280
UA	G215	C	2012/05/23	Manganese, dissolved	mg/L	0.180
UA	G215	C	2012/07/25	Manganese, dissolved	mg/L	0.310
UA	G215	C	2012/11/15	Manganese, dissolved	mg/L	0.340
UA	G215	C	2013/02/04	Manganese, dissolved	mg/L	0.180
UA	G215	C	2013/05/21	Manganese, dissolved	mg/L	0.130
UA	G215	C	2013/07/23	Manganese, dissolved	mg/L	0.350
UA	G215	C	2013/10/15	Manganese, dissolved	mg/L	0.180
UA	G215	C	2014/02/20	Manganese, dissolved	mg/L	0.320
UA	G215	C	2014/05/14	Manganese, dissolved	mg/L	0.320

UA	G215	C	2014/08/12	Manganese, dissolved	mg/L	0.270
UA	G215	C	2014/10/15	Manganese, dissolved	mg/L	0.260
UA	G215	C	2015/01/21	Manganese, dissolved	mg/L	0.290
UA	G215	C	2015/04/09	Manganese, dissolved	mg/L	0.240
UA	G215	C	2015/07/22	Manganese, dissolved	mg/L	0.790
UA	G215	C	2015/10/07	Manganese, dissolved	mg/L	0.240
UA	G215	C	2016/02/18	Manganese, dissolved	mg/L	0.260
UA	G215	C	2016/05/11	Manganese, dissolved	mg/L	0.290
UA	G215	C	2016/07/25	Manganese, dissolved	mg/L	0.120
UA	G215	C	2016/11/23	Manganese, dissolved	mg/L	0.230
UA	G215	C	2017/02/14	Manganese, dissolved	mg/L	0.120
UA	G215	C	2017/05/24	Manganese, dissolved	mg/L	0.140
UA	G215	C	2017/07/25	Manganese, dissolved	mg/L	0.0680
UA	G215	C	2017/10/31	Manganese, dissolved	mg/L	0.210
UA	G215	C	2018/01/27	Manganese, dissolved	mg/L	0.290
UA	G215	C	2018/05/15	Manganese, dissolved	mg/L	0.330
UA	G215	C	2018/08/08	Manganese, dissolved	mg/L	0.320
UA	G215	C	2018/11/02	Manganese, dissolved	mg/L	0.340
UA	G215	C	2019/01/16	Manganese, dissolved	mg/L	0.280
UA	G215	C	2019/05/02	Manganese, dissolved	mg/L	0.310
UA	G215	C	2019/08/14	Manganese, dissolved	mg/L	0.280
UA	G215	C	2019/10/23	Manganese, dissolved	mg/L	0.260
UA	G215	C	2020/01/22	Manganese, dissolved	mg/L	0.280
UA	G215	C	2020/05/04	Manganese, dissolved	mg/L	0.260
UA	G215	C	2020/08/13	Manganese, dissolved	mg/L	<0.001
UA	G215	C	2020/10/14	Manganese, dissolved	mg/L	0.410
UA	G215	C	2021/01/26	Manganese, dissolved	mg/L	0.500
UA	G215	C	2021/05/19	Manganese, dissolved	mg/L	0.530
UA	G215	C	2021/08/19	Manganese, dissolved	mg/L	0.510
UA	G215	C	2021/10/27	Manganese, dissolved	mg/L	<0.001
UA	G215	C	2022/02/09	Manganese, dissolved	mg/L	0.560
UA	G215	C	2022/05/11	Manganese, dissolved	mg/L	0.590
UA	G215	C	2022/08/23	Manganese, dissolved	mg/L	0.550
UA	G215	C	2022/11/07	Manganese, dissolved	mg/L	0.580
UA	G215	C	2023/02/15	Manganese, dissolved	mg/L	0.590
UA	G215	C	2023/06/01	Manganese, dissolved	mg/L	0.520
UA	G215	C	2023/08/10	Manganese, dissolved	mg/L	0.605
UA	G215	C	2023/11/16	Manganese, dissolved	mg/L	0.489
UA	G215	C	2023/08/10	Phosphate, dissolved	mg/L	0.0150
UA	G215	C	2010/11/18	Potassium, total	mg/L	5.10
UA	G215	C	2011/01/27	Potassium, total	mg/L	2.20
UA	G215	C	2011/03/10	Potassium, total	mg/L	1.20
UA	G215	C	2011/05/05	Potassium, total	mg/L	0.710
UA	G215	C	2011/07/26	Potassium, total	mg/L	1.10
UA	G215	C	2011/09/20	Potassium, total	mg/L	0.640
UA	G215	C	2012/01/26	Potassium, total	mg/L	0.530
UA	G215	C	2013/02/04	Potassium, total	mg/L	0.470
UA	G215	C	2014/02/20	Potassium, total	mg/L	0.640
UA	G215	C	2015/04/09	Potassium, total	mg/L	0.530
UA	G215	C	2017/07/15	Potassium, total	mg/L	0.490

UA	G215	C	2020/01/22	Potassium, total	mg/L	0.430
UA	G215	C	2020/08/13	Potassium, total	mg/L	0.360
UA	G215	C	2021/01/26	Potassium, total	mg/L	0.600
UA	G215	C	2021/08/19	Potassium, total	mg/L	0.780
UA	G215	C	2022/02/09	Potassium, total	mg/L	1.30
UA	G215	C	2022/05/11	Potassium, total	mg/L	1.80
UA	G215	C	2022/08/23	Potassium, total	mg/L	3.10
UA	G215	C	2023/02/15	Potassium, total	mg/L	4.10
UA	G215	C	2023/06/01	Potassium, total	mg/L	4.20
UA	G215	C	2023/08/10	Potassium, total	mg/L	4.50
UA	G215	C	2023/11/16	Potassium, total	mg/L	4.73
UA	G215	C	2023/06/01	Silicon, dissolved	mg/L	6.80
UA	G215	C	2023/08/10	Silicon, dissolved	mg/L	6.28
UA	G215	C	2010/11/18	Sodium, total	mg/L	54.0
UA	G215	C	2011/01/27	Sodium, total	mg/L	59.0
UA	G215	C	2011/03/10	Sodium, total	mg/L	63.0
UA	G215	C	2011/05/05	Sodium, total	mg/L	<100
UA	G215	C	2011/07/26	Sodium, total	mg/L	64.0
UA	G215	C	2011/09/20	Sodium, total	mg/L	63.0
UA	G215	C	2012/01/26	Sodium, total	mg/L	59.0
UA	G215	C	2013/02/04	Sodium, total	mg/L	50.0
UA	G215	C	2014/02/20	Sodium, total	mg/L	57.0
UA	G215	C	2015/04/09	Sodium, total	mg/L	63.0
UA	G215	C	2017/07/15	Sodium, total	mg/L	43.0
UA	G215	C	2020/01/22	Sodium, total	mg/L	55.0
UA	G215	C	2020/08/13	Sodium, total	mg/L	61.0
UA	G215	C	2021/01/26	Sodium, total	mg/L	87.0
UA	G215	C	2021/08/19	Sodium, total	mg/L	89.0
UA	G215	C	2022/02/09	Sodium, total	mg/L	100
UA	G215	C	2022/05/11	Sodium, total	mg/L	93.0
UA	G215	C	2022/08/23	Sodium, total	mg/L	98.0
UA	G215	C	2023/02/15	Sodium, total	mg/L	90.0
UA	G215	C	2023/06/01	Sodium, total	mg/L	96.0
UA	G215	C	2023/08/10	Sodium, total	mg/L	91.8
UA	G215	C	2023/11/16	Sodium, total	mg/L	95.4
UA	G215	C	2010/11/18	Sulfate, total	mg/L	61.0
UA	G215	C	2011/01/27	Sulfate, total	mg/L	71.0
UA	G215	C	2011/03/10	Sulfate, total	mg/L	57.0
UA	G215	C	2011/05/05	Sulfate, total	mg/L	56.0
UA	G215	C	2011/07/26	Sulfate, total	mg/L	66.0
UA	G215	C	2011/09/20	Sulfate, total	mg/L	78.0
UA	G215	C	2011/11/11	Sulfate, total	mg/L	88.0
UA	G215	C	2012/01/26	Sulfate, total	mg/L	97.0
UA	G215	C	2012/05/23	Sulfate, total	mg/L	91.0
UA	G215	C	2012/07/25	Sulfate, total	mg/L	110
UA	G215	C	2012/11/15	Sulfate, total	mg/L	110
UA	G215	C	2013/02/04	Sulfate, total	mg/L	120
UA	G215	C	2013/05/21	Sulfate, total	mg/L	100
UA	G215	C	2013/07/23	Sulfate, total	mg/L	110
UA	G215	C	2013/10/15	Sulfate, total	mg/L	130

UA	G215	C	2014/02/20	Sulfate, total	mg/L	160
UA	G215	C	2014/05/14	Sulfate, total	mg/L	130
UA	G215	C	2014/08/12	Sulfate, total	mg/L	140
UA	G215	C	2014/10/15	Sulfate, total	mg/L	130
UA	G215	C	2015/01/21	Sulfate, total	mg/L	170
UA	G215	C	2015/04/09	Sulfate, total	mg/L	140
UA	G215	C	2015/07/22	Sulfate, total	mg/L	110
UA	G215	C	2015/10/07	Sulfate, total	mg/L	110
UA	G215	C	2015/11/24	Sulfate, total	mg/L	110
UA	G215	C	2016/02/18	Sulfate, total	mg/L	130
UA	G215	C	2016/05/11	Sulfate, total	mg/L	110
UA	G215	C	2016/07/30	Sulfate, total	mg/L	110
UA	G215	C	2016/11/23	Sulfate, total	mg/L	100
UA	G215	C	2017/02/18	Sulfate, total	mg/L	110
UA	G215	C	2017/05/22	Sulfate, total	mg/L	100
UA	G215	C	2017/07/15	Sulfate, total	mg/L	110
UA	G215	C	2017/10/31	Sulfate, total	mg/L	110
UA	G215	C	2018/05/15	Sulfate, total	mg/L	220
UA	G215	C	2018/11/02	Sulfate, total	mg/L	170
UA	G215	C	2019/01/16	Sulfate, total	mg/L	180
UA	G215	C	2019/08/14	Sulfate, total	mg/L	120
UA	G215	C	2020/01/22	Sulfate, total	mg/L	130
UA	G215	C	2020/08/13	Sulfate, total	mg/L	210
UA	G215	C	2020/10/14	Sulfate, total	mg/L	310
UA	G215	C	2021/01/26	Sulfate, total	mg/L	490
UA	G215	C	2021/05/19	Sulfate, total	mg/L	480
UA	G215	C	2021/06/29	Sulfate, total	mg/L	470
UA	G215	C	2021/08/19	Sulfate, total	mg/L	440
UA	G215	C	2021/10/27	Sulfate, total	mg/L	470
UA	G215	C	2022/02/09	Sulfate, total	mg/L	520
UA	G215	C	2022/05/11	Sulfate, total	mg/L	540
UA	G215	C	2022/08/23	Sulfate, total	mg/L	470
UA	G215	C	2022/11/07	Sulfate, total	mg/L	510
UA	G215	C	2023/02/15	Sulfate, total	mg/L	560
UA	G215	C	2023/06/01	Sulfate, total	mg/L	540
UA	G215	C	2023/08/10	Sulfate, total	mg/L	481
UA	G215	C	2023/11/16	Sulfate, total	mg/L	512
UA	G215	C	2015/11/24	Temperature (Celsius)	degrees C	16.0
UA	G215	C	2016/02/18	Temperature (Celsius)	degrees C	12.9
UA	G215	C	2016/05/11	Temperature (Celsius)	degrees C	16.9
UA	G215	C	2016/07/30	Temperature (Celsius)	degrees C	18.3
UA	G215	C	2016/11/23	Temperature (Celsius)	degrees C	15.9
UA	G215	C	2017/02/18	Temperature (Celsius)	degrees C	14.5
UA	G215	C	2017/05/22	Temperature (Celsius)	degrees C	15.2
UA	G215	C	2017/07/15	Temperature (Celsius)	degrees C	17.5
UA	G215	C	2017/10/31	Temperature (Celsius)	degrees C	13.3
UA	G215	C	2018/05/15	Temperature (Celsius)	degrees C	15.2
UA	G215	C	2018/11/02	Temperature (Celsius)	degrees C	14.2
UA	G215	C	2019/01/16	Temperature (Celsius)	degrees C	12.6
UA	G215	C	2019/08/14	Temperature (Celsius)	degrees C	17.2

UA	G215	C	2020/01/22	Temperature (Celsius)	degrees C	11.1
UA	G215	C	2020/08/13	Temperature (Celsius)	degrees C	20.3
UA	G215	C	2021/01/26	Temperature (Celsius)	degrees C	12.0
UA	G215	C	2021/06/29	Temperature (Celsius)	degrees C	19.1
UA	G215	C	2021/08/19	Temperature (Celsius)	degrees C	21.0
UA	G215	C	2021/11/29	Temperature (Celsius)	degrees C	14.6
UA	G215	C	2022/02/09	Temperature (Celsius)	degrees C	12.4
UA	G215	C	2022/05/11	Temperature (Celsius)	degrees C	21.4
UA	G215	C	2022/08/23	Temperature (Celsius)	degrees C	20.8
UA	G215	C	2022/11/07	Temperature (Celsius)	degrees C	15.9
UA	G215	C	2023/02/15	Temperature (Celsius)	degrees C	13.7
UA	G215	C	2023/06/01	Temperature (Celsius)	degrees C	20.9
UA	G215	C	2023/08/10	Temperature (Celsius)	degrees C	15.6
UA	G215	C	2023/11/16	Temperature (Celsius)	degrees C	17.3
UA	G215	C	2010/11/18	Total Dissolved Solids	mg/L	470
UA	G215	C	2011/01/27	Total Dissolved Solids	mg/L	540
UA	G215	C	2011/03/10	Total Dissolved Solids	mg/L	520
UA	G215	C	2011/05/05	Total Dissolved Solids	mg/L	500
UA	G215	C	2011/07/26	Total Dissolved Solids	mg/L	500
UA	G215	C	2011/09/20	Total Dissolved Solids	mg/L	520
UA	G215	C	2011/11/11	Total Dissolved Solids	mg/L	500
UA	G215	C	2012/01/26	Total Dissolved Solids	mg/L	490
UA	G215	C	2012/05/23	Total Dissolved Solids	mg/L	570
UA	G215	C	2012/07/25	Total Dissolved Solids	mg/L	520
UA	G215	C	2012/11/15	Total Dissolved Solids	mg/L	540
UA	G215	C	2013/02/04	Total Dissolved Solids	mg/L	560
UA	G215	C	2013/05/21	Total Dissolved Solids	mg/L	490
UA	G215	C	2013/07/23	Total Dissolved Solids	mg/L	520
UA	G215	C	2013/10/15	Total Dissolved Solids	mg/L	520
UA	G215	C	2014/02/20	Total Dissolved Solids	mg/L	620
UA	G215	C	2014/05/14	Total Dissolved Solids	mg/L	390
UA	G215	C	2014/08/12	Total Dissolved Solids	mg/L	570
UA	G215	C	2014/10/15	Total Dissolved Solids	mg/L	560
UA	G215	C	2015/01/21	Total Dissolved Solids	mg/L	640
UA	G215	C	2015/04/09	Total Dissolved Solids	mg/L	620
UA	G215	C	2015/07/22	Total Dissolved Solids	mg/L	660
UA	G215	C	2015/10/07	Total Dissolved Solids	mg/L	550
UA	G215	C	2015/11/24	Total Dissolved Solids	mg/L	500
UA	G215	C	2016/02/18	Total Dissolved Solids	mg/L	520
UA	G215	C	2016/05/11	Total Dissolved Solids	mg/L	460
UA	G215	C	2016/07/30	Total Dissolved Solids	mg/L	480
UA	G215	C	2016/11/23	Total Dissolved Solids	mg/L	500
UA	G215	C	2017/02/18	Total Dissolved Solids	mg/L	510
UA	G215	C	2017/05/22	Total Dissolved Solids	mg/L	470
UA	G215	C	2017/07/15	Total Dissolved Solids	mg/L	550
UA	G215	C	2017/10/31	Total Dissolved Solids	mg/L	470
UA	G215	C	2018/05/15	Total Dissolved Solids	mg/L	660
UA	G215	C	2018/11/02	Total Dissolved Solids	mg/L	480
UA	G215	C	2019/01/16	Total Dissolved Solids	mg/L	800
UA	G215	C	2019/08/14	Total Dissolved Solids	mg/L	520

UA	G215	C	2020/01/22	Total Dissolved Solids	mg/L	460
UA	G215	C	2020/08/13	Total Dissolved Solids	mg/L	710
UA	G215	C	2020/10/14	Total Dissolved Solids	mg/L	870
UA	G215	C	2021/01/26	Total Dissolved Solids	mg/L	1,100
UA	G215	C	2021/05/19	Total Dissolved Solids	mg/L	1,500
UA	G215	C	2021/06/29	Total Dissolved Solids	mg/L	950
UA	G215	C	2021/08/19	Total Dissolved Solids	mg/L	1,300
UA	G215	C	2021/10/27	Total Dissolved Solids	mg/L	1,100
UA	G215	C	2022/02/09	Total Dissolved Solids	mg/L	1,200
UA	G215	C	2022/05/11	Total Dissolved Solids	mg/L	1,300
UA	G215	C	2022/08/23	Total Dissolved Solids	mg/L	1,300
UA	G215	C	2022/11/07	Total Dissolved Solids	mg/L	1,200
UA	G215	C	2023/02/15	Total Dissolved Solids	mg/L	1,500
UA	G215	C	2023/06/01	Total Dissolved Solids	mg/L	1,200
UA	G215	C	2023/08/10	Total Dissolved Solids	mg/L	1,270
UA	G215	C	2023/11/16	Total Dissolved Solids	mg/L	1,250
UA	G217	C	2010/11/17	pH (field)	SU	6.8
UA	G217	C	2011/01/27	pH (field)	SU	6.8
UA	G217	C	2011/03/09	pH (field)	SU	6.8
UA	G217	C	2011/05/05	pH (field)	SU	6.7
UA	G217	C	2011/07/26	pH (field)	SU	6.6
UA	G217	C	2011/09/20	pH (field)	SU	6.8
UA	G217	C	2011/11/11	pH (field)	SU	6.9
UA	G217	C	2012/01/26	pH (field)	SU	7.0
UA	G217	C	2012/05/23	pH (field)	SU	6.9
UA	G217	C	2012/07/24	pH (field)	SU	6.8
UA	G217	C	2012/11/15	pH (field)	SU	7.0
UA	G217	C	2013/02/04	pH (field)	SU	6.7
UA	G217	C	2013/05/21	pH (field)	SU	6.9
UA	G217	C	2013/07/23	pH (field)	SU	6.8
UA	G217	C	2013/10/15	pH (field)	SU	6.9
UA	G217	C	2014/02/20	pH (field)	SU	6.7
UA	G217	C	2014/05/14	pH (field)	SU	6.9
UA	G217	C	2014/08/12	pH (field)	SU	7.2
UA	G217	C	2014/10/15	pH (field)	SU	7.2
UA	G217	C	2015/01/21	pH (field)	SU	7.2
UA	G217	C	2015/04/10	pH (field)	SU	6.8
UA	G217	C	2015/07/22	pH (field)	SU	7.0
UA	G217	C	2015/10/07	pH (field)	SU	7.1
UA	G217	C	2020/10/14	pH (field)	SU	6.8
UA	G217	C	2021/01/28	pH (field)	SU	6.8
UA	G217	C	2021/05/20	pH (field)	SU	7.1
UA	G217	C	2021/08/19	pH (field)	SU	7.1
UA	G217	C	2021/10/26	pH (field)	SU	7.1
UA	G217	C	2022/02/09	pH (field)	SU	6.8
UA	G217	C	2022/05/10	pH (field)	SU	6.8
UA	G217	C	2022/08/23	pH (field)	SU	6.8
UA	G217	C	2022/11/08	pH (field)	SU	6.8
UA	G217	C	2023/02/15	pH (field)	SU	7.2
UA	G217	C	2023/06/08	pH (field)	SU	6.7

UA	G217	C	2023/08/10	pH (field)	SU	6.9
UA	G217	C	2023/11/16	pH (field)	SU	6.9
UA	G217	C	2022/02/09	Oxidation Reduction Potential	mV	26.1
UA	G217	C	2022/05/10	Oxidation Reduction Potential	mV	67.6
UA	G217	C	2022/08/23	Oxidation Reduction Potential	mV	-68.0
UA	G217	C	2022/11/08	Oxidation Reduction Potential	mV	-0.900
UA	G217	C	2023/02/15	Oxidation Reduction Potential	mV	13.0
UA	G217	C	2023/06/08	Oxidation Reduction Potential	mV	2.00
UA	G217	C	2023/08/10	Oxidation Reduction Potential	mV	77.0
UA	G217	C	2023/11/16	Oxidation Reduction Potential	mV	16.0
UA	G217	C	2022/02/09	Eh	V	0.22
UA	G217	C	2022/05/10	Eh	V	0.26
UA	G217	C	2022/08/23	Eh	V	0.12
UA	G217	C	2022/11/08	Eh	V	0.19
UA	G217	C	2023/02/15	Eh	V	0.21
UA	G217	C	2023/06/08	Eh	V	0.19
UA	G217	C	2023/08/10	Eh	V	0.27
UA	G217	C	2023/11/16	Eh	V	0.21
UA	G217	C	2010/12/15	Alkalinity, bicarbonate	mg/L CaCO3	520
UA	G217	C	2011/01/27	Alkalinity, bicarbonate	mg/L CaCO3	540
UA	G217	C	2011/03/09	Alkalinity, bicarbonate	mg/L CaCO3	590
UA	G217	C	2011/05/05	Alkalinity, bicarbonate	mg/L CaCO3	570
UA	G217	C	2011/07/26	Alkalinity, bicarbonate	mg/L CaCO3	2,600
UA	G217	C	2011/09/20	Alkalinity, bicarbonate	mg/L CaCO3	540
UA	G217	C	2012/01/26	Alkalinity, bicarbonate	mg/L CaCO3	470
UA	G217	C	2013/02/04	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	G217	C	2014/02/20	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	G217	C	2014/08/12	Alkalinity, bicarbonate	mg/L CaCO3	390
UA	G217	C	2014/10/15	Alkalinity, bicarbonate	mg/L CaCO3	390
UA	G217	C	2015/01/21	Alkalinity, bicarbonate	mg/L CaCO3	370
UA	G217	C	2015/04/10	Alkalinity, bicarbonate	mg/L CaCO3	380
UA	G217	C	2023/02/15	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G217	C	2023/06/08	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G217	C	2023/08/10	Alkalinity, bicarbonate	mg/L CaCO3	303
UA	G217	C	2023/11/16	Alkalinity, bicarbonate	mg/L CaCO3	288
UA	G217	C	2011/01/27	Barium, total	mg/L	0.140
UA	G217	C	2011/03/09	Barium, total	mg/L	0.160
UA	G217	C	2011/05/05	Barium, total	mg/L	0.160
UA	G217	C	2011/07/26	Barium, total	mg/L	0.140
UA	G217	C	2011/09/20	Barium, total	mg/L	0.150
UA	G217	C	2012/01/26	Barium, total	mg/L	0.120
UA	G217	C	2013/02/04	Barium, total	mg/L	0.100
UA	G217	C	2014/02/20	Barium, total	mg/L	0.0860
UA	G217	C	2015/04/10	Barium, total	mg/L	0.0880
UA	G217	C	2015/07/22	Barium, total	mg/L	0.160
UA	G217	C	2015/10/07	Barium, total	mg/L	0.110
UA	G217	C	2020/10/14	Barium, total	mg/L	0.0950
UA	G217	C	2021/01/28	Barium, total	mg/L	0.0900
UA	G217	C	2021/05/20	Barium, total	mg/L	0.0970
UA	G217	C	2021/08/19	Barium, total	mg/L	0.100

UA	G217	C	2021/10/26	Barium, total	mg/L	0.0970
UA	G217	C	2022/02/09	Barium, total	mg/L	0.120
UA	G217	C	2022/05/10	Barium, total	mg/L	0.110
UA	G217	C	2022/08/23	Barium, total	mg/L	0.100
UA	G217	C	2022/11/08	Barium, total	mg/L	0.0890
UA	G217	C	2023/02/15	Barium, total	mg/L	0.0960
UA	G217	C	2023/06/08	Barium, total	mg/L	0.110
UA	G217	C	2023/08/10	Barium, total	mg/L	0.107
UA	G217	C	2023/11/16	Barium, total	mg/L	0.127
UA	G217	C	2010/11/17	Calcium, total	mg/L	180
UA	G217	C	2011/01/27	Calcium, total	mg/L	190
UA	G217	C	2011/03/09	Calcium, total	mg/L	200
UA	G217	C	2011/05/05	Calcium, total	mg/L	190
UA	G217	C	2011/07/26	Calcium, total	mg/L	180
UA	G217	C	2011/09/20	Calcium, total	mg/L	190
UA	G217	C	2011/11/11	Calcium, total	mg/L	170
UA	G217	C	2012/01/26	Calcium, total	mg/L	160
UA	G217	C	2012/05/23	Calcium, total	mg/L	150
UA	G217	C	2012/07/24	Calcium, total	mg/L	150
UA	G217	C	2012/11/15	Calcium, total	mg/L	140
UA	G217	C	2013/02/04	Calcium, total	mg/L	130
UA	G217	C	2013/05/21	Calcium, total	mg/L	130
UA	G217	C	2013/07/23	Calcium, total	mg/L	130
UA	G217	C	2013/10/15	Calcium, total	mg/L	130
UA	G217	C	2014/02/20	Calcium, total	mg/L	120
UA	G217	C	2014/05/14	Calcium, total	mg/L	140
UA	G217	C	2014/08/12	Calcium, total	mg/L	62.0
UA	G217	C	2014/10/15	Calcium, total	mg/L	130
UA	G217	C	2015/01/21	Calcium, total	mg/L	110
UA	G217	C	2015/04/10	Calcium, total	mg/L	130
UA	G217	C	2023/02/15	Calcium, total	mg/L	160
UA	G217	C	2023/06/08	Calcium, total	mg/L	180
UA	G217	C	2023/08/10	Calcium, total	mg/L	175
UA	G217	C	2023/11/16	Calcium, total	mg/L	177
UA	G217	C	2010/11/17	Chloride, total	mg/L	160
UA	G217	C	2011/01/27	Chloride, total	mg/L	170
UA	G217	C	2011/03/09	Chloride, total	mg/L	200
UA	G217	C	2011/05/05	Chloride, total	mg/L	160
UA	G217	C	2011/07/26	Chloride, total	mg/L	160
UA	G217	C	2011/09/20	Chloride, total	mg/L	140
UA	G217	C	2011/11/11	Chloride, total	mg/L	130
UA	G217	C	2012/01/26	Chloride, total	mg/L	120
UA	G217	C	2012/05/23	Chloride, total	mg/L	91.0
UA	G217	C	2012/07/24	Chloride, total	mg/L	98.0
UA	G217	C	2012/11/15	Chloride, total	mg/L	94.0
UA	G217	C	2013/02/04	Chloride, total	mg/L	110
UA	G217	C	2013/05/21	Chloride, total	mg/L	83.0
UA	G217	C	2013/07/23	Chloride, total	mg/L	91.0
UA	G217	C	2013/10/15	Chloride, total	mg/L	86.0
UA	G217	C	2014/02/20	Chloride, total	mg/L	82.0

UA	G217	C	2014/05/14	Chloride, total	mg/L	87.0
UA	G217	C	2014/08/12	Chloride, total	mg/L	77.0
UA	G217	C	2014/10/15	Chloride, total	mg/L	79.0
UA	G217	C	2015/01/21	Chloride, total	mg/L	82.0
UA	G217	C	2015/04/10	Chloride, total	mg/L	77.0
UA	G217	C	2015/07/22	Chloride, total	mg/L	78.0
UA	G217	C	2015/10/07	Chloride, total	mg/L	76.0
UA	G217	C	2020/10/14	Chloride, total	mg/L	84.0
UA	G217	C	2021/01/28	Chloride, total	mg/L	82.0
UA	G217	C	2021/05/20	Chloride, total	mg/L	94.0
UA	G217	C	2021/08/19	Chloride, total	mg/L	87.0
UA	G217	C	2021/10/26	Chloride, total	mg/L	79.0
UA	G217	C	2022/02/09	Chloride, total	mg/L	91.0
UA	G217	C	2022/05/10	Chloride, total	mg/L	95.0
UA	G217	C	2022/08/23	Chloride, total	mg/L	110
UA	G217	C	2022/11/08	Chloride, total	mg/L	110
UA	G217	C	2023/02/15	Chloride, total	mg/L	93.0
UA	G217	C	2023/06/08	Chloride, total	mg/L	130
UA	G217	C	2023/08/10	Chloride, total	mg/L	109
UA	G217	C	2023/11/16	Chloride, total	mg/L	123
UA	G217	C	2023/06/08	Ferrous Iron, dissolved	mg/L	0.440
UA	G217	C	2010/11/17	Iron, dissolved	mg/L	<0.1
UA	G217	C	2011/01/27	Iron, dissolved	mg/L	0.180
UA	G217	C	2011/03/09	Iron, dissolved	mg/L	0.220
UA	G217	C	2011/05/05	Iron, dissolved	mg/L	0.0860
UA	G217	C	2011/07/26	Iron, dissolved	mg/L	0.250
UA	G217	C	2011/09/20	Iron, dissolved	mg/L	0.180
UA	G217	C	2011/11/11	Iron, dissolved	mg/L	0.270
UA	G217	C	2012/01/26	Iron, dissolved	mg/L	0.260
UA	G217	C	2012/05/23	Iron, dissolved	mg/L	0.170
UA	G217	C	2012/07/24	Iron, dissolved	mg/L	0.210
UA	G217	C	2012/11/15	Iron, dissolved	mg/L	0.320
UA	G217	C	2013/02/04	Iron, dissolved	mg/L	0.270
UA	G217	C	2013/05/21	Iron, dissolved	mg/L	0.0730
UA	G217	C	2013/07/23	Iron, dissolved	mg/L	0.120
UA	G217	C	2013/10/15	Iron, dissolved	mg/L	0.120
UA	G217	C	2014/02/20	Iron, dissolved	mg/L	0.100
UA	G217	C	2014/05/14	Iron, dissolved	mg/L	0.0250
UA	G217	C	2014/08/12	Iron, dissolved	mg/L	0.0960
UA	G217	C	2014/10/15	Iron, dissolved	mg/L	0.100
UA	G217	C	2015/01/21	Iron, dissolved	mg/L	0.110
UA	G217	C	2015/04/10	Iron, dissolved	mg/L	<0.01
UA	G217	C	2015/07/22	Iron, dissolved	mg/L	<0.01
UA	G217	C	2015/10/07	Iron, dissolved	mg/L	0.0790
UA	G217	C	2016/02/10	Iron, dissolved	mg/L	0.0280
UA	G217	C	2016/05/11	Iron, dissolved	mg/L	<0.01
UA	G217	C	2016/07/25	Iron, dissolved	mg/L	1.60
UA	G217	C	2016/11/23	Iron, dissolved	mg/L	0.350
UA	G217	C	2017/02/14	Iron, dissolved	mg/L	1.70
UA	G217	C	2017/05/24	Iron, dissolved	mg/L	0.110

UA	G217	C	2017/07/25	Iron, dissolved	mg/L	0.350
UA	G217	C	2017/10/31	Iron, dissolved	mg/L	1.40
UA	G217	C	2018/01/27	Iron, dissolved	mg/L	0.150
UA	G217	C	2018/05/15	Iron, dissolved	mg/L	<0.01
UA	G217	C	2018/08/08	Iron, dissolved	mg/L	0.0790
UA	G217	C	2018/11/01	Iron, dissolved	mg/L	<0.1
UA	G217	C	2019/01/16	Iron, dissolved	mg/L	0.0780
UA	G217	C	2019/05/02	Iron, dissolved	mg/L	0.0220
UA	G217	C	2019/08/15	Iron, dissolved	mg/L	0.360
UA	G217	C	2019/10/22	Iron, dissolved	mg/L	0.470
UA	G217	C	2020/01/23	Iron, dissolved	mg/L	0.190
UA	G217	C	2020/05/04	Iron, dissolved	mg/L	0.180
UA	G217	C	2020/08/13	Iron, dissolved	mg/L	0.340
UA	G217	C	2020/10/14	Iron, dissolved	mg/L	0.390
UA	G217	C	2021/01/28	Iron, dissolved	mg/L	0.170
UA	G217	C	2021/05/20	Iron, dissolved	mg/L	0.0890
UA	G217	C	2021/08/19	Iron, dissolved	mg/L	0.340
UA	G217	C	2021/10/26	Iron, dissolved	mg/L	0.340
UA	G217	C	2022/02/09	Iron, dissolved	mg/L	0.230
UA	G217	C	2022/05/10	Iron, dissolved	mg/L	0.0990
UA	G217	C	2022/08/23	Iron, dissolved	mg/L	0.310
UA	G217	C	2022/11/08	Iron, dissolved	mg/L	0.350
UA	G217	C	2023/02/15	Iron, dissolved	mg/L	0.220
UA	G217	C	2023/06/08	Iron, dissolved	mg/L	0.270
UA	G217	C	2023/08/10	Iron, dissolved	mg/L	0.320
UA	G217	C	2023/11/16	Iron, dissolved	mg/L	0.256
UA	G217	C	2011/01/27	Magnesium, total	mg/L	74.0
UA	G217	C	2011/03/09	Magnesium, total	mg/L	77.0
UA	G217	C	2011/05/05	Magnesium, total	mg/L	<100
UA	G217	C	2011/07/26	Magnesium, total	mg/L	69.0
UA	G217	C	2011/09/20	Magnesium, total	mg/L	67.0
UA	G217	C	2012/01/26	Magnesium, total	mg/L	63.0
UA	G217	C	2013/02/04	Magnesium, total	mg/L	51.0
UA	G217	C	2014/02/20	Magnesium, total	mg/L	49.0
UA	G217	C	2015/04/10	Magnesium, total	mg/L	49.0
UA	G217	C	2023/02/15	Magnesium, total	mg/L	57.0
UA	G217	C	2023/06/08	Magnesium, total	mg/L	68.0
UA	G217	C	2023/08/10	Magnesium, total	mg/L	67.7
UA	G217	C	2023/11/16	Magnesium, total	mg/L	71.4
UA	G217	C	2010/11/17	Manganese, dissolved	mg/L	0.330
UA	G217	C	2011/01/27	Manganese, dissolved	mg/L	0.580
UA	G217	C	2011/03/09	Manganese, dissolved	mg/L	0.610
UA	G217	C	2011/05/05	Manganese, dissolved	mg/L	0.310
UA	G217	C	2011/07/26	Manganese, dissolved	mg/L	0.290
UA	G217	C	2011/09/20	Manganese, dissolved	mg/L	0.310
UA	G217	C	2011/11/11	Manganese, dissolved	mg/L	0.330
UA	G217	C	2012/01/26	Manganese, dissolved	mg/L	0.270
UA	G217	C	2012/05/23	Manganese, dissolved	mg/L	0.210
UA	G217	C	2012/07/24	Manganese, dissolved	mg/L	0.360
UA	G217	C	2012/11/15	Manganese, dissolved	mg/L	0.230

UA	G217	C	2013/02/04	Manganese, dissolved	mg/L	0.210
UA	G217	C	2013/05/21	Manganese, dissolved	mg/L	0.0720
UA	G217	C	2013/07/23	Manganese, dissolved	mg/L	0.140
UA	G217	C	2013/10/15	Manganese, dissolved	mg/L	0.190
UA	G217	C	2014/02/20	Manganese, dissolved	mg/L	0.100
UA	G217	C	2014/05/14	Manganese, dissolved	mg/L	0.100
UA	G217	C	2014/08/12	Manganese, dissolved	mg/L	0.120
UA	G217	C	2014/10/15	Manganese, dissolved	mg/L	0.160
UA	G217	C	2015/01/21	Manganese, dissolved	mg/L	0.140
UA	G217	C	2015/04/10	Manganese, dissolved	mg/L	0.0150
UA	G217	C	2015/07/22	Manganese, dissolved	mg/L	0.00250
UA	G217	C	2015/10/07	Manganese, dissolved	mg/L	0.170
UA	G217	C	2016/02/10	Manganese, dissolved	mg/L	0.100
UA	G217	C	2016/05/11	Manganese, dissolved	mg/L	0.00370
UA	G217	C	2016/07/25	Manganese, dissolved	mg/L	0.240
UA	G217	C	2016/11/23	Manganese, dissolved	mg/L	0.160
UA	G217	C	2017/02/14	Manganese, dissolved	mg/L	0.0380
UA	G217	C	2017/05/24	Manganese, dissolved	mg/L	0.0880
UA	G217	C	2017/07/25	Manganese, dissolved	mg/L	0.130
UA	G217	C	2017/10/31	Manganese, dissolved	mg/L	0.210
UA	G217	C	2018/01/27	Manganese, dissolved	mg/L	0.0850
UA	G217	C	2018/05/15	Manganese, dissolved	mg/L	0.00250
UA	G217	C	2018/08/08	Manganese, dissolved	mg/L	0.200
UA	G217	C	2018/11/01	Manganese, dissolved	mg/L	0.0340
UA	G217	C	2019/01/16	Manganese, dissolved	mg/L	0.830
UA	G217	C	2019/05/02	Manganese, dissolved	mg/L	0.0290
UA	G217	C	2019/08/15	Manganese, dissolved	mg/L	0.170
UA	G217	C	2019/10/22	Manganese, dissolved	mg/L	0.170
UA	G217	C	2020/01/23	Manganese, dissolved	mg/L	0.130
UA	G217	C	2020/05/04	Manganese, dissolved	mg/L	0.250
UA	G217	C	2020/08/13	Manganese, dissolved	mg/L	0.180
UA	G217	C	2020/10/14	Manganese, dissolved	mg/L	0.160
UA	G217	C	2021/01/28	Manganese, dissolved	mg/L	0.110
UA	G217	C	2021/05/20	Manganese, dissolved	mg/L	0.140
UA	G217	C	2021/08/19	Manganese, dissolved	mg/L	0.230
UA	G217	C	2021/10/26	Manganese, dissolved	mg/L	0.230
UA	G217	C	2022/02/09	Manganese, dissolved	mg/L	0.170
UA	G217	C	2022/05/10	Manganese, dissolved	mg/L	0.120
UA	G217	C	2022/08/23	Manganese, dissolved	mg/L	0.310
UA	G217	C	2022/11/08	Manganese, dissolved	mg/L	0.320
UA	G217	C	2023/02/15	Manganese, dissolved	mg/L	0.230
UA	G217	C	2023/06/08	Manganese, dissolved	mg/L	0.380
UA	G217	C	2023/08/10	Manganese, dissolved	mg/L	0.444
UA	G217	C	2023/11/16	Manganese, dissolved	mg/L	0.384
UA	G217	C	2023/08/10	Phosphate, dissolved	mg/L	0.0400
UA	G217	C	2011/01/27	Potassium, total	mg/L	1.10
UA	G217	C	2011/03/09	Potassium, total	mg/L	1.00
UA	G217	C	2011/05/05	Potassium, total	mg/L	0.600
UA	G217	C	2011/07/26	Potassium, total	mg/L	0.920
UA	G217	C	2011/09/20	Potassium, total	mg/L	0.800

UA	G217	C	2012/01/26	Potassium, total	mg/L	0.770
UA	G217	C	2013/02/04	Potassium, total	mg/L	0.590
UA	G217	C	2014/02/20	Potassium, total	mg/L	0.540
UA	G217	C	2015/04/10	Potassium, total	mg/L	0.440
UA	G217	C	2023/02/15	Potassium, total	mg/L	0.430
UA	G217	C	2023/06/08	Potassium, total	mg/L	0.710
UA	G217	C	2023/08/10	Potassium, total	mg/L	0.659
UA	G217	C	2023/11/16	Potassium, total	mg/L	0.626
UA	G217	C	2023/06/08	Silicon, dissolved	mg/L	7.80
UA	G217	C	2023/08/10	Silicon, dissolved	mg/L	6.97
UA	G217	C	2011/01/27	Sodium, total	mg/L	79.0
UA	G217	C	2011/03/09	Sodium, total	mg/L	87.0
UA	G217	C	2011/05/05	Sodium, total	mg/L	<100
UA	G217	C	2011/07/26	Sodium, total	mg/L	78.0
UA	G217	C	2011/09/20	Sodium, total	mg/L	74.0
UA	G217	C	2012/01/26	Sodium, total	mg/L	69.0
UA	G217	C	2013/02/04	Sodium, total	mg/L	55.0
UA	G217	C	2014/02/20	Sodium, total	mg/L	52.0
UA	G217	C	2015/04/10	Sodium, total	mg/L	53.0
UA	G217	C	2023/02/15	Sodium, total	mg/L	63.0
UA	G217	C	2023/06/08	Sodium, total	mg/L	69.0
UA	G217	C	2023/08/10	Sodium, total	mg/L	74.0
UA	G217	C	2023/11/16	Sodium, total	mg/L	73.6
UA	G217	C	2010/11/17	Sulfate, total	mg/L	150
UA	G217	C	2011/01/27	Sulfate, total	mg/L	170
UA	G217	C	2011/03/09	Sulfate, total	mg/L	190
UA	G217	C	2011/05/05	Sulfate, total	mg/L	170
UA	G217	C	2011/07/26	Sulfate, total	mg/L	160
UA	G217	C	2011/09/20	Sulfate, total	mg/L	160
UA	G217	C	2011/11/11	Sulfate, total	mg/L	150
UA	G217	C	2012/01/26	Sulfate, total	mg/L	130
UA	G217	C	2012/05/23	Sulfate, total	mg/L	110
UA	G217	C	2012/07/24	Sulfate, total	mg/L	120
UA	G217	C	2012/11/15	Sulfate, total	mg/L	110
UA	G217	C	2013/02/04	Sulfate, total	mg/L	120
UA	G217	C	2013/05/21	Sulfate, total	mg/L	110
UA	G217	C	2013/07/23	Sulfate, total	mg/L	100
UA	G217	C	2013/10/15	Sulfate, total	mg/L	110
UA	G217	C	2014/02/20	Sulfate, total	mg/L	99.0
UA	G217	C	2014/05/14	Sulfate, total	mg/L	110
UA	G217	C	2014/08/12	Sulfate, total	mg/L	120
UA	G217	C	2014/10/15	Sulfate, total	mg/L	120
UA	G217	C	2015/01/21	Sulfate, total	mg/L	140
UA	G217	C	2015/04/10	Sulfate, total	mg/L	130
UA	G217	C	2015/07/22	Sulfate, total	mg/L	130
UA	G217	C	2015/10/07	Sulfate, total	mg/L	130
UA	G217	C	2020/10/14	Sulfate, total	mg/L	210
UA	G217	C	2021/01/28	Sulfate, total	mg/L	200
UA	G217	C	2021/05/20	Sulfate, total	mg/L	210
UA	G217	C	2021/08/19	Sulfate, total	mg/L	230

UA	G217	C	2021/10/26	Sulfate, total	mg/L	240
UA	G217	C	2022/02/09	Sulfate, total	mg/L	270
UA	G217	C	2022/05/10	Sulfate, total	mg/L	290
UA	G217	C	2022/08/23	Sulfate, total	mg/L	310
UA	G217	C	2022/11/08	Sulfate, total	mg/L	310
UA	G217	C	2023/02/15	Sulfate, total	mg/L	310
UA	G217	C	2023/06/08	Sulfate, total	mg/L	370
UA	G217	C	2023/08/10	Sulfate, total	mg/L	394
UA	G217	C	2023/11/16	Sulfate, total	mg/L	427
UA	G217	C	2022/02/09	Temperature (Celsius)	degrees C	12.7
UA	G217	C	2022/05/10	Temperature (Celsius)	degrees C	18.4
UA	G217	C	2022/08/23	Temperature (Celsius)	degrees C	20.1
UA	G217	C	2022/11/08	Temperature (Celsius)	degrees C	16.1
UA	G217	C	2023/02/15	Temperature (Celsius)	degrees C	15.0
UA	G217	C	2023/06/08	Temperature (Celsius)	degrees C	19.6
UA	G217	C	2023/08/10	Temperature (Celsius)	degrees C	15.6
UA	G217	C	2023/11/16	Temperature (Celsius)	degrees C	16.1
UA	G217	C	2010/11/17	Total Dissolved Solids	mg/L	1,100
UA	G217	C	2011/01/27	Total Dissolved Solids	mg/L	1,000
UA	G217	C	2011/03/09	Total Dissolved Solids	mg/L	1,200
UA	G217	C	2011/05/05	Total Dissolved Solids	mg/L	1,100
UA	G217	C	2011/07/26	Total Dissolved Solids	mg/L	1,000
UA	G217	C	2011/09/20	Total Dissolved Solids	mg/L	930
UA	G217	C	2011/11/11	Total Dissolved Solids	mg/L	890
UA	G217	C	2012/01/26	Total Dissolved Solids	mg/L	810
UA	G217	C	2012/05/23	Total Dissolved Solids	mg/L	830
UA	G217	C	2012/07/24	Total Dissolved Solids	mg/L	800
UA	G217	C	2012/11/15	Total Dissolved Solids	mg/L	780
UA	G217	C	2013/02/04	Total Dissolved Solids	mg/L	700
UA	G217	C	2013/05/21	Total Dissolved Solids	mg/L	660
UA	G217	C	2013/07/23	Total Dissolved Solids	mg/L	660
UA	G217	C	2013/10/15	Total Dissolved Solids	mg/L	650
UA	G217	C	2014/02/20	Total Dissolved Solids	mg/L	680
UA	G217	C	2014/05/14	Total Dissolved Solids	mg/L	580
UA	G217	C	2014/08/12	Total Dissolved Solids	mg/L	620
UA	G217	C	2014/10/15	Total Dissolved Solids	mg/L	640
UA	G217	C	2015/01/21	Total Dissolved Solids	mg/L	670
UA	G217	C	2015/04/10	Total Dissolved Solids	mg/L	700
UA	G217	C	2015/07/22	Total Dissolved Solids	mg/L	750
UA	G217	C	2015/10/07	Total Dissolved Solids	mg/L	660
UA	G217	C	2020/10/14	Total Dissolved Solids	mg/L	680
UA	G217	C	2021/01/28	Total Dissolved Solids	mg/L	710
UA	G217	C	2021/05/20	Total Dissolved Solids	mg/L	730
UA	G217	C	2021/08/19	Total Dissolved Solids	mg/L	850
UA	G217	C	2021/10/26	Total Dissolved Solids	mg/L	740
UA	G217	C	2022/02/09	Total Dissolved Solids	mg/L	720
UA	G217	C	2022/05/10	Total Dissolved Solids	mg/L	870
UA	G217	C	2022/08/23	Total Dissolved Solids	mg/L	1,100
UA	G217	C	2022/11/08	Total Dissolved Solids	mg/L	940
UA	G217	C	2023/02/15	Total Dissolved Solids	mg/L	1,100

UA	G217	C	2023/06/08	Total Dissolved Solids	mg/L	1,100
UA	G217	C	2023/08/10	Total Dissolved Solids	mg/L	1,100
UA	G217	C	2023/11/16	Total Dissolved Solids	mg/L	1,100
UA	G218	C	2010/11/16	pH (field)	SU	7.1
UA	G218	C	2011/01/27	pH (field)	SU	7.1
UA	G218	C	2011/03/09	pH (field)	SU	7.2
UA	G218	C	2011/05/05	pH (field)	SU	7.0
UA	G218	C	2011/07/26	pH (field)	SU	6.9
UA	G218	C	2011/09/20	pH (field)	SU	7.1
UA	G218	C	2011/11/11	pH (field)	SU	7.1
UA	G218	C	2012/01/26	pH (field)	SU	7.1
UA	G218	C	2012/05/23	pH (field)	SU	7.1
UA	G218	C	2012/07/24	pH (field)	SU	7.0
UA	G218	C	2012/11/15	pH (field)	SU	7.2
UA	G218	C	2013/02/04	pH (field)	SU	7.3
UA	G218	C	2013/05/21	pH (field)	SU	7.0
UA	G218	C	2013/07/23	pH (field)	SU	7.0
UA	G218	C	2013/10/15	pH (field)	SU	7.1
UA	G218	C	2014/02/20	pH (field)	SU	7.2
UA	G218	C	2014/05/14	pH (field)	SU	6.8
UA	G218	C	2014/08/12	pH (field)	SU	7.3
UA	G218	C	2014/10/15	pH (field)	SU	7.3
UA	G218	C	2015/01/21	pH (field)	SU	7.2
UA	G218	C	2015/04/10	pH (field)	SU	6.8
UA	G218	C	2015/07/22	pH (field)	SU	6.8
UA	G218	C	2015/10/07	pH (field)	SU	7.0
UA	G218	C	2015/11/24	pH (field)	SU	7.1
UA	G218	C	2016/02/19	pH (field)	SU	7.0
UA	G218	C	2016/05/10	pH (field)	SU	7.0
UA	G218	C	2016/07/30	pH (field)	SU	7.0
UA	G218	C	2016/11/23	pH (field)	SU	7.1
UA	G218	C	2017/02/18	pH (field)	SU	7.2
UA	G218	C	2017/05/22	pH (field)	SU	7.1
UA	G218	C	2017/07/17	pH (field)	SU	7.1
UA	G218	C	2017/10/31	pH (field)	SU	6.9
UA	G218	C	2018/01/26	pH (field)	SU	6.9
UA	G218	C	2018/05/15	pH (field)	SU	7.0
UA	G218	C	2018/11/02	pH (field)	SU	6.9
UA	G218	C	2019/01/17	pH (field)	SU	7.0
UA	G218	C	2019/08/14	pH (field)	SU	7.0
UA	G218	C	2020/01/22	pH (field)	SU	7.1
UA	G218	C	2020/08/13	pH (field)	SU	7.1
UA	G218	C	2020/10/14	pH (field)	SU	6.9
UA	G218	C	2021/01/26	pH (field)	SU	7.0
UA	G218	C	2021/05/20	pH (field)	SU	7.1
UA	G218	C	2021/08/19	pH (field)	SU	7.1
UA	G218	C	2021/10/26	pH (field)	SU	7.1
UA	G218	C	2021/11/29	pH (field)	SU	7.0
UA	G218	C	2022/02/09	pH (field)	SU	6.8
UA	G218	C	2022/05/10	pH (field)	SU	6.8

UA	G218	C	2022/08/23	pH (field)	SU	6.9
UA	G218	C	2022/11/08	pH (field)	SU	6.7
UA	G218	C	2023/02/16	pH (field)	SU	7.1
UA	G218	C	2023/06/01	pH (field)	SU	7.2
UA	G218	C	2023/08/10	pH (field)	SU	6.9
UA	G218	C	2023/11/16	pH (field)	SU	6.8
UA	G218	C	2015/11/24	Oxidation Reduction Potential	mV	-22.0
UA	G218	C	2016/02/19	Oxidation Reduction Potential	mV	28.0
UA	G218	C	2016/05/10	Oxidation Reduction Potential	mV	-7.00
UA	G218	C	2016/07/30	Oxidation Reduction Potential	mV	72.0
UA	G218	C	2016/11/23	Oxidation Reduction Potential	mV	76.0
UA	G218	C	2017/02/18	Oxidation Reduction Potential	mV	57.0
UA	G218	C	2017/05/22	Oxidation Reduction Potential	mV	62.0
UA	G218	C	2017/07/17	Oxidation Reduction Potential	mV	59.0
UA	G218	C	2017/10/31	Oxidation Reduction Potential	mV	69.0
UA	G218	C	2018/01/26	Oxidation Reduction Potential	mV	71.0
UA	G218	C	2018/05/15	Oxidation Reduction Potential	mV	81.0
UA	G218	C	2018/11/02	Oxidation Reduction Potential	mV	61.0
UA	G218	C	2019/01/17	Oxidation Reduction Potential	mV	73.0
UA	G218	C	2019/08/14	Oxidation Reduction Potential	mV	69.0
UA	G218	C	2020/01/22	Oxidation Reduction Potential	mV	33.9
UA	G218	C	2020/08/13	Oxidation Reduction Potential	mV	9.60
UA	G218	C	2021/01/26	Oxidation Reduction Potential	mV	10.5
UA	G218	C	2021/08/19	Oxidation Reduction Potential	mV	-49.3
UA	G218	C	2021/11/29	Oxidation Reduction Potential	mV	-21.4
UA	G218	C	2022/02/09	Oxidation Reduction Potential	mV	45.1
UA	G218	C	2022/05/10	Oxidation Reduction Potential	mV	15.4
UA	G218	C	2022/08/23	Oxidation Reduction Potential	mV	-28.0
UA	G218	C	2022/11/08	Oxidation Reduction Potential	mV	-6.90
UA	G218	C	2023/02/16	Oxidation Reduction Potential	mV	2.90
UA	G218	C	2023/06/01	Oxidation Reduction Potential	mV	-27.0
UA	G218	C	2023/08/10	Oxidation Reduction Potential	mV	70.0
UA	G218	C	2023/11/16	Oxidation Reduction Potential	mV	-5.00
UA	G218	C	2015/11/24	Eh	V	0.17
UA	G218	C	2016/02/19	Eh	V	0.22
UA	G218	C	2016/05/10	Eh	V	0.19
UA	G218	C	2016/07/30	Eh	V	0.27
UA	G218	C	2016/11/23	Eh	V	0.27
UA	G218	C	2017/02/18	Eh	V	0.25
UA	G218	C	2017/05/22	Eh	V	0.26
UA	G218	C	2017/07/17	Eh	V	0.25
UA	G218	C	2017/10/31	Eh	V	0.27
UA	G218	C	2018/01/26	Eh	V	0.27
UA	G218	C	2018/05/15	Eh	V	0.28
UA	G218	C	2018/11/02	Eh	V	0.26
UA	G218	C	2019/01/17	Eh	V	0.27
UA	G218	C	2019/08/14	Eh	V	0.26
UA	G218	C	2020/01/22	Eh	V	0.23
UA	G218	C	2020/08/13	Eh	V	0.20
UA	G218	C	2021/01/26	Eh	V	0.21

UA	G218	C	2021/08/19	Eh	V	0.14
UA	G218	C	2021/11/29	Eh	V	0.17
UA	G218	C	2022/02/09	Eh	V	0.24
UA	G218	C	2022/05/10	Eh	V	0.21
UA	G218	C	2022/08/23	Eh	V	0.16
UA	G218	C	2022/11/08	Eh	V	0.19
UA	G218	C	2023/02/16	Eh	V	0.20
UA	G218	C	2023/06/01	Eh	V	0.17
UA	G218	C	2023/08/10	Eh	V	0.27
UA	G218	C	2023/11/16	Eh	V	0.19
UA	G218	C	2010/12/15	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G218	C	2011/01/27	Alkalinity, bicarbonate	mg/L CaCO3	340
UA	G218	C	2011/03/09	Alkalinity, bicarbonate	mg/L CaCO3	400
UA	G218	C	2011/05/05	Alkalinity, bicarbonate	mg/L CaCO3	370
UA	G218	C	2011/07/26	Alkalinity, bicarbonate	mg/L CaCO3	1,700
UA	G218	C	2011/09/20	Alkalinity, bicarbonate	mg/L CaCO3	330
UA	G218	C	2012/01/26	Alkalinity, bicarbonate	mg/L CaCO3	370
UA	G218	C	2013/02/04	Alkalinity, bicarbonate	mg/L CaCO3	370
UA	G218	C	2014/02/20	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	G218	C	2014/08/12	Alkalinity, bicarbonate	mg/L CaCO3	370
UA	G218	C	2014/10/15	Alkalinity, bicarbonate	mg/L CaCO3	440
UA	G218	C	2015/01/21	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	G218	C	2015/04/10	Alkalinity, bicarbonate	mg/L CaCO3	370
UA	G218	C	2017/07/17	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	G218	C	2020/01/22	Alkalinity, bicarbonate	mg/L CaCO3	360
UA	G218	C	2020/08/13	Alkalinity, bicarbonate	mg/L CaCO3	320
UA	G218	C	2021/01/26	Alkalinity, bicarbonate	mg/L CaCO3	390
UA	G218	C	2021/08/19	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G218	C	2022/02/09	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G218	C	2022/06/15	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G218	C	2022/08/23	Alkalinity, bicarbonate	mg/L CaCO3	290
UA	G218	C	2023/02/16	Alkalinity, bicarbonate	mg/L CaCO3	310
UA	G218	C	2023/06/01	Alkalinity, bicarbonate	mg/L CaCO3	300
UA	G218	C	2023/08/10	Alkalinity, bicarbonate	mg/L CaCO3	305
UA	G218	C	2023/11/16	Alkalinity, bicarbonate	mg/L CaCO3	298
UA	G218	C	2022/08/23	Alkalinity, carbonate	mg/L CaCO3	10.0
UA	G218	C	2010/11/16	Barium, total	mg/L	0.190
UA	G218	C	2011/01/27	Barium, total	mg/L	0.120
UA	G218	C	2011/03/09	Barium, total	mg/L	0.140
UA	G218	C	2011/05/05	Barium, total	mg/L	0.140
UA	G218	C	2011/07/26	Barium, total	mg/L	0.180
UA	G218	C	2011/09/20	Barium, total	mg/L	0.160
UA	G218	C	2012/01/26	Barium, total	mg/L	0.140
UA	G218	C	2013/02/04	Barium, total	mg/L	0.130
UA	G218	C	2014/02/20	Barium, total	mg/L	0.130
UA	G218	C	2015/04/10	Barium, total	mg/L	0.140
UA	G218	C	2015/07/22	Barium, total	mg/L	0.150
UA	G218	C	2015/10/07	Barium, total	mg/L	0.140
UA	G218	C	2015/11/24	Barium, total	mg/L	0.170
UA	G218	C	2016/02/19	Barium, total	mg/L	0.150

UA	G218	C	2016/05/10	Barium, total	mg/L	0.140
UA	G218	C	2016/07/30	Barium, total	mg/L	0.150
UA	G218	C	2016/11/23	Barium, total	mg/L	0.130
UA	G218	C	2017/02/18	Barium, total	mg/L	0.130
UA	G218	C	2017/05/22	Barium, total	mg/L	0.150
UA	G218	C	2017/07/17	Barium, total	mg/L	0.140
UA	G218	C	2020/10/14	Barium, total	mg/L	0.140
UA	G218	C	2021/01/26	Barium, total	mg/L	0.140
UA	G218	C	2021/05/20	Barium, total	mg/L	0.140
UA	G218	C	2021/08/19	Barium, total	mg/L	0.150
UA	G218	C	2021/10/26	Barium, total	mg/L	0.130
UA	G218	C	2022/02/09	Barium, total	mg/L	0.140
UA	G218	C	2022/05/10	Barium, total	mg/L	0.120
UA	G218	C	2022/08/23	Barium, total	mg/L	0.0970
UA	G218	C	2022/11/08	Barium, total	mg/L	0.0850
UA	G218	C	2023/02/16	Barium, total	mg/L	0.110
UA	G218	C	2023/06/01	Barium, total	mg/L	0.0850
UA	G218	C	2023/08/10	Barium, total	mg/L	0.0747
UA	G218	C	2023/11/16	Barium, total	mg/L	0.0931
UA	G218	C	2010/11/16	Calcium, total	mg/L	120
UA	G218	C	2011/01/27	Calcium, total	mg/L	110
UA	G218	C	2011/03/09	Calcium, total	mg/L	110
UA	G218	C	2011/05/05	Calcium, total	mg/L	110
UA	G218	C	2011/07/26	Calcium, total	mg/L	110
UA	G218	C	2011/09/20	Calcium, total	mg/L	130
UA	G218	C	2011/11/11	Calcium, total	mg/L	110
UA	G218	C	2012/01/26	Calcium, total	mg/L	110
UA	G218	C	2012/05/23	Calcium, total	mg/L	110
UA	G218	C	2012/07/24	Calcium, total	mg/L	110
UA	G218	C	2012/11/15	Calcium, total	mg/L	110
UA	G218	C	2013/02/04	Calcium, total	mg/L	100
UA	G218	C	2013/05/21	Calcium, total	mg/L	110
UA	G218	C	2013/07/23	Calcium, total	mg/L	110
UA	G218	C	2013/10/15	Calcium, total	mg/L	120
UA	G218	C	2014/02/20	Calcium, total	mg/L	110
UA	G218	C	2014/05/14	Calcium, total	mg/L	140
UA	G218	C	2014/08/12	Calcium, total	mg/L	59.0
UA	G218	C	2014/10/15	Calcium, total	mg/L	120
UA	G218	C	2015/01/21	Calcium, total	mg/L	94.0
UA	G218	C	2015/04/10	Calcium, total	mg/L	120
UA	G218	C	2015/11/24	Calcium, total	mg/L	120
UA	G218	C	2016/02/19	Calcium, total	mg/L	120
UA	G218	C	2016/05/10	Calcium, total	mg/L	110
UA	G218	C	2016/07/30	Calcium, total	mg/L	130
UA	G218	C	2016/11/23	Calcium, total	mg/L	92.0
UA	G218	C	2017/02/18	Calcium, total	mg/L	110
UA	G218	C	2017/05/22	Calcium, total	mg/L	100
UA	G218	C	2017/07/17	Calcium, total	mg/L	120
UA	G218	C	2017/10/31	Calcium, total	mg/L	110
UA	G218	C	2018/05/15	Calcium, total	mg/L	110

UA	G218	C	2018/11/02	Calcium, total	mg/L	130
UA	G218	C	2019/01/17	Calcium, total	mg/L	120
UA	G218	C	2019/08/14	Calcium, total	mg/L	130
UA	G218	C	2020/01/22	Calcium, total	mg/L	130
UA	G218	C	2020/08/13	Calcium, total	mg/L	120
UA	G218	C	2021/01/26	Calcium, total	mg/L	120
UA	G218	C	2021/08/19	Calcium, total	mg/L	150
UA	G218	C	2022/02/09	Calcium, total	mg/L	140
UA	G218	C	2022/05/10	Calcium, total	mg/L	150
UA	G218	C	2022/08/23	Calcium, total	mg/L	170
UA	G218	C	2023/02/16	Calcium, total	mg/L	160
UA	G218	C	2023/06/01	Calcium, total	mg/L	170
UA	G218	C	2023/08/10	Calcium, total	mg/L	179
UA	G218	C	2023/11/16	Calcium, total	mg/L	181
UA	G218	C	2010/11/16	Chloride, total	mg/L	95.0
UA	G218	C	2011/01/27	Chloride, total	mg/L	95.0
UA	G218	C	2011/03/09	Chloride, total	mg/L	96.0
UA	G218	C	2011/05/05	Chloride, total	mg/L	95.0
UA	G218	C	2011/07/26	Chloride, total	mg/L	85.0
UA	G218	C	2011/09/20	Chloride, total	mg/L	98.0
UA	G218	C	2011/11/11	Chloride, total	mg/L	92.0
UA	G218	C	2012/01/26	Chloride, total	mg/L	85.0
UA	G218	C	2012/05/23	Chloride, total	mg/L	99.0
UA	G218	C	2012/07/24	Chloride, total	mg/L	84.0
UA	G218	C	2012/11/15	Chloride, total	mg/L	83.0
UA	G218	C	2013/02/04	Chloride, total	mg/L	91.0
UA	G218	C	2013/05/21	Chloride, total	mg/L	83.0
UA	G218	C	2013/07/23	Chloride, total	mg/L	93.0
UA	G218	C	2013/10/15	Chloride, total	mg/L	97.0
UA	G218	C	2014/02/20	Chloride, total	mg/L	88.0
UA	G218	C	2014/05/14	Chloride, total	mg/L	91.0
UA	G218	C	2014/08/12	Chloride, total	mg/L	91.0
UA	G218	C	2014/10/15	Chloride, total	mg/L	92.0
UA	G218	C	2015/01/21	Chloride, total	mg/L	100
UA	G218	C	2015/04/10	Chloride, total	mg/L	93.0
UA	G218	C	2015/07/22	Chloride, total	mg/L	98.0
UA	G218	C	2015/10/07	Chloride, total	mg/L	96.0
UA	G218	C	2015/11/24	Chloride, total	mg/L	99.0
UA	G218	C	2016/02/19	Chloride, total	mg/L	100
UA	G218	C	2016/05/10	Chloride, total	mg/L	97.0
UA	G218	C	2016/07/30	Chloride, total	mg/L	100
UA	G218	C	2016/11/23	Chloride, total	mg/L	97.0
UA	G218	C	2017/02/18	Chloride, total	mg/L	88.0
UA	G218	C	2017/05/22	Chloride, total	mg/L	84.0
UA	G218	C	2017/07/17	Chloride, total	mg/L	81.0
UA	G218	C	2017/10/31	Chloride, total	mg/L	91.0
UA	G218	C	2018/05/15	Chloride, total	mg/L	91.0
UA	G218	C	2018/11/02	Chloride, total	mg/L	84.0
UA	G218	C	2019/01/17	Chloride, total	mg/L	82.0
UA	G218	C	2019/08/14	Chloride, total	mg/L	81.0

UA	G218	C	2020/01/22	Chloride, total	mg/L	83.0
UA	G218	C	2020/08/13	Chloride, total	mg/L	84.0
UA	G218	C	2020/10/14	Chloride, total	mg/L	81.0
UA	G218	C	2021/01/26	Chloride, total	mg/L	81.0
UA	G218	C	2021/05/20	Chloride, total	mg/L	82.0
UA	G218	C	2021/08/19	Chloride, total	mg/L	88.0
UA	G218	C	2021/10/26	Chloride, total	mg/L	79.0
UA	G218	C	2022/02/09	Chloride, total	mg/L	110
UA	G218	C	2022/05/10	Chloride, total	mg/L	96.0
UA	G218	C	2022/08/23	Chloride, total	mg/L	100
UA	G218	C	2022/11/08	Chloride, total	mg/L	110
UA	G218	C	2023/02/16	Chloride, total	mg/L	100
UA	G218	C	2023/06/01	Chloride, total	mg/L	160
UA	G218	C	2023/08/10	Chloride, total	mg/L	116
UA	G218	C	2023/11/16	Chloride, total	mg/L	125
UA	G218	C	2023/06/01	Ferrous Iron, dissolved	mg/L	1.20
UA	G218	C	2010/11/16	Iron, dissolved	mg/L	0.130
UA	G218	C	2011/01/27	Iron, dissolved	mg/L	0.0720
UA	G218	C	2011/03/09	Iron, dissolved	mg/L	0.0760
UA	G218	C	2011/05/05	Iron, dissolved	mg/L	0.110
UA	G218	C	2011/07/26	Iron, dissolved	mg/L	0.0880
UA	G218	C	2011/09/20	Iron, dissolved	mg/L	0.380
UA	G218	C	2011/11/11	Iron, dissolved	mg/L	0.330
UA	G218	C	2012/01/26	Iron, dissolved	mg/L	0.530
UA	G218	C	2012/05/23	Iron, dissolved	mg/L	0.340
UA	G218	C	2012/07/24	Iron, dissolved	mg/L	0.450
UA	G218	C	2012/11/15	Iron, dissolved	mg/L	0.540
UA	G218	C	2013/02/04	Iron, dissolved	mg/L	0.590
UA	G218	C	2013/05/21	Iron, dissolved	mg/L	0.280
UA	G218	C	2013/07/23	Iron, dissolved	mg/L	0.430
UA	G218	C	2013/10/15	Iron, dissolved	mg/L	0.330
UA	G218	C	2014/02/20	Iron, dissolved	mg/L	0.530
UA	G218	C	2014/05/14	Iron, dissolved	mg/L	0.380
UA	G218	C	2014/08/12	Iron, dissolved	mg/L	0.670
UA	G218	C	2014/10/15	Iron, dissolved	mg/L	0.590
UA	G218	C	2015/01/21	Iron, dissolved	mg/L	0.700
UA	G218	C	2015/04/10	Iron, dissolved	mg/L	<0.01
UA	G218	C	2015/07/22	Iron, dissolved	mg/L	0.0410
UA	G218	C	2015/10/07	Iron, dissolved	mg/L	0.280
UA	G218	C	2016/02/19	Iron, dissolved	mg/L	0.600
UA	G218	C	2016/05/11	Iron, dissolved	mg/L	0.0120
UA	G218	C	2016/07/25	Iron, dissolved	mg/L	0.0570
UA	G218	C	2016/11/23	Iron, dissolved	mg/L	0.390
UA	G218	C	2017/02/14	Iron, dissolved	mg/L	0.470
UA	G218	C	2017/05/24	Iron, dissolved	mg/L	<0.01
UA	G218	C	2017/07/25	Iron, dissolved	mg/L	<0.01
UA	G218	C	2017/10/31	Iron, dissolved	mg/L	0.860
UA	G218	C	2018/01/27	Iron, dissolved	mg/L	0.110
UA	G218	C	2018/05/15	Iron, dissolved	mg/L	<0.01
UA	G218	C	2018/08/09	Iron, dissolved	mg/L	0.180

UA	G218	C	2018/11/02	Iron, dissolved	mg/L	0.390
UA	G218	C	2019/01/17	Iron, dissolved	mg/L	0.700
UA	G218	C	2019/05/02	Iron, dissolved	mg/L	0.0640
UA	G218	C	2019/08/14	Iron, dissolved	mg/L	0.310
UA	G218	C	2019/10/22	Iron, dissolved	mg/L	0.690
UA	G218	C	2020/01/22	Iron, dissolved	mg/L	0.270
UA	G218	C	2020/05/04	Iron, dissolved	mg/L	0.470
UA	G218	C	2020/08/13	Iron, dissolved	mg/L	0.380
UA	G218	C	2020/10/14	Iron, dissolved	mg/L	0.650
UA	G218	C	2021/01/26	Iron, dissolved	mg/L	0.510
UA	G218	C	2021/05/20	Iron, dissolved	mg/L	1.10
UA	G218	C	2021/08/19	Iron, dissolved	mg/L	0.840
UA	G218	C	2021/10/26	Iron, dissolved	mg/L	0.770
UA	G218	C	2022/02/09	Iron, dissolved	mg/L	0.610
UA	G218	C	2022/05/10	Iron, dissolved	mg/L	0.660
UA	G218	C	2022/08/23	Iron, dissolved	mg/L	0.810
UA	G218	C	2022/11/08	Iron, dissolved	mg/L	0.740
UA	G218	C	2023/02/16	Iron, dissolved	mg/L	<0.00072
UA	G218	C	2023/06/01	Iron, dissolved	mg/L	1.00
UA	G218	C	2023/08/10	Iron, dissolved	mg/L	0.950
UA	G218	C	2023/11/16	Iron, dissolved	mg/L	0.905
UA	G218	C	2010/11/16	Magnesium, total	mg/L	46.0
UA	G218	C	2011/01/27	Magnesium, total	mg/L	42.0
UA	G218	C	2011/03/09	Magnesium, total	mg/L	46.0
UA	G218	C	2011/05/05	Magnesium, total	mg/L	<100
UA	G218	C	2011/07/26	Magnesium, total	mg/L	49.0
UA	G218	C	2011/09/20	Magnesium, total	mg/L	50.0
UA	G218	C	2012/01/26	Magnesium, total	mg/L	45.0
UA	G218	C	2013/02/04	Magnesium, total	mg/L	44.0
UA	G218	C	2014/02/20	Magnesium, total	mg/L	46.0
UA	G218	C	2015/04/10	Magnesium, total	mg/L	51.0
UA	G218	C	2017/07/17	Magnesium, total	mg/L	57.0
UA	G218	C	2020/01/22	Magnesium, total	mg/L	52.0
UA	G218	C	2020/08/13	Magnesium, total	mg/L	49.0
UA	G218	C	2021/01/26	Magnesium, total	mg/L	50.0
UA	G218	C	2021/08/19	Magnesium, total	mg/L	59.0
UA	G218	C	2022/02/09	Magnesium, total	mg/L	57.0
UA	G218	C	2022/05/10	Magnesium, total	mg/L	62.0
UA	G218	C	2022/08/23	Magnesium, total	mg/L	70.0
UA	G218	C	2023/02/16	Magnesium, total	mg/L	57.0
UA	G218	C	2023/06/01	Magnesium, total	mg/L	65.0
UA	G218	C	2023/08/10	Magnesium, total	mg/L	70.6
UA	G218	C	2023/11/16	Magnesium, total	mg/L	74.3
UA	G218	C	2010/11/16	Manganese, dissolved	mg/L	0.290
UA	G218	C	2011/01/27	Manganese, dissolved	mg/L	0.330
UA	G218	C	2011/03/09	Manganese, dissolved	mg/L	0.230
UA	G218	C	2011/05/05	Manganese, dissolved	mg/L	0.140
UA	G218	C	2011/07/26	Manganese, dissolved	mg/L	0.180
UA	G218	C	2011/09/20	Manganese, dissolved	mg/L	0.320
UA	G218	C	2011/11/11	Manganese, dissolved	mg/L	0.170

UA	G218	C	2012/01/26	Manganese, dissolved	mg/L	0.250
UA	G218	C	2012/05/23	Manganese, dissolved	mg/L	0.230
UA	G218	C	2012/07/24	Manganese, dissolved	mg/L	0.280
UA	G218	C	2012/11/15	Manganese, dissolved	mg/L	0.250
UA	G218	C	2013/02/04	Manganese, dissolved	mg/L	0.250
UA	G218	C	2013/05/21	Manganese, dissolved	mg/L	0.160
UA	G218	C	2013/07/23	Manganese, dissolved	mg/L	0.230
UA	G218	C	2013/10/15	Manganese, dissolved	mg/L	0.310
UA	G218	C	2014/02/20	Manganese, dissolved	mg/L	0.190
UA	G218	C	2014/05/14	Manganese, dissolved	mg/L	0.230
UA	G218	C	2014/08/12	Manganese, dissolved	mg/L	0.260
UA	G218	C	2014/10/15	Manganese, dissolved	mg/L	0.270
UA	G218	C	2015/01/21	Manganese, dissolved	mg/L	0.260
UA	G218	C	2015/04/10	Manganese, dissolved	mg/L	<0.002
UA	G218	C	2015/07/22	Manganese, dissolved	mg/L	0.110
UA	G218	C	2015/10/07	Manganese, dissolved	mg/L	0.320
UA	G218	C	2016/02/19	Manganese, dissolved	mg/L	0.200
UA	G218	C	2016/05/11	Manganese, dissolved	mg/L	0.180
UA	G218	C	2016/07/25	Manganese, dissolved	mg/L	0.0100
UA	G218	C	2016/11/23	Manganese, dissolved	mg/L	0.270
UA	G218	C	2017/02/14	Manganese, dissolved	mg/L	0.130
UA	G218	C	2017/05/24	Manganese, dissolved	mg/L	0.00900
UA	G218	C	2017/07/25	Manganese, dissolved	mg/L	0.00540
UA	G218	C	2017/10/31	Manganese, dissolved	mg/L	0.200
UA	G218	C	2018/01/27	Manganese, dissolved	mg/L	0.0530
UA	G218	C	2018/05/15	Manganese, dissolved	mg/L	0.00530
UA	G218	C	2018/08/09	Manganese, dissolved	mg/L	0.370
UA	G218	C	2018/11/02	Manganese, dissolved	mg/L	0.290
UA	G218	C	2019/01/17	Manganese, dissolved	mg/L	0.150
UA	G218	C	2019/05/02	Manganese, dissolved	mg/L	0.0550
UA	G218	C	2019/08/14	Manganese, dissolved	mg/L	0.190
UA	G218	C	2019/10/22	Manganese, dissolved	mg/L	0.280
UA	G218	C	2020/01/22	Manganese, dissolved	mg/L	0.160
UA	G218	C	2020/05/04	Manganese, dissolved	mg/L	0.240
UA	G218	C	2020/08/13	Manganese, dissolved	mg/L	0.320
UA	G218	C	2020/10/14	Manganese, dissolved	mg/L	0.300
UA	G218	C	2021/01/26	Manganese, dissolved	mg/L	0.290
UA	G218	C	2021/05/20	Manganese, dissolved	mg/L	0.430
UA	G218	C	2021/08/19	Manganese, dissolved	mg/L	0.390
UA	G218	C	2021/10/26	Manganese, dissolved	mg/L	0.380
UA	G218	C	2022/02/09	Manganese, dissolved	mg/L	0.330
UA	G218	C	2022/05/10	Manganese, dissolved	mg/L	0.340
UA	G218	C	2022/08/23	Manganese, dissolved	mg/L	0.420
UA	G218	C	2022/11/08	Manganese, dissolved	mg/L	0.420
UA	G218	C	2023/02/16	Manganese, dissolved	mg/L	<0.00023
UA	G218	C	2023/06/01	Manganese, dissolved	mg/L	0.450
UA	G218	C	2023/08/10	Manganese, dissolved	mg/L	0.429
UA	G218	C	2023/11/16	Manganese, dissolved	mg/L	0.436
UA	G218	C	2023/08/10	Phosphate, dissolved	mg/L	0.0210
UA	G218	C	2010/11/16	Potassium, total	mg/L	3.20

UA	G218	C	2011/01/27	Potassium, total	mg/L	1.00
UA	G218	C	2011/03/09	Potassium, total	mg/L	0.530
UA	G218	C	2011/05/05	Potassium, total	mg/L	0.310
UA	G218	C	2011/07/26	Potassium, total	mg/L	2.50
UA	G218	C	2011/09/20	Potassium, total	mg/L	0.640
UA	G218	C	2012/01/26	Potassium, total	mg/L	0.490
UA	G218	C	2013/02/04	Potassium, total	mg/L	0.500
UA	G218	C	2014/02/20	Potassium, total	mg/L	0.490
UA	G218	C	2015/04/10	Potassium, total	mg/L	0.540
UA	G218	C	2017/07/17	Potassium, total	mg/L	0.530
UA	G218	C	2020/01/22	Potassium, total	mg/L	0.570
UA	G218	C	2020/08/13	Potassium, total	mg/L	0.440
UA	G218	C	2021/01/26	Potassium, total	mg/L	0.900
UA	G218	C	2021/08/19	Potassium, total	mg/L	0.470
UA	G218	C	2022/02/09	Potassium, total	mg/L	0.630
UA	G218	C	2022/05/10	Potassium, total	mg/L	0.690
UA	G218	C	2022/08/23	Potassium, total	mg/L	0.630
UA	G218	C	2023/02/16	Potassium, total	mg/L	0.790
UA	G218	C	2023/06/01	Potassium, total	mg/L	0.690
UA	G218	C	2023/08/10	Potassium, total	mg/L	0.772
UA	G218	C	2023/11/16	Potassium, total	mg/L	0.810
UA	G218	C	2023/06/01	Silicon, dissolved	mg/L	8.50
UA	G218	C	2023/08/10	Silicon, dissolved	mg/L	8.19
UA	G218	C	2010/11/16	Sodium, total	mg/L	52.0
UA	G218	C	2011/01/27	Sodium, total	mg/L	52.0
UA	G218	C	2011/03/09	Sodium, total	mg/L	58.0
UA	G218	C	2011/05/05	Sodium, total	mg/L	<100
UA	G218	C	2011/07/26	Sodium, total	mg/L	55.0
UA	G218	C	2011/09/20	Sodium, total	mg/L	63.0
UA	G218	C	2012/01/26	Sodium, total	mg/L	56.0
UA	G218	C	2013/02/04	Sodium, total	mg/L	55.0
UA	G218	C	2014/02/20	Sodium, total	mg/L	57.0
UA	G218	C	2015/04/10	Sodium, total	mg/L	60.0
UA	G218	C	2017/07/17	Sodium, total	mg/L	67.0
UA	G218	C	2020/01/22	Sodium, total	mg/L	55.0
UA	G218	C	2020/08/13	Sodium, total	mg/L	58.0
UA	G218	C	2021/01/26	Sodium, total	mg/L	58.0
UA	G218	C	2021/08/19	Sodium, total	mg/L	63.0
UA	G218	C	2022/02/09	Sodium, total	mg/L	67.0
UA	G218	C	2022/05/10	Sodium, total	mg/L	65.0
UA	G218	C	2022/08/23	Sodium, total	mg/L	75.0
UA	G218	C	2023/02/16	Sodium, total	mg/L	63.0
UA	G218	C	2023/06/01	Sodium, total	mg/L	73.0
UA	G218	C	2023/08/10	Sodium, total	mg/L	75.3
UA	G218	C	2023/11/16	Sodium, total	mg/L	73.7
UA	G218	C	2010/11/16	Sulfate, total	mg/L	79.0
UA	G218	C	2011/01/27	Sulfate, total	mg/L	87.0
UA	G218	C	2011/03/09	Sulfate, total	mg/L	87.0
UA	G218	C	2011/05/05	Sulfate, total	mg/L	88.0
UA	G218	C	2011/07/26	Sulfate, total	mg/L	85.0

UA	G218	C	2011/09/20	Sulfate, total	mg/L	88.0
UA	G218	C	2011/11/11	Sulfate, total	mg/L	83.0
UA	G218	C	2012/01/26	Sulfate, total	mg/L	81.0
UA	G218	C	2012/05/23	Sulfate, total	mg/L	94.0
UA	G218	C	2012/07/24	Sulfate, total	mg/L	76.0
UA	G218	C	2012/11/15	Sulfate, total	mg/L	76.0
UA	G218	C	2013/02/04	Sulfate, total	mg/L	86.0
UA	G218	C	2013/05/21	Sulfate, total	mg/L	76.0
UA	G218	C	2013/07/23	Sulfate, total	mg/L	82.0
UA	G218	C	2013/10/15	Sulfate, total	mg/L	91.0
UA	G218	C	2014/02/20	Sulfate, total	mg/L	81.0
UA	G218	C	2014/05/14	Sulfate, total	mg/L	93.0
UA	G218	C	2014/08/12	Sulfate, total	mg/L	97.0
UA	G218	C	2014/10/15	Sulfate, total	mg/L	96.0
UA	G218	C	2015/01/21	Sulfate, total	mg/L	110
UA	G218	C	2015/04/10	Sulfate, total	mg/L	99.0
UA	G218	C	2015/07/22	Sulfate, total	mg/L	97.0
UA	G218	C	2015/10/07	Sulfate, total	mg/L	95.0
UA	G218	C	2015/11/24	Sulfate, total	mg/L	94.0
UA	G218	C	2016/02/19	Sulfate, total	mg/L	110
UA	G218	C	2016/05/10	Sulfate, total	mg/L	140
UA	G218	C	2016/07/30	Sulfate, total	mg/L	120
UA	G218	C	2016/11/23	Sulfate, total	mg/L	130
UA	G218	C	2017/02/18	Sulfate, total	mg/L	130
UA	G218	C	2017/05/22	Sulfate, total	mg/L	140
UA	G218	C	2017/07/17	Sulfate, total	mg/L	140
UA	G218	C	2017/10/31	Sulfate, total	mg/L	140
UA	G218	C	2018/05/15	Sulfate, total	mg/L	140
UA	G218	C	2018/11/02	Sulfate, total	mg/L	140
UA	G218	C	2019/01/17	Sulfate, total	mg/L	140
UA	G218	C	2019/08/14	Sulfate, total	mg/L	150
UA	G218	C	2020/01/22	Sulfate, total	mg/L	170
UA	G218	C	2020/08/13	Sulfate, total	mg/L	220
UA	G218	C	2020/10/14	Sulfate, total	mg/L	230
UA	G218	C	2021/01/26	Sulfate, total	mg/L	210
UA	G218	C	2021/05/20	Sulfate, total	mg/L	200
UA	G218	C	2021/08/19	Sulfate, total	mg/L	260
UA	G218	C	2021/10/26	Sulfate, total	mg/L	260
UA	G218	C	2022/02/09	Sulfate, total	mg/L	260
UA	G218	C	2022/05/10	Sulfate, total	mg/L	270
UA	G218	C	2022/08/23	Sulfate, total	mg/L	350
UA	G218	C	2022/11/08	Sulfate, total	mg/L	340
UA	G218	C	2023/02/16	Sulfate, total	mg/L	300
UA	G218	C	2023/06/01	Sulfate, total	mg/L	370
UA	G218	C	2023/08/10	Sulfate, total	mg/L	424
UA	G218	C	2023/11/16	Sulfate, total	mg/L	433
UA	G218	C	2015/11/24	Temperature (Celsius)	degrees C	15.8
UA	G218	C	2016/02/19	Temperature (Celsius)	degrees C	13.6
UA	G218	C	2016/05/10	Temperature (Celsius)	degrees C	19.8
UA	G218	C	2016/07/30	Temperature (Celsius)	degrees C	18.5

UA	G218	C	2016/11/23	Temperature (Celsius)	degrees C	14.6
UA	G218	C	2017/02/18	Temperature (Celsius)	degrees C	14.7
UA	G218	C	2017/05/22	Temperature (Celsius)	degrees C	15.8
UA	G218	C	2017/07/17	Temperature (Celsius)	degrees C	20.0
UA	G218	C	2017/10/31	Temperature (Celsius)	degrees C	13.5
UA	G218	C	2018/01/26	Temperature (Celsius)	degrees C	11.9
UA	G218	C	2018/05/15	Temperature (Celsius)	degrees C	15.4
UA	G218	C	2018/11/02	Temperature (Celsius)	degrees C	14.5
UA	G218	C	2019/01/17	Temperature (Celsius)	degrees C	12.5
UA	G218	C	2019/08/14	Temperature (Celsius)	degrees C	16.9
UA	G218	C	2020/01/22	Temperature (Celsius)	degrees C	13.2
UA	G218	C	2020/08/13	Temperature (Celsius)	degrees C	20.2
UA	G218	C	2021/01/26	Temperature (Celsius)	degrees C	12.2
UA	G218	C	2021/08/19	Temperature (Celsius)	degrees C	19.0
UA	G218	C	2021/11/29	Temperature (Celsius)	degrees C	13.9
UA	G218	C	2022/02/09	Temperature (Celsius)	degrees C	12.5
UA	G218	C	2022/05/10	Temperature (Celsius)	degrees C	20.1
UA	G218	C	2022/08/23	Temperature (Celsius)	degrees C	20.8
UA	G218	C	2022/11/08	Temperature (Celsius)	degrees C	16.4
UA	G218	C	2023/02/16	Temperature (Celsius)	degrees C	10.9
UA	G218	C	2023/06/01	Temperature (Celsius)	degrees C	19.8
UA	G218	C	2023/08/10	Temperature (Celsius)	degrees C	15.2
UA	G218	C	2023/11/16	Temperature (Celsius)	degrees C	15.8
UA	G218	C	2010/11/16	Total Dissolved Solids	mg/L	590
UA	G218	C	2011/01/27	Total Dissolved Solids	mg/L	620
UA	G218	C	2011/03/09	Total Dissolved Solids	mg/L	630
UA	G218	C	2011/05/05	Total Dissolved Solids	mg/L	610
UA	G218	C	2011/07/26	Total Dissolved Solids	mg/L	680
UA	G218	C	2011/09/20	Total Dissolved Solids	mg/L	620
UA	G218	C	2011/11/11	Total Dissolved Solids	mg/L	580
UA	G218	C	2012/01/26	Total Dissolved Solids	mg/L	550
UA	G218	C	2012/05/23	Total Dissolved Solids	mg/L	610
UA	G218	C	2012/07/24	Total Dissolved Solids	mg/L	610
UA	G218	C	2012/11/15	Total Dissolved Solids	mg/L	610
UA	G218	C	2013/02/04	Total Dissolved Solids	mg/L	590
UA	G218	C	2013/05/21	Total Dissolved Solids	mg/L	580
UA	G218	C	2013/07/23	Total Dissolved Solids	mg/L	600
UA	G218	C	2013/10/15	Total Dissolved Solids	mg/L	620
UA	G218	C	2014/02/20	Total Dissolved Solids	mg/L	610
UA	G218	C	2014/05/14	Total Dissolved Solids	mg/L	610
UA	G218	C	2014/08/12	Total Dissolved Solids	mg/L	580
UA	G218	C	2014/10/15	Total Dissolved Solids	mg/L	600
UA	G218	C	2015/01/21	Total Dissolved Solids	mg/L	660
UA	G218	C	2015/04/10	Total Dissolved Solids	mg/L	640
UA	G218	C	2015/07/22	Total Dissolved Solids	mg/L	690
UA	G218	C	2015/10/07	Total Dissolved Solids	mg/L	620
UA	G218	C	2015/11/24	Total Dissolved Solids	mg/L	620
UA	G218	C	2016/02/19	Total Dissolved Solids	mg/L	560
UA	G218	C	2016/05/10	Total Dissolved Solids	mg/L	600
UA	G218	C	2016/07/30	Total Dissolved Solids	mg/L	620

UA	G218	C	2016/11/23	Total Dissolved Solids	mg/L	620
UA	G218	C	2017/02/18	Total Dissolved Solids	mg/L	630
UA	G218	C	2017/05/22	Total Dissolved Solids	mg/L	600
UA	G218	C	2017/07/17	Total Dissolved Solids	mg/L	720
UA	G218	C	2017/10/31	Total Dissolved Solids	mg/L	660
UA	G218	C	2018/05/15	Total Dissolved Solids	mg/L	640
UA	G218	C	2018/11/02	Total Dissolved Solids	mg/L	280
UA	G218	C	2019/01/17	Total Dissolved Solids	mg/L	600
UA	G218	C	2019/08/14	Total Dissolved Solids	mg/L	660
UA	G218	C	2020/01/22	Total Dissolved Solids	mg/L	560
UA	G218	C	2020/08/13	Total Dissolved Solids	mg/L	720
UA	G218	C	2020/10/14	Total Dissolved Solids	mg/L	740
UA	G218	C	2021/01/26	Total Dissolved Solids	mg/L	710
UA	G218	C	2021/05/20	Total Dissolved Solids	mg/L	760
UA	G218	C	2021/08/19	Total Dissolved Solids	mg/L	1,000
UA	G218	C	2021/10/26	Total Dissolved Solids	mg/L	850
UA	G218	C	2021/11/29	Total Dissolved Solids	mg/L	880
UA	G218	C	2022/02/09	Total Dissolved Solids	mg/L	850
UA	G218	C	2022/05/10	Total Dissolved Solids	mg/L	920
UA	G218	C	2022/08/23	Total Dissolved Solids	mg/L	1,100
UA	G218	C	2022/11/08	Total Dissolved Solids	mg/L	940
UA	G218	C	2023/02/16	Total Dissolved Solids	mg/L	920
UA	G218	C	2023/06/01	Total Dissolved Solids	mg/L	1,000
UA	G218	C	2023/08/10	Total Dissolved Solids	mg/L	1,140
UA	G218	C	2023/11/16	Total Dissolved Solids	mg/L	1,140

Notes:

< = results is less than detection limit

B = Background

C = Compliance

HSU = Hydrostratigraphic Unit

DA = Deep Aquifer

S = Source Water

UA = Uppermost Aquifer

mg/L = milligrams per liter

SU = standard units

V = volts

Attachment H

Memorandum – Evaluation of Partition Coefficient Results – Coffeen GMF Recycle Pond

Geosyntec consultants

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Memorandum

Date:	July 5, 2022
To:	David Mitchell, Stu Cravens, Vic Modeer Illinois Power Generating Company
Copies to:	Brian Hennings - Ramboll
From:	Allison Kreinberg, Ryan Fimmen – Geosyntec Consultants, Inc.
Subject:	Evaluation of Partition Coefficient Results – Coffeen GMF Recycle Pond CCR Unit 104, Coffeen Power Plant, Coffeen, Illinois

INTRODUCTION

The Illinois Power Generation Company (IPGC) currently operates the Coffeen Power Plant (CPP) in Coffeen, Illinois. The coal combustion residuals (CCR) Unit referred to as the Gypsum Management Facility (GMP) Recycle Pond (RP) (Vistra identification [ID] number [No.] 104; Illinois Environmental Protection Agency [IEPA] ID No. W1350150004-04; National Inventory of Dams [NID] No. IL50578) is a 17-acre pond that receives blowdown from the air emission scrubber. The pond was in operation starting in 2010 until April 11, 2021, when IPGC ceased receipt of waste to the GMF RP. Geosyntec Consultants (Geosyntec) is assisting IPGC with Part 845 compliance at the Site.

IPGC is currently preparing a Construction Permit application for the GMF RP as required under Section 845.220. As part of the Construction Permit application, groundwater modeling is being completed for known potential exceedances of groundwater protection standards (GWPS) as outlined in the Operating Permit (Burns & McDonnell, 2021). In the Operating Permit (October 2021), Burns & McDonnell identified potential GWPS exceedances for several compounds potentially associated with the GMF RP, including boron, sulfate, and total dissolved solids (TDS). Batch adsorption testing was conducted for boron and sulfate to generate site-specific partition coefficients. This technical memorandum summarizes the results of the batch adsorption testing and calculation of partition coefficients.

BATCH ATTENUATION TESTING

In 2021 Geosyntec conducted a field investigation at the GMF RP which included completion of two (2) soil/rock borings ranging in depth from 18 to 28 feet below ground surface. As part of that investigation, soil and groundwater samples were submitted to SiREM Laboratories (Guelph, ON) for batch solid/liquid partitioning testing. A summary of the soil samples used for the batch testing is provided in **Table 1**.

One groundwater sample (G215) and one soil sample (SB-215) were used for batch attenuation testing at five (5) soil:solution ratios (**Table 1**), each ran in duplicate. For each treatment, 0.1 L of groundwater was brought into contact with varying amounts of soil (0.004 to 0.2 kg, depending on the ratio) and equilibrated over a seven-day period. One set of microcosms was amended (i.e., spiked) with sodium sulfate (Na_2SO_4) and another with boric acid (H_3BO_3) to achieve target concentrations of sulfate and boron, respectively (**Table 2**).

An initial sample of the stock solution for each experimental design was collected on Day 0, and a control sample (i.e., only amended G215 groundwater with no aquifer solids) was collected on Day 7 after tumbling in polypropylene bottleware to evaluate any loss to interactions with the bottleware or ambient conditions. Duplicates were constructed for each microcosm, including the control samples. After seven days of contact time, an aliquot of the free liquid was collected and filtered through a 0.45 micron (µm) filter prior to analysis for dissolved concentrations of sulfate and/or boron. The oxidation/reduction potential (redox) and pH were measured for each batch test at the beginning and end of the contact period and in the control samples.

Data obtained from the tests (**Tables 3** and **4**) were used to construct isotherms for boron and sulfate; 5-point isotherms were constructed by averaging duplicate results for each soil:solution ratio. Mathematical fitting was used to calculate the partition coefficients (K_d), assuming linear adsorption. The linear adsorption equation was used:

$$q_e = K_d \times C_e \qquad \text{Eq. 1}$$

where q_e is the mass of constituent adsorbed to the solid phase at equilibrium, C_e is the remaining aqueous constituent concentration at equilibrium, and K_d is the linear sorption coefficient (reported in liters per kilogram [L/kg]). Some of the data showed a deviation from a linear trend, and so were also fitted using non-linear isotherms. The non-linear Langmuir isotherm was used:

$$q_e = \frac{q_m K_L C_e}{1 + K_L C_e} \qquad \text{Eq. 2}$$

where q_m is the inverse of the slope and K_L is the Langmuir partition coefficient. The adsorption data were linearized according to:

$$\frac{C_e}{q_e} = \frac{1}{(K_L \times q_m)} + \frac{C_e}{q_m} \qquad \text{Eq. 3}$$

A common non-linear Freundlich equation was also used:

$$q_e = K_F (C_e)^{1/n} \qquad \text{Eq. 4}$$

where q_e is the mass of constituent adsorbed to the solid phase at equilibrium, C_e is the remaining aqueous constituent concentration at equilibrium, K_F is the Freundlich partition coefficient, and *1/n* is a non-linearity constant. The adsorption data were plotted as log-transformed values to perform the non-linear isotherm fitting using the linearized Freundlich equation:

$$log(q_e) = \log(K_F) + (1/n)\log(C_e) \qquad \text{Eq. 5}$$

The calculated linear, Langmuir, and Freundlich partition coefficients (K_d, K_L, and K_F, respectively) and 1/*n* values are shown in **Table 5**.

SUMMARY OF RESULTS

The partition coefficient values for each amendment (denoted as G215-SO_4 when amended with sodium sulfate and G215-B when amended with boric acid) are presented in **Table 5**. Figures which show the linear, Langmuir, and Freundlich isotherms for boron and sulfate are provided in **Appendix A**. Measurements of soil boron concentrations in SB-215 are pending; a surrogate value of 0 mg/kg was used, consistent with soil boron concentrations from other areas at the CPP.

A boron partition coefficient was not determined for any isotherm for the boron amended microcosms. Both the linear and linearized Langmuir isotherms yielded negative partition coefficients, and the linearized Freundlich could not be calculated as the data were not conducive to log transformation. Other studies have reported low partition coefficients for boron ranging from 0.19 to 1.3 L/kg, depending on pH conditions and the amount of sorbent present (EPRI, 2005; Strenge & Peterson, 1989).

A sulfate partition coefficient was not determined for any isotherm for the sulfate amended microcosms. The linear isotherm yielded a partition coefficient of 0.1 L/kg but had a very poor goodness-of-fit, and the Langmuir isotherm yielded a negative coefficient. As in the boron-amended microcosms, the Freundlich isotherm could not be calculated because the data were not conducive to log transformation These results are consistent with the findings of Strenge and Peterson (1989), who found that partition coefficients for sulfate are 0.0 L/kg, regardless of pH conditions and the amount of sorbent present.

REFERENCES

EPRI, 2005. *Chemical constituents in coal combustion product leachate: boron. Final Report 1005258.*

Burns & McDonnell. 2021. Initial Operating Permit Coffeen GMF Recycle Pond. October

Strenge, D. and Peterson, S. 1989. Chemical Data Bases for the Multimedia Environmental Pollutant Assessment System (MEPAS) (No. PNL-7145). Pacific Northwest National Laboratory, Richland, WA (USA).

TABLES

Table 1 - Batch Attenuation Testing Data Summary
Coffeen GMF RP

Groundwater Sample ID	Soil Sample ID	Soil: Water Ratio
G215	SB-215 (19-24.5 ft bgs) Sodium Sulfate Amendment	2:1.5
		1:1.3
		1:5.8
		1:11.5
		1:27.2
G215	SB-215 (19-24.5 ft bgs) Boric Acid Amendment	2:1.5
		1:1.3
		1:5.8
		1:11.5
		1:28.1

Notes:

ft bgs = feet below ground surface

Table 2 - Microcosm Amendment and Target Concentrations
Coffeen GMF RP

Groundwater Sample ID	Soil Sample ID	Compound	Amendment	Target Concentration (mg/L)
G215	SB-215 (19-24.5 ft bgs)	Boron	31.93 mL of a 2 g/L H_3BO_3	6
		Sulfate	3.41 g of Na_2SO_4	1500

Notes:
ft bgs - feet below ground surface
mg/L - milligrams per liter
Na_2SO_4 - sodium sulfate
H_3BO_3 - boric acid

Table 3 - Batch Attenuation Testing Results
Coffeen GMF RP - Sodium Sulfate Amendment

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Date	Day	Replicate	Dissolved Sulfate	pH	ORP
						mg/L	SU	mV
G215	--	Groundwater Only Control	25-Jan-22	0	G215-1a (SO_4^{2-})	1,589	6.98	83
					G215-2a (SO_4^{2-})	1,826	6.99	79
					Average Concentration (mg/L)	**1,708**	**6.99**	**81**
			7-Feb-22	7	G215-1 (SO_4^{2-})	1,617	6.8	26
					G215-2 (SO_4^{2-})	1,478	6.81	13
					Average Concentration (mg/L)	**1,548**	**6.81**	**20**
	G215 SB-215 Geologic Material	2:1 Soil:Water Ratio	31-Jan-22	0				
			7-Feb-22	7	SB-215-(19-24.5) :G215 2:1-1 (SO_4^{2-})	1,321	6.92	57
					SB-215-(19-24.5) :G215 2:1-2 (SO_4^{2-})	1,302	6.94	103
					Average Concentration (mg/L)	**1,311**	**6.93**	**80**
		1:1 Soil:Water Ratio	31-Jan-22	0				
			7-Feb-22	7	SB-215-(19-24.5) :G215 1:1-1 (SO_4^{2-})	1,727	6.89	85
					SB-215-(19-24.5) :G215 1:1-2 (SO_4^{2-})	860	6.91	91
					Average Concentration (mg/L)	**1,294**	**6.90**	**88**
		1:5 Soil:Water Ratio	31-Jan-22	0				
			7-Feb-22	7	SB-215-(19-24.5) :G215 1:5-1 (SO_4^{2-})	1,326	6.92	29
					SB-215-(19-24.5) :G215 1:5-2 (SO_4^{2-})	1,516	6.87	15
					Average Concentration (mg/L)	**1,421**	**6.90**	**22**
		1:10 Soil:Water Ratio	31-Jan-22	0				
			7-Feb-22	7	SB-215-(19-24.5) :G215 1:10-1 (SO_4^{2-})	1,570	6.87	23
					SB-215-(19-24.5) :G215 1:10-2 (SO_4^{2-})	1,551	6.85	30
					Average Concentration (mg/L)	**1,560**	**6.86**	**27**
		1:20 Soil:Water Ratio	31-Jan-22	0				
			7-Feb-22	7	SB-215-(19-24.5) :G215 1:20-1 (SO_4^{2-})	1,511	6.83	32
					SB-215-(19-24.5) :G215 1:20-2 (SO_4^{2-})	1,588	6.84	79
					Average Concentration (mg/L)	**1,550**	**6.84**	**56**

Notes:
mg/L - milligrams per liter
mV - millivolts
SU - Standard Units
ORP - oxidation/reduction potential

Table 4 - Batch Attenuation Testing Results
Coffeen GMF RP - Boric Acid Amendment

Groundwater Sample ID	Geologic Material Sample ID	Treatment	Date	Day	Replicate	Dissolved Boron	pH	ORP
						mg/L	SU	mV
G215	--	Groundwater Only Control	25-Jan-22	0	G215-1a (B)	4.6	6.88	90
					G215-2a (B)	4.7	6.85	72
					Average Concentration (mg/L)	**4.7**	**6.87**	**81**
			7-Feb-22	7	G215-1 (B)	5.3	6.9	57
					G215-2 (B)	5.4	7.03	13
					Average Concentration (mg/L)	**5.4**	**6.97**	**35**
	G215 SB-215 Geologic Material	2:1 Soil:Water Ratio	31-Jan-22	0				
			7-Feb-22	7	SB-215-(19-24.5) :G215 2:1-1 (B)	3.4	6.91	9
					SB-215-(19-24.5) :G215 2:1-2 (B)	3.4	7.05	11
					Average Concentration (mg/L)	**3.4**	**6.98**	**10**
		1:1 Soil:Water Ratio	31-Jan-22	0				
			7-Feb-22	7	SB-215-(19-24.5) :G215 1:1-1 (B)	4.3	6.98	15
					SB-215-(19-24.5) :G215 1:1-2 (B)	4.3	7.06	31
					Average Concentration (mg/L)	**4.3**	**7.02**	**23**
		1:5 Soil:Water Ratio	31-Jan-22	0				
			7-Feb-22	7	SB-215-(19-24.5) :G215 1:5-1 (B)	5.0	6.96	49
					SB-215-(19-24.5) :G215 1:5-2 (B)	5.2	7.00	19
					Average Concentration (mg/L)	**5.1**	**6.98**	**34**
		1:10 Soil:Water Ratio	31-Jan-22	0				
			7-Feb-22	7	SB-215-(19-24.5) :G215 1:10-1 (B)	5.5	6.95	20
					SB-215-(19-24.5) :G215 1:10-2 (B)	5.3	6.95	29
					Average Concentration (mg/L)	**5.4**	**6.95**	**25**
		1:20 Soil:Water Ratio	31-Jan-22	0				
			7-Feb-22	7	SB-215-(19-24.5) :G215 1:20-1 (B)	5.6	6.93	174
					SB-215-(19-24.5) :G215 1:20-2 (B)	5.5	6.84	102
					Average Concentration (mg/L)	**5.5**	**6.89**	**138**

Notes:
mg/L - milligrams per liter
mV - millivolts
SU - Standard Units
ORP - oxidation/reduction potential

Table 5 - Partition Coefficient Results
Coffeen GMF RP

Analyte	Amendment	Isotherm	Variable	Value
Boron	Boric Acid	Linear	R^2	0.518
			K_D (L/kg)	-8.45
		Langmuir	R^2	0.47
			q_m (mg/g)	0.000
			K_L (L/kg)	-1.87E+05
		Freundlich	R^2	--
			1/n	--
			K_F (L/kg)	--
Sulfate	Sodium Sulfate	Linear	R^2	0.0
			K_D (L/kg)	0.10
		Langmuir	R^2	0.66
			q_m (mg/g)	-0.028
			K_L (L/kg)	-8.94E+02
		Freundlich	R^2	--
			1/n	--
			K_F (L/kg)	--

Notes:

The Freundlich isotherm was not calculated for boron or sulfate because the data were not conducive to log transformation

K_D - linear partition coefficient

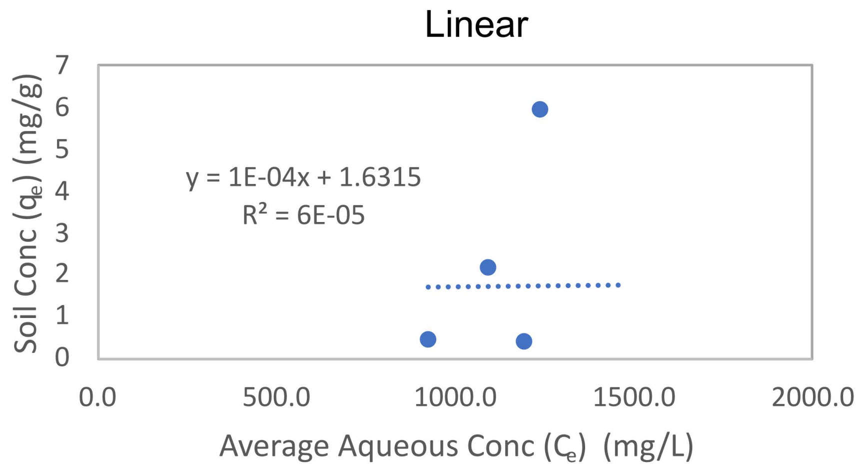
K_L - Langmuir partition coefficient

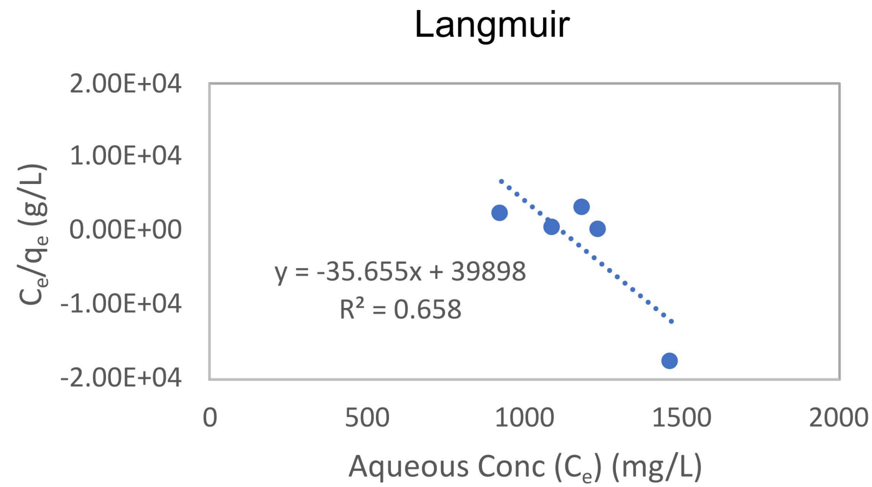
K_F - Freundlich partition coefficient

q_m - inverse of the slope of the linearized Langmuir isotherm

n - non-linearity constant of the Freundlich isotherm

APPENDIX A
BATCH TESTING ISOTHERM PLOTS





Notes:

The Freundlich isotherm was not calculated because the data were not conducive to log transformation.

q_e - mass of constituent adsorbed to the solid phase
C_e - remaining aqueous constituent concentration
mg/L - milligrams per liter
mg/g - milligrams per gram
g/L - grams per liter

G215-SO_4 Sulfate Partitioning Coefficients
Coffeen Power Plant GMF RP
Coffeen, Illinois

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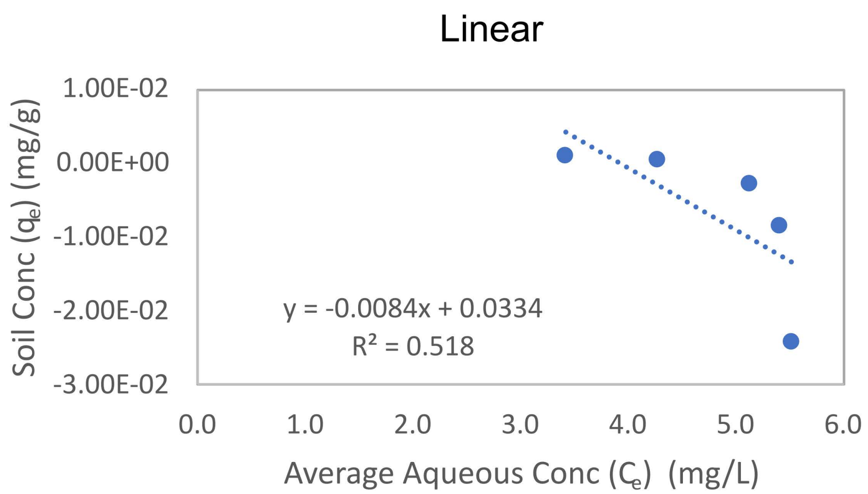
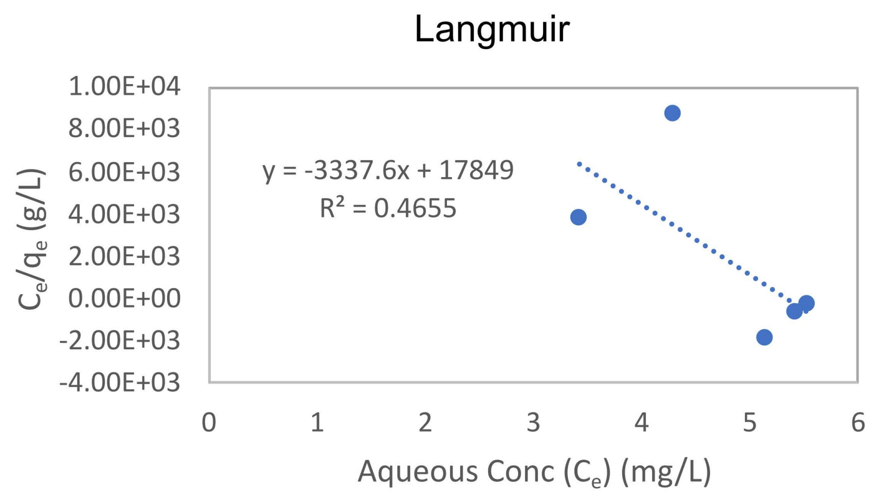
Figure 1





Notes:

The Freundlich isotherm was not calculated because the data were not conducive to log transformation.

q_e - mass of constituent adsorbed to the solid phase
C_e - remaining aqueous constituent concentration
mg/L - milligrams per liter
mg/g - milligrams per gram
g/L - grams per liter

G215-B Boron Partitioning Coefficients
Coffeen Power Plant GMF RP
Coffeen, Illinois

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Figure **2**