BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

SIERRA CLUB, PRAIRIE RIVERS NETWORK, and NATIONAL ASSOCIATION FOR THE ADVANCEMENT OF COLORED PEOPLE,	)	
Complainants,	)	
v.	)	PCB 18-11 (Enforcement – Water)
CITY OF SPRINGFIELD, OFFICE OF PUBLIC UTILITIES d/b/a CITY WATER, LIGHT and POWER,	)	
Respondent.	)	

NOTICE OF FILING

PLEASE TAKE NOTICE that I have served a true and correct copy of **COMPLAINANTS' RESPONSE TO RESPONDENT'S MOTION TO BOARD PRELIMINARY TO HEARING** via electronic mail to the parties listed on the attached service list before 5:00 p.m.

Respectfully submitted,

Faith E. Bugel

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Wilmette, IL 60091
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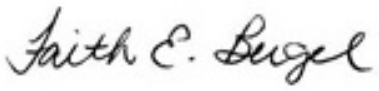
Attorney for Sierra Club

Dated: August 15, 2025

CERTIFICATE OF SERVICE

The undersigned, Faith E. Bugel, an attorney, certifies that I have served electronically upon the Clerk and by email upon the individuals named on the attached Service List a true and correct copy of **COMPLAINANTS' RESPONSE TO RESPONDENT'S MOTION TO BOARD PRELIMINARY TO HEARING** before 5 p.m. Central Time on August 15, 2025 to the email addresses of the parties on the attached Service List. The entire filing package, including exhibits, is 137 pages.

Respectfully submitted,



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PCB 2018-11

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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

SIERRA CLUB, PRAIRIE RIVERS NETWORK, and NATIONAL ASSOCIATION FOR THE ADVANCEMENT OF COLORED PEOPLE,	)	
Complainants,	)	
v.	)	PCB 18-11 (Enforcement – Water)
CITY OF SPRINGFIELD, OFFICE OF PUBLIC UTILITIES d/b/a CITY WATER, LIGHT and POWER,	)	
Respondent.	)	

COMPLAINANTS' RESPONSE TO RESPONDENT'S MOTION TO BOARD PRELIMINARY TO HEARING

Sierra Club, Prairie Rivers Network, and National Association for the Advancement of Colored People ("Complainants") hereby oppose City of Springfield, Office of Public Utilities d/b/a City Water, Light and Power's ("Respondent") Motion to Board Preliminary to Hearing to Clarify the Scope of Available Remedies ("Motion"). In 2023, the Board held Respondents liable for violations under the Illinois Groundwater Quality Standards and the Illinois Environmental Protection Act. Despite that Order, Respondent brings this Motion in an attempt to foreclose the most critical element of remedial relief—a cease and desist order prohibiting further violations. Respondent's motion must fail because of legal errors and lack of supporting legal authority.

Respondent's Motion contains at least four distinct errors that warrant denial of their request. First, Respondent largely ignores its violations of the Illinois Environmental Protection Act (the "Act") and the Board's right to consider and compare the water pollution standards under Part 620 in addressing those violations. Second, Respondents have not shown or argued

that the conduct causing the exceedances of Parts 620 has ceased. On the other hand, Complainants have identified additional pollution exceedances which document that the contamination is ongoing and causing harm. Third, Respondent does not address the broad discretion afforded to the Board under the Environmental Protection Act Section 33(c) when fashioning an appropriate remedy. Finally, Complainants are seeking a cease and desist order, not injunctive relief. Therefore, Respondent's Motion should be denied.

ARGUMENT

First, Respondent's motion focuses on violations of regulations, specifically Part 620, and largely ignores Complainants' allegations of and the Board's conclusions on violations of the Illinois Environmental Protection Act. CWLP Mot. at pp. 7-13. Section 12(a) of the Act provides that "[n]o person shall: cause or threaten or allow the discharge of any contaminants into the environment in any State so as to cause or tend to cause water pollution in Illinois, either alone or in combination with matter from other sources, or so as to violate regulations or standards adopted by the Pollution Control Board under this Act." 415 ILCS § 5/12(a). The Act defines "water pollution as "such alteration of the physical, thermal, chemical, biological or radioactive properties of any waters of the State, or such discharge of any contaminant into any waters of the State, as will or is likely to create a nuisance or render such waters harmful or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate uses, or to livestock, wild animals, birds, fish, or other aquatic life." 415 ILCS 5/3.545. Further, the Board does not require proof that actual harm has occurred or that the groundwater is being used but, instead, only requires a showing that "harm would occur if the contaminated water were to be used." *Central Illinois Public Service Co. v. Pollution Control Board*, 116 Ill. 2d 397, 409, 507 N.E.2d 819, 824 (1987).

The Board has established that parties may rely on regulations that are not in effect as evidence of water pollution and Illinois Environmental Protection Act violations. In *International Union*, at the time of the violation, the groundwater standards under Part 620 had not yet been developed, and 12(a) did not include the language stating that a person can be liable under 12(a) for violating regulations or standards. However, groundwater sampling information demonstrated that Class I and II groundwater standards were exceeded at the respondent's site. *International Union v. Caterpillar* PCB No. 94-240, slip op., at 33-34 (Aug. 1, 1996).

> The Part 620 standards of the Board's groundwater quality regulations establish a classification scheme for groundwater which is designed to protect them from degradation and to protect the continued viability of Illinois' groundwater resources. Though not adopted pursuant to the Act, but to the Illinois Groundwater Protection Act (IGPA), the IGPA directs the Board to adopt regulations establishing comprehensive water quality standards which are specifically for the protection of groundwater. (Groundwater Quality Standards: 35 Ill. Adm. Code 620, (November 7, 1991), 127 PCB 53.) The IGPA further declares groundwater to be a resource, the protection of which is essential to the social and economic well-being of the people of Illinois, and which is of vital importance to their general health, safety, and welfare. (Id.) In this case, we find that exceedances of the Part 620 standards, therefore, constitutes degradation of one of the State's water resources and indicates the presence of water pollution caused by respondent.

Id. Similar to *International Union*, the present matter represents the other side of the same legal principle when the regulations in question, Part 845, had not yet gone into effect. The comparison between the effective Part 845 standards and the Part 620 standards that are no longer in effect can still be made to demonstrate that there are violations of the Act. CWLP's exceedances of Part 620 may no longer constitute violations of the regulations after March 28, 2025, but they still indicate that there is degradation of the State's water resources and water pollution.

Along the same lines, even though Part 845 was not in effect at the time of the Complaint or the Amended Complaint, comparison to Part 845 is informative as to water pollution as well.

Like *International Union*, the comparison to Part 845 standards that were adopted in the middle of this matter can still be made to demonstrate that there is water pollution and the water pollution's ongoing nature. The water pollution established by the CWLP's contamination of groundwater and exceedances of Part 620 and Part 845 constitute continuing violations of the Illinois Environmental Protection Act. It is these violations of the Act that justify the need for a cease and desist order.

Second, Respondent argues that the violations of Part 620 cease on March 28, 2025 but never argues that the conduct causing the violations has ceased. When considering whether violations have ceased, the Board focuses on the conduct causing the violations and whether compliance is voluntary. *East Moline v. Pollution Control Bd.*, 136 Ill. App. 3d 687, 693 (1985) (noting that "previous conduct constituting environmental violations has been discontinued"); *Southern Illinois Asphalt Co. v. Pollution Control Board*, 60 Ill. 2d 204, 209 326 N.E.2d 406 (1975) ("Merlan has exercised good faith in trying to control its problems."); *Bresler Ice Cream Co. v. Pollution Control Board,* 21 Ill. App. 3d 560, 315 N.E.2d 619 (1974) ("[A]ll violations were voluntarily abated by Bresler close to 3 months prior to the filing of the complaint"); *Chicago Magnesium Casting Co. v. Pollution Control Board*, 22 Ill. App. 3d 489, 317 N.E.2d 689 (1974) (noting that Chicago Magnesium voluntarily came into compliance two years prior to complaint being filed); *CPC International, Inc. v. Pollution Control Board*, 24 Ill. App. 3d 203, 321 N.E.2d 58 (1974) (noting that CPC voluntarily remedied the violations before hearing). Respondent never argues that the conduct causing the violations ceased on March 28, 2025. The water pollution from the contaminants leaching from CWLP's ash ponds did not lessen, end, or change as of the March 28, 2025 date on which the Part 620 amendment went into effect. Unlike *East Moline*, the conduct causing the violations here did not cease. The only

change was the scope of the Part 620 regulations. The amendment to Part 620 created a new class of groundwater—Class IV. 35 Ill. Admin Code Section 620.240. Class IV applies to groundwater regulated by Part 845, and provides that the groundwater protection standard under Section 845.600 must not be exceeded for any constituent with a Section 845.600 standard. Class IV groundwater is excepted out of Section 620.210 and 220 application of Class I and II groundwater provisions. Exceedances of Parts 620 and 845 also establish that the conduct causing the exceedances is continuing and while the violations of Part 620 may have ceased, it was not a voluntary cessation by CWLP.

Third, Respondent fails to even mention the Section 33(c) requirements that apply to all Board orders and determinations. 415 ILCS 5/33(c). Section 33(c) requires the Board to consider "all the facts and circumstances bearing upon the reasonableness" of the pollution. *Id.* Illinois courts have held that "Section 33 of the Act vests the Board with wide discretion in fashioning a remedy." *Roti v. LTD Commodities*, 355 Ill.App.3d 1039, 1053 (2005). The Board must consider five factors when making its determination:

> (i) the character and degree of injury to, or interference with the protection of the health, general welfare and physical property of the people;
> (ii) the social and economic value of the pollution source;
> (iii) the suitability or unsuitability of the pollution source to the area in which it is located, including the question of priority of location in the area involved;
> (iv) the technical practicability and economic reasonableness of reducing or eliminating the emissions, discharges or deposits resulting from such pollution source; and
> (v) any subsequent compliance.

415 ILCS 5/33(c).

In addition, to the broad facts and circumstances that must be considered during the remedy phase of a case, the Illinois Pollution Control Board applies a "relaxed standard" in determining the admissibility of evidence. This relaxed standard allows the admission of evidence that is material, relevant, and reliable, even if it would not be admissible under Illinois

civil court rules. *See, e.g., People v. Atkinson Landfill Co.,* PCB 13-28, 2014 WL 186652, at *9 (Jan. 9, 2014). In other words, "the hearing officer will admit evidence that is admissible under the rules of evidence" and may also "admit evidence that is material, relevant, and would be relied upon by prudent persons in the conduct of serious affairs, unless the evidence is privileged." 35 Ill. Adm. Code Section 101.626. Contrary to Respondent's argument that Part 620 groundwater protection standards are no longer applicable in the present case, consideration and comparison of the Part 620 and Part 845 groundwater protection standards absolutely bear "upon the reasonableness" of the pollution and are squarely within the purview of evidence that the Board may consider at its discretion. 415 ILCS 5/33(c). Since exceedances of Part 620 are highly relevant in this matter, especially to the Section 33(c) factors on character and degree of injury and subsequent compliance, evidence of those exceedances is admissible.

Finally, Respondent's motion misstates the governing law by characterizing Complainants as seeking injunctive relief. CWLP Mot. at ¶ 6 ("The Complaint and Amended Complaint request three types of relief: … (3) injunctive relief, purportedly pursuant to 415 ILCS 5/33 …"). In so arguing, Respondent mischaracterizes the Illinois Environmental Protection Act (the "Act") and its parameters governing the Illinois Pollution Control Board's (the "Board") authority. The Act distinguishes the Board's authority to impose equitable (injunctive) relief from its authority to issue a cease and desist order. The Board's authority to order injunctive relief is limited to cases in which the "State's Attorney of the county in which the violation occurred or the Attorney General … institute[] a civil action for an injunction." 415 ILCS 5/42(e). Section 33(b) of the Act provides that a Board "order may include a direction to cease and desist from violations of this Act." 415 ILCS 5/33(b). The Board's power to issue a "cease and desist" order includes the power to order compliance with regulations and with the

Illinois Environmental Protection Act. *People v. Poland,* PCB 98-148*,* 2003 WL 21995867, *at *11.* It also allows the Board to dictate an "enforcement remedy." *City of Springfield*, PCB 18-11, slip op. at 30. Accordingly, "[t]he Board has broad authority to take whatever steps are necessary to rectify the problem of [water] pollution." *People v. Poland,* PCB 98-148*,* 2003 WL 21995867, *at *11 (citing Discovery South Group v. PCB*, 275 Ill. App. 3d 547, 560, 656 N.E.2d 51 (1st Dist. 1995)).

Even though the Board's cease and desist authority is broad, that authority is still distinct from the Board's power to order injunctive relief. Respondent erred in their description of both the remedy that Complainants are seeking and the scope of the Board's injunctive authority. Since Complainants are not the State's Attorney or Attorney General, Complainants are not able to seek injunctive relief as Respondent claims. Instead, Complainants seek a cease and desist order to prevent further water pollution, which is a remedy that the Board can grant.

Exceedances of Part 620 and Part 845 have continued unabated throughout 2023, 2024 and 2025. The Board found in 2022 that "there are no issues of genuine fact that CWLP violated Section 12(a) of the Act (415 ILCS 5/12(a)) and Sections 610.115, 620.301(a) and 620.405 of the Board's groundwater rules (35 Ill. Adm. Code 620.115, 620.301(a), 620.405) for the discharge of boron, sulfate, and TDS. For the reasons stated above, the violations of the Act are continuing since the Board's decision because CWLP has reported exceedances of both Part 620 and Part 845.

In 2023, CWLP exceedances of groundwater protection standards under Part 845 for five different constituents: boron, calcium, pH, sulfate and TDS. These exceedances were scattered across six different wells. *See, e.g.*, Letter from P.J. Becker to Josiah Seif, Notification of Groundwater Protection Standards Exceedances First Quarter 2023 (May 4, 2023) (Ex. A);

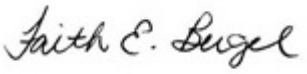
Letter from P.J. Becker to Josiah Seif, Notification of Groundwater Protection Standards Exceedances Second Quarter 2023 (Sept. 5, 2023) (Ex. B); *see also* Hutson Report, at 15 (Jan. 5, 2025) (Ex. C). Exceedances of the boron standard were most prevalent with five wells showing exceedances. *Id.* These patterns continued into 2024 except arsenic and cobalt joined the growing list of exceedances with arsenic exceedances at monitoring wells AP-7 and AP-8 and cobalt exceedances at well AP-2. *See* Hutson Report, Ex. C at 15; *see also* Annual Groundwater Monitoring and Corrective Action Report Year Ending Dec. 31, 2024, at 9-12 (Jan. 2025) (excerpted at Ex. D). Notably, the arsenic exceedances are occurring in groundwater monitoring well AP-7 which is located at the compliance boundary suggesting that the arsenic plume extends off the CWLP property. Ex. D, at 9. Finally, CWLP continues to report the same list of constituents as exceeding Part 835 standards in 2025. In the first quarter of 2025, CWLP continued to report exceedances of arsenic, boron, calcium, cobalt, sulfate, TDS and pH. Letter from P.J. Becker to CCR Coordinator, Notification of Exceedances of Proposed GWPS First Quarter 2025 (July 15, 2025) (Ex. E).

Comparing the results reported under Part 845 to Part 620 Class I groundwater standards indicates that CWLP has exceedances of boron, sulfate and TDS in 2023 (Annual Groundwater Monitoring and Corrective Action Report Year Ending Dec. 31, 2023, tbl. 2 (Jan. 2024) (excerpted at Ex. F)); arsenic, boron, cobalt, sulfate and TDS in 2024 (Annual Groundwater Monitoring and Corrective Action Report Year Ending December 31, 2024, tbl. 2 (Jan. 2025) (excerpted at Ex. G)); and arsenic, boron, cobalt, sulfate and TDS 2025 (Ex. E). *See* 35 Ill. Admin. Code Section 620.410. Consequently, the violations of the Act have continued since the Board's decision because CWLP has exceedances of both Part 620 and Part 845.

CONCLUSION

For all the reasons stated above, Complainants respectfully request that the Board deny Respondent's Motion to Board Preliminary to Hearing.

Respectfully submitted,



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Attorney for Sierra Club

Dated: August 15, 2025

OFFICE OF PUBLIC UTILITIES
CITY OF SPRINGFIELD, ILLINOIS
JAMES O. LANGFELDER, MAYOR
DOUG BROWN, CHIEF UTILITY ENGINEER

May 4, 2023

Josiah Seif, CCR Coordinator
Illinois Environmental Protection Agency
DWPC – Permits #15
Attn: Part 845 Coal Combustion Residual Rule Submittal
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Re: City Water, Light and Power – CCR Surface Impoundments
Lakeside Ash Pond – W1671200052-01
Dallman Ash Pond – W1671200052-02
Notification of Groundwater Protection Standards Exceedance First Quarter 2023

Dear Mr. Seif:

Pursuant to 35 IAC 845.650(d), provided herein is notification of a Groundwater Protection Standard Exceedance from the First Quarter 2023. The groundwater sampling event was initiated on January 26, 2023. Due to adverse weather conditions, the sampling event was completed on February 16, 2023. Statistical analysis of the monitoring results per 35 IAC 845.640(h)(2) was completed on March 10, 2023. Confirmation sampling was conducted on April 12, 2023

An Alternate Source Demonstration pursuant to 35 IAC 845.650(e) was submitted to the Illinois EPA on September 12, 2022 to address the exceedances in the vicinity of monitoring well AP12 and is currently under review by the Illinois EPA.. The remaining exceedances have been delineated pursuant to 35 IAC 845.650 (d)(1). The Assessment of Corrective Measures required pursuant to 35 IAC 845.660 was completed concurrently with the Closure Alternatives Assessment in October 2021. Both of these assessments were submitted to the Illinois EPA on February 1, 2022 as part of our Closure Construction Permit Application. This permit application is currently under review by the Illinois EPA.

If you have any questions, please feel free to contact Eric Staley of my staff at (217) 757-8610. Thank you.

Sincerely,

P.J. Becker
Environmental Health and Safety Manager

Enclosure

Cc: Deborah Williams (w/o att.)
Andrews Engineering

CITY WATER LIGHT AND POWER

ASH POND GROUNDWATER MONITORING PROGRAM

Groundwater Protection Standard Exceedances

1st Quarter 2023

Well #	Parameter	Units	GWPS	1/26/2023 2/16/2023	Resample 4/12/2023	Confirmed Exceedance
RW3	Arsenic	mg/L	0.0724	0.169	0.145	Yes
AP1	Boron	mg/L	2	23.2	21.2	Yes
AP1	Calcium	mg/L	176.63	230	242	Yes
AP1	Lithium	mg/L	0.05	0.0566	<0.005	NO
AP1	Sulfate	mg/L	400	781	768	Yes
AP1	Total Dissolved Solids	mg/L	1200	1520	1540	Yes
AP2	pH	S.U.	6.5-9.0	6.46	6.44	Yes
AP2	Boron	mg/L	2	3.94	3.7	Yes
AP2	Calcium	mg/L	176.63	217	210	Yes
AP2	Sulfate	mg/L	400	485	432	Yes
AP3	Boron	mg/L	2	14.5	14.3	Yes
AP3	Lithium	mg/L	0.05	0.0501	<0.005	NO
AP3	Sulfate	mg/L	400	461	483	Yes
AP10	Boron	mg/L	2	3.32	3.76	Yes
AP11	pH	S.U.	6.5-9.0	6.42	6.45	Yes
AP12	pH	S.U.	6.5-9.0	6.47	6.43	Yes
AP12	Calcium	mg/L	176.63	265	269	Yes
AP12	Sulfate	mg/L	400	641	659	Yes
AP12	Total Dissolved Solids	mg/L	1200	1440	1580	Yes
AP14	Boron	mg/L	2	21.3	23	Yes
AP14	Calcium	mg/L	176.63	209	233	Yes
AP14	Sulfate	mg/L	400	699	707	Yes
AP14	Total Dissolved Solids	mg/L	1200	1280	1330	Yes

CITY WATER, LIGHT AND POWER
CITY OF SPRINGFIELD, ILLINOIS
MISTY BUSCHER, MAYOR
DOUG BROWN, CHIEF UTILITY ENGINEER

September 5, 2023

Josiah Seif, CCR Coordinator
Illinois Environmental Protection Agency DWPC – Permits #15
Attn: Part 845 Coal Combustion Residual Rule Submittal
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Re: City Water, Light and Power – CCR Surface Impoundments
Lakeside Ash Pond – W1671200052-01
Dallman Ash Pond – W1671200052-02
Notification of Groundwater Protection Standards Exceedance Second Quarter 2023

Dear Mr. Seif:

Pursuant to 35 IAC 845.650(d), provided herein is notification of a Groundwater Protection Standard Exceedance from the Second Quarter 2023. The groundwater sampling event was completed on April 12, 2023. Statistical analysis of the monitoring results per 35 IAC 845.640(h)(2) was completed on May 30, 2023. Confirmation sampling was conducted on July 26, 2023. Statistical analysis of the confirmation results was completed on August 28, 2023.

An Alternate Source Demonstration pursuant to 35 IAC 845.650(e) was submitted to the Illinois EPA on September 12, 2022 to address the exceedances in the vicinity of monitoring well AP12. This Alternate Source Demonstration is currently under review by the Illinois EPA. The remaining exceedances have been delineated pursuant to 35 IAC 845.650 (d)(1). The Assessment of Corrective Measures required pursuant to 35 IAC 845.660 was completed concurrently with the Closure Alternatives Assessment in October 2021. Both of these assessments were submitted to the Illinois EPA on February 1, 2022 as part of our Closure Construction Permit Application. This permit application is currently under review by the Illinois EPA.

If you have any questions, please feel free to contact Eric Staley of my staff at (217) 757-8610. Thank you.

Sincerely,

P.J. Becker
Environmental Health and Safety Manager

Enclosure

Cc: Deborah Williams (w/o att.)
Andrews Engineering

CITY WATER LIGHT AND POWER

ASH POND GROUNDWATER MONITORING PROGRAM

Groundwater Protection Standard Exceedances

2nd Quarter 2023

Well #	Parameter	Units	GWPS	Sample 4/12/2023	Resample 7/6/2023	Confirmed Exceedance
RW3	Arsenic	mg/L	0.0724	0.145	0.0831	Yes
AP1	Boron	mg/L	2	23.2	21.2	Yes
AP1	Calcium	mg/L	176.63	230	242	Yes
AP1	Lithium	mg/L	0.05	0.0566	<0.005	NO
AP1	Sulfate	mg/L	400	781	768	Yes
AP1	Total Dissolved Solids	mg/L	1200	1520	1540	Yes
AP2	pH	S.U.	6.5-9.0	6.46	6.44	Yes
AP2	Boron	mg/L	2	3.94	3.7	Yes
AP2	Calcium	mg/L	176.63	217	210	Yes
AP2	Sulfate	mg/L	400	485	432	Yes
AP3	Boron	mg/L	2	14.5	14.3	Yes
AP3	Lithium	mg/L	0.05	0.0501	<0.005	NO
AP3	Sulfate	mg/L	400	461	483	Yes
AP10	Boron	mg/L	2	3.32	3.76	Yes
AP11	pH	S.U.	6.5-9.0	6.42	6.45	Yes
AP12	pH	S.U.	6.5-9.0	6.47	6.43	Yes
AP12	Calcium	mg/L	176.63	265	269	Yes
AP12	Sulfate	mg/L	400	641	659	Yes
AP12	Total Dissolved Solids	mg/L	1200	1440	1580	Yes
AP14	Boron	mg/L	2	21.3	23	Yes
AP14	Calcium	mg/L	176.63	209	233	Yes
AP14	Sulfate	mg/L	400	699	707	Yes
AP14	Total Dissolved Solids	mg/L	1200	1280	1330	Yes

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(720) 320-2060

January 5, 2025

Ms. Faith Bugel
Attorney
1004 Mohawk Rd.
Wilmette, Il 60091

Subject: Review of Closure Permit Application and Other Pertinent Materials
City, Water, Light and Power Coal Combustion Residual Impoundments
Springfield, IL

Introduction

This report was prepared following a request from Sierra Club to review available information and provide my expert opinions on options for closing the City, Water, Light and Power (CWLP) coal combustion residuals (CCR) impoundments located at the Dallman Station (Dallman) in Springfield, Illinois. CCR storage and disposal facilities associated with Dallman are located on the floodplain of Sugar Creek immediately downstream of Lake Springfield and Spalding Dam.

I recommend that waste be excavated from the site and be either beneficially reused or disposed in a secure facility. The proposed cap-in-place remedy for the Lakeside and Dallman Ash Ponds does not meet the Illinois performance standard for CCR closures[1] which requires the facility to take measures, such as engineering controls that will control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste as well as post-closure releases to groundwater from the sides and bottom of the unit. Closing the impoundments by capping them in place fails to meet performance standard for because waste located at or below the potentiometric surface would continue to be in regular contact with groundwater. Capping waste in place would also leave the units susceptible to damage or releases during flood events. For these reasons I cannot recommend simply leaving the waste in place beneath a cap.

Because the CWLP CCR units are located immediately adjacent to Sugar Creek and waste is in regular contact with groundwater, there are few options that will be effective at containing the CCR waste and eliminating potential release of contaminants into the environment. Other remedial options may reduce contaminant concentrations to some extent for as long as one or more systems are operated and maintained. The overarching problem with this site would however remain. The CWLP impoundments were constructed in a location that is very poorly suited for waste disposal facilities. The CWLP ash is currently contained in:

[1] 35 Ill. Admin. Code Section 845.750(a)(1)

- impoundments that have been poorly designed and constructed,
- impoundments known to be releasing ash-related contaminants to groundwater in concentrations well above Illinois Class I Groundwater Quality Standards,
- impoundments with bottoms located at or below the water table, and
- impoundments located on the Sugar Creek 100-year floodplain.

Throughout this report, I cite to certain documents and evidence upon which I base my observations, opinions and conclusions. That does not mean, however, that the cited materials are the only sources of supporting evidence. For example, I often draw upon information in technical papers and textbooks as well as my decades of experience working on environmental contamination from waste disposal facilities, including numerous coal ash disposal facilities, to focus my review and inform my opinions.

A central tenet of responsible waste management is that it be prevention-based. The United States Environmental Protection Agency (EPA) articulated this tenet in its 1993 guidance for owners and operators of solid waste disposal facilities stating: "Ground water is … used extensively for agricultural, industrial, and recreational purposes. Landfills can contribute to the contamination of this valuable resource if they are not designed to prevent waste releases into ground water … Cleaning up contaminated ground water is a long and costly process and in some cases may not be totally successful."[2] Simply said, preventing groundwater contamination uses far fewer resources that cleaning up contamination that has already reached groundwater.

Unlike other forms of solid waste such as municipal solid waste (MSW), inorganic coal combustion residuals (CCR) and the metals contained in inorganic CCR do not biodegrade. Coal ash that is left in unlined ash basins will be capable of leaching toxic metals into Illinois groundwater and/or surface water at any time in the present, the near, or distant future for as long as soluble metals in the ash come into contact with water. This is true for unlined facilities[3] where waste is in contact with groundwater, whether or not a cap is placed on the top of the disposal area.

Therefore, effective closure of coal ash storage sites requires that the coal ash waste be securely and permanently isolated from water: including precipitation, surface water, and groundwater. Concerns over the adequacy of proposed coal ash impoundment closures typically center on the proposals ability to isolate the waste from water. Failure to isolate coal ash waste from water will result in leaching of contaminants, i.e. formation of leachate. "Leachate" "includes liquid, including any suspended or dissolved constituents in the liquid, that has percolated through or drained from waste or other materials placed in a landfill, or that passes through the containment

[2] EPA (1993), Criteria for Solid Waste Disposal Facilities, A Guide for Owners/Operators, EPA/530-SW-91-089, March 1993, p. 3, available at https://www.epa.gov/sites/production/files/2016-03/documents/landbig.pdf

[3] Facilities constructed with no low-permeability bottom liner that adequately restricts subsurface water flow.

structure (e.g., bottom, dikes, berms) of a surface impoundment."[4] If released to groundwater or surface water, leachate from coal ash impoundments impairs and degrades water quality. Due to the lack of a bottom liner, unlined coal ash impoundments "allow the leachate to potentially migrate to nearby groundwater, drinking water wells, or surface waters."[5]

Background

CWLP has notified IEPA of intent to initiate closure of the Lakeside and Dallman CCR impoundments under the requirements of 35 Illinois Administrative Code Section 845.750, Closure with a Final Cover System.[6] This letter documents the results of my review to date and identifies several significant findings that the Illinois Pollution Control Board should take into consideration when making its remedy decision to this matter. I reserve the right to amend, supplement or clarify my opinions based on the review of additional data and evidence, including any evidence contained in any additional disclosures by CWLP concerning closure of the Lakeside and Dallman ash ponds.

Summary of Significant Findings

The following are the major findings that resulted from my review to date:

- The cap-in-place closure proposed by CWLP would leave unlined ash ponds in place on the floodplain of Sugar Creek and over the original Sugar Creek channel where the disposed waste will remain in contact with groundwater.
- The proposed cap-in-place remedy for the Lakeside and Dallman Ash Ponds does not meet the Illinois performance standard for CCR closures[7] which requires the facility to take measures, such as engineering controls that will control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste as well as post-closure releases to groundwater from the sides and bottom of the unit.
- Coal ash contained within the impoundments is saturated by, and degrading the quality of groundwater within, beneath, and downgradient of the impoundments. This impairment and degradation of groundwater quality will continue post-closure unless ash and ash-constituents are effectively segregated from the groundwater flow system.
- Exceedances of background arsenic concentrations are being systematically under-reported by including data from an impacted downgradient monitoring well (AP-4) in the background data. Maintaining AP-4 as an upgradient monitoring well creates an

[4] EPA (2015), Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category, 80 Fed. Reg. (November 3, 2015) (40 C.F.R. Part 423), at pp. 67,838 and 67,847, available at https://www.govinfo.gov/content/pkg/FR-2015-11-03/pdf/2015-25663.pdf

[5] EPA (2015), at p. 67,847

[6] Andrews Engineering (2022), Final Closure Plan for Coal Combustion Residuals Surface Impoundments, contained in Attach. 13 to CWLP Closure Construction Permit Application (Feb. 2022)

[7] 35 Illinois Administrative Code Section 845.750(a)(1)

artificially high background value and minimizes the number of exceedances of groundwater protection standards.

- The bottom of the ash impoundment is and would remain unlined under the proposed closure plan. The lack of a bottom liner and high groundwater elevation beneath the impoundments will result in some CCR being permanently submerged, and additional CCR being periodically re-wetted during flood events or periods of unusually high groundwater elevation.
- CCR contaminants will be released to the groundwater as long as soluble CCR constituents are allowed to be in continuous or intermittent contact with groundwater. Given the close proximity to the CWLP CCR impoundments, released contaminants must be expected to enter the surface water and accumulate in sediments within Sugar Creek.
- Even under a now routine flood event such as the 100-year flood[8], the Federal Emergency Management Administration (FEMA) predicts water will flow over the top Spalding Dam drop down the perimeter berm around the Lakeside Ash Pond into Sugar Creek. Catastrophic release of some portion of the CCR waste stored in the impoundment will become increasingly likely over time as storm events increase in intensity and become more common.
- As utilities have reluctantly realized that capping waste in contact with groundwater does not meet applicable performance standards, CCR closures are now being planned using alternative methods. CWLP must recognize that its proposed closure plan does not meet the performance standard and select a closure technique that is actually protective of the environment.
- Coal ash is known to be buried outside of the berms surrounding the Lakeside Ash Pond. Construction of a cap over the Lakeside Ash Pond would do nothing to eliminate contamination from wastes located outside of the berm. The appropriate closure method for the CWLP Coal Ash Ponds must address all of the disposed ash. The proposed Cap-in-Place closure does not achieve this goal.
- I recommend that waste be excavated from the site and be either beneficially reused or disposed in a secure facility. Closing the impoundments by capping them in place would reduce the amount of waste in contact with groundwater by reducing infiltration from above, but waste located at or below the potentiometric surface will continue to contaminate groundwater. Capping waste in place would also leave the units susceptible to damage or releases during flood events.

Qualifications

I express the opinions in this letter based on my formal education in geology and over 44 years of experience on a wide range of environmental characterization and remediation sites. My

[8] A 100-year flood is a flood event with a 1% annual chance of occurrence.

education includes Bachelor of Science and Masters of Science degrees in geology from Northern Illinois University and the University of Illinois at Chicago, respectively. My entire professional career has been focused on regulatory, site characterization, and remediation issues related to waste handling and disposal practices and facilities for regulatory agencies and in private practice. I have worked on contaminated sites in over 35 states and the Caribbean. My site characterization and remediation experience includes activities at sites located in a full range of geologic conditions, including soil and groundwater contamination in both consolidated and unconsolidated geologic media, and a wide range of contaminants. I have served in various technical and managerial roles in conducting all aspects of site characterization and remediation including definition of the nature and extent of contamination (including developing and implementing monitoring plans to accurately characterize groundwater contamination), directing human health and ecological risk assessments, conducting feasibility studies for selection of appropriate remedies to meet remediation goals, and implementing remedial strategies. Much of my consulting activity over the last 18 years has been related to groundwater contamination and permitting issues at coal ash storage and disposal sites in numerous states. I am a registered Professional Geologist (PG) in Georgia, Kansas, Illinois, Indiana, and Wisconsin, and am a Past President of the Colorado Ground Water Association. My current resume is provided in the Appendix to this report.

Discussion

Impoundment Location and Construction

Over several decades CWLP has constructed CCR disposal facilities on alluvial sediments in the floodplain of Sugar Creek, immediately downstream of Spalding Dam. The original meandering channel of Sugar Creek was abandoned and relocated westward to its current location to facilitate construction. The original Creek channel was reportedly abandoned by filling the abandoned channel with a wide variety of soils, ranging from silty clays to organic clays to silty sands.

CCR was first placed on the Lakeside Ash Pond property in the middle 1930's. It was not until some later time prior to 1958 that berms to contain disposed ash were constructed and the 44-acre Lakeside Ash Pond was placed into service.[9] The Lakeside Ash Pond is bounded by Spaulding Dam to the south and by earthen berms on the east, north, and west. The Lakeside Pond was expanded vertically in 1988 by building berms on top and inside of the existing embankments. The 1988 vertical expansion also included construction of internal berms over disposed ash to create lime softening ponds on the southern section of the Lakeside Ash Pond. Available drawings indicate that the top of existing embankments around the Lakeside Ash Pond

[9] Andrews Engineering (2016), History of Construction Report for Coal Combustion Residuals Surface Impoundments, October, 2016, p.3, contained in Attach. 14 to CWLP Initial Operating Permit Application (Oct. 2021)

are at an elevation of approximately 565-feet (msl).[10] The bottom elevation of the Lakeside Ash Pond is often not specified, but is identified on a Closure Plan drawing to be at an elevation of approximately 537 feet above mean sea level (msl).[11]

The 34.5 acre Dallman Ash Pond was put into operation in 1976. The Dallman Ash Pond is bounded by the Clarification Pond on the South, the FGDS landfill on the east, and by Sugar Creek on the north and west. The Dallman Ash Pond is contained by embankments constructed of natural soils. Available drawings indicate that the existing perimeter embankments around the Dallman Ash Pond are at an elevation of approximately 554-feet (msl).[12] In locations where the perimeter dikes crossed the former creek bed, the native materials were reportedly excavated to at least 4-feet below the existing channel banks and bottom, and backfilled with compacted cohesive soils.[13] Material from the center of the ash pond was excavated and utilized in the construction of the embankments, lowering the elevation of the base of the ash fill.[14] The bottom elevation of the Dallman Ash Pond has been routinely identified to be at an elevation of approximately 527-feet msl.[15]

Recent responses to comments from the Illinois Environmental Protection Agency (IEPA) on the Operating and Construction Application show that CWLP directed that borings be advanced at four locations each in both the Lakeside and Dallman Ash ponds for the apparent purpose of collecting porewater analyses.[16] In addition to sampling porewater, borings through the waste disposal units provide actual measurements of the bottom of fill elevation at these eight locations. The elevation of the base of CCR fill placed in the CWLP impoundments is a critical piece of information needed to evaluate the effectiveness on the proposed in-place closure. Two of the four borings through the Lakeside Ash Pond showed that the bottom of the disposed ash is at elevations of 530.0 to 530.5-feet msl rather than the 537-foot pond bottom previously reported by CWLP. Borings through the Dallman Ash Pond showed the bottom of ash at elevations as low as 523 feet msl, rather than the previously reported 527-foot pond bottom. Since only four borings in each impoundment were advanced it remains unclear if other, other lower elevation areas also exist in either impoundment. The fact that CCR waste is now known to have been placed deeper than had previously been identified has severe implications for site closure evaluations and modeling, and for the ability of the eventual remedy to protect environmental quality.

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[10] Andrews Engineering (2022), Closure Plans, City Water, Light, And Power, Springfield, Sangamon County, Illinois, Sheet 7, contained in Attachment 8 to the Closure Construction Permit Application, February 2022

[11] Andrews Engineering (2022), Closure Plans, City Water, Light, And Power, Springfield, Sangamon County, Illinois, Sheet 7, contained in Attachment 8 to the Closure Construction Permit Application, February 2022

[12] Andrews Engineering (2022), Closure Plans, City Water, Light, And Power, Springfield, Sangamon County, Illinois, Sheet 7, contained in Attachment 8 to the Closure Construction Permit Application, February 2022

[13] Andrews Engineering (2021a), Initial Operating Permit Application, October, 2021, p.5

[14] Andrews Engineering (2021a), p.7

[15] Andrews Engineering (2022), Closure Plans, City Water, Light, And Power, Springfield, Sangamon County, Illinois, Sheet 7 contained in Attachment 8 to the Closure Construction Permit Application, February 2022

[16] CWLP (2024), Coal Combustion Residuals Surface Impoundment Operating and Construction Permit Application Review Letter, September 9, 2024, Response to Item 1.7.15

Site Geology

The CWLP ash ponds are located in the alluvial valley of Sugar Creek. In fact, both the Lakeside and Dallman Ash Ponds were constructed within the floodplain and over the previous location of the meandering channel of Sugar Creek.[17] The creek channel was relocated to the west of the Lakeside and Dallman Ash Ponds to allow construction of waste storage facilities. [18]

Various alluvial units and placed fill materials overlie the Pennsylvanian Shale bedrock. Characterization of alluvial sediments is an extremely difficult task due to the very irregular thickness, discontinuous extent, and propensity for abrupt lithology changes that are all characteristics of alluvial sediments. As is typical of alluvial sediments, the unconsolidated sediments that overlie bedrock include various combinations of sands, gravels, silts and clays in generally fining upward sequences of highly variable thickness. The placed fill and naturally occurring sediments have been described in various characterization reports and grouped into the general units described below. However, boring logs through these units show widely varying sediment compositions and unit thicknesses rather than laterally continuous sediment layers. Highly variable sediment composition and layer thickness are common characteristics of alluvial sediments.

Creek Fill Material

Fill materials were used during site development to increase the elevation of low areas, specifically including the former channel of Sugar Creek. Borings completed into the Channel Fill materials show that fill consists of variable cohesive and granular soils classified as silty clays, clayey-silt, silt, or sand.[19] The field horizontal hydraulic conductivity of the fill materials is highly variable, ranging from 6.1×10^{-2} cm/sec in granular fill to 7.1×10^{-5} cm/sec in cohesive fill. The presence of creek fill has a profound effect on site hydrogeology and transport of contaminants from the impoundments. The flow of groundwater between the various geologic units is facilitated where granular fill materials extend down from the existing grade to the bedrock surface, interconnecting the Channel Fill with the Upper Sand Unit and the Basal Sand Unit.[20] This interconnection of the sand units creates a direct conduit for transfer of water and CCR contaminants between impounded CCR waste and the uppermost aquifer (Basal Sand) at the CWLP site. Recharge of overlying CCR and sediments by groundwater flowing upward from the Basal Sand Unit will maintain saturation of waste placed below the elevation of the potentiometric surface and facilitate migration of soluble metals.

[17] CWLP (1976), Sugar Creek Relocation Application, p.11, Bates 19.6

[18] CWLP (1976), p. 11, Bates 19.6

[19] Andrews Engineering (2021b), Hydrogeologic Report, Groundwater Monitoring Program and Statistical Procedures, October 2021, p. 7, contained in Attach. 11 to CWLP Initial Operating Permit Application (Oct. 2021)

[20] Andrews Engineering (2021b), Hydrogeologic Report, Groundwater Monitoring Program and Statistical Procedures, October 2021, p. 7, contained in Attach. 11 to CWLP Initial Operating Permit Application (Oct. 2021)

Upper Cohesive Deposit

The uppermost naturally occurring sediment unit generally encountered at the site is the Upper Cohesive Deposit but this unit is missing in areas underlain by the abandoned creek. In these areas both the Upper Cohesive Deposit and underlying Shallow Sand Unit are absent.[21] The remaining thickness of this unit in other areas of the impoundments may be significantly reduced in many locations as material from this unit was excavated and used in berm construction.

Where present this unit consists of silt, silty clays and clayey silts. The thickness of the Upper Cohesive Deposit was reported to vary from 2.5 to 16 feet. Laboratory tests of samples from this unit indicate that hydraulic conductivity is relatively low with laboratory tests of vertical conductivity values ranging between 5.2×10^{-7} cm/sec and 1.6×10^{-5} cm/sec.[22] However, the Upper Cohesive Deposit is an alluvial deposit and it is expected that horizontal hydraulic conductivity will be greater than the vertical conductivity.[23] Horizontal hydraulic conductivity should be expected to be at least one and likely more orders of magnitude higher than the laboratory test results indicate. The difference between vertical and horizontal hydraulic conductivities means that groundwater will flow more freely in the lateral direction Upper Cohesive Deposit than vertically through the Upper Cohesive Deposit. This observation conflicts with the assumption made during development of the Site Conceptual Model indicating that groundwater flows only vertically through sediment layers above the Basal Sand.[24]

Shallow Sand Unit

The Shallow Sand Unit often underlies the Upper Cohesive Deposit. This unit was not encountered at all locations across the site, but where encountered it was found to underlie the Upper Cohesive Deposit. Where present, this unit consists of silty to clayey fine sand that varies in thickness from one to three feet. Slug tests conducted on two piezometers completed in this unit show high horizontal hydraulic conductivities of 3.6×10^{-3} cm/sec and 2.9×10^{-2} cm/sec.[25] As is the case with the Upper Cohesive Deposit, the high horizontal conductivity of the Shallow Sand Unit conflicts with the with assumptions made in the Site Conceptual Model indicating that groundwater flows only vertically through sediment layers above the Basal Sand.[26]

Lower Cohesive Deposit

The Lower Cohesive Deposit ranges in thickness from 0 to 22 feet and is missing in some locations above the abandoned creek bed where it has likely been removed by erosion.[27] The acknowledgement in CWLP documents that the Lower Cohesive Deposit and overlying natural sediments are missing above some sections of the abandoned creek bed is a critical piece of

[21] Andrews Engineering (2021b), p. 6
[22] Andrews Engineering (2021b), p. 6
[23] Andrews Engineering (2021b), p. 6
[24] Andrews Engineering (2021c), Closure Alternatives Assessment – Contaminant Transport Model, Figure 4, contained in Attachment 2 of the Closure Construction Permit Application
[25] Andrews Engineering (2021b), p. 6
[26] Andrews Engineering (2021c), Figure 4
[27] Andrews Engineering (2021b), p. 6

information. This information must be recognized in order to understand not only how CCR contaminants have migrated from the impoundment during operation, but also why capping the impoundments in place is very unlikely to control the release of CCR contaminants.

Where present, the Lower Cohesive Deposit consists of clays, silty clays, and clayey silts that range in thickness from 0 to 22 feet. The average thickness is reported to be approximately 15 feet. The vertical hydraulic conductivity of the Lower Cohesive Deposit has been reported to range from 1.3 x 10^{-8} cm/sec to 1.8 x 10^{-6} cm/sec. The horizontal hydraulic conductivity ranges from 4.6 x 10^{-5} cm/sec to 7.6 x 10^{-5} cm/sec.[28] These results show that the horizontal hydraulic conductivity through the Lower Cohesive Deposit is two to three orders of magnitude higher than vertical conductivity and conflict with assumptions of only vertical flow through unconsolidated sediments made in the Site Conceptual Model. [29]

Basal Sand Unit

The Basal Sand Unit is composed of silty to clayey fine sands to sand with some gravel. It generally overlies the bedrock surface and underlies the Lower Cohesive Deposit. This unit is not present everywhere, but its thickness generally varies from 0 to 12.3 feet with a top elevation of from 491 to 513 feet above msl.[30] The Basal Sand Unit is the most conductive of any material encountered on site with an average field hydraulic conductivity of 1.73 x 10^{-2} cm/sec.[31] CWLP has identified the Basal Sand Unit as the Uppermost Aquifer on the site. This is the unit that is targeted by the groundwater monitoring system.

Bedrock

The uppermost bedrock that underlies the CWLP site is Pennsylvanian Shale. Bedrock is reportedly encountered at approximately 500 feet msl along the downgradient edge of the Dallman Ash Pond. The bedrock surface is known to slope from the east and west toward the center of the landfill area. The measured elevation varies from a low of 492 feet above msl near the center of the Landfill, to a high of approximately 554 feet above msl on a bedrock outcrop located near the southeast corner of Landfill Cell 1.[32] Two tests of the hydraulic conductivity of the upper portions of the shale returned values of 1.8 x 10^{-7} cm/sec and 1.3 x 10^{-5} cm/sec.[33] Vertical flow through the bedrock unit is not expected to be significant unless currently unidentified fracture zones were identified.

The above summary descriptions[34] of the geologic materials known to be on site clearly show that, as expected, the alluvial sediments that underlie the CWLP impoundments are highly

[28] Andrews Engineering (2021b), Hydrogeologic Report, Groundwater Monitoring Program and Statistical Procedures, October 2021, p. 6, contained in Attach. 11 to CWLP Initial Operating Permit Application (Oct. 2021)
[29] Andrews Engineering (2021c), Figure 4
[30] Andrews Engineering (2021b), p. 7
[31] Andrews Engineering (2017), Groundwater Monitoring Program, p. 6, Bates 10.15
[32] Andrews Engineering (2021b), p. 8
[33] Andrews Engineering (2021b), p. 8
[34] Descriptions are based on information contained in referenced CWLP documents.

variable in terms of composition, hydraulic conductivity and both lateral and vertical extent. Both the Upper and Lower Cohesive Deposits are acknowledged to be thin in some areas and missing altogether in locations above the abandoned creek channel. Areas where these units are thin or missing function as conduits allowing groundwater to move into and out of the impoundments. The lack of continuously present cohesive units explains why contaminants have been shown to be migrating away from the impoundments and why closing the impoundments in place with waste in contact with groundwater will not be protective of the environment.

Site Hydrogeology

Potentiometric surface maps depicting the groundwater potential in the basal sand unit beneath the CWLP Ash ponds were included in an updated 2021 Hydrogeologic Report[35] and are provided as Attachment A. The potentiometric maps do not reflect the elevation of standing water held within the unlined ash ponds. Rather, the potentiometric maps reflect groundwater elevations measured in monitoring wells completed in the Basal Sand Unit and located around the perimeter of the ponds.

The highest groundwater potential on the site is consistently measured on the highland area off the southeast corner of the south side of the Lakeside Ash Pond near Lake Springfield. The potentiometric surface maps show that hydraulic head drops at regular intervals as groundwater flows from the southeast corner of the Lakeside Ash Pond toward areas of lower groundwater head to the north and west toward Sugar Creek.[36] The maps also show that groundwater reaches the upgradient (southeast) corner of the Dallman Pond with a measured head of approximately 535-feet above msl. Groundwater heads along the north and west (downgradient) sides of the pond are typically indicated to be between 525 and 530-feet above msl.

Under current conditions mounding of groundwater within the basal sand unit beneath the Dallman Pond is indicated by the local northward shift of the 535-foot contour line beneath the Dallman Ash Pond.[37] Identification of mounded groundwater beneath the pond confirms that there is a hydraulic connection between the impoundment and underlying sand units. Leakage of impoundment leachate into the underlying Basal Sand Unit is currently driving groundwater flow from the Dallman Ash Pond toward the north, east, and west. Flow toward the north and west is moving water from the ash pond toward discharge areas along Sugar Creek. Eastward flow from the Dallman Ash Pond moves groundwater toward the FGDS Landfill where it contributes to the shallow saturated conditions on that site before flowing northward toward the creek.

[35] Andrews Engineering (2021b), Hydrogeologic Report, Groundwater Monitoring Program and Statistical Procedures, October 2021, Appendix C, contained in Attach. 11 to CWLP Initial Operating Permit Application (Oct. 2021)

[36] Andrews Engineering (2021b), Hydrogeologic Report, Groundwater Monitoring Program and Statistical Procedures, October 2021, Appendix C, contained in Attach. 11 to CWLP Initial Operating Permit Application (Oct. 2021)

[37] See potentiometric surface maps in Attachment A to this report.

Once waste in the Dallman Ash Pond is dewatered, mounding of groundwater would be expected to slowly dissipate and head within the basal sand will return to the regular contour orientation observed upgradient of the pond, with head steadily decreasing from approximately 535-feet above msl on the southeast corner of the impoundment to 525 to 530-feet above msl along Sugar Creek.

Documents prepared at the direction of CWLP and posted in compliance with applicable CCR rules have historically identified the elevations of the bottom of the Lakeside and Dallman ponds to be at approximately 537 and 527 feet above msl, respectively.[38] But borings installed at the direction of CWLP to facilitate collection of porewater samples, and discussed above, indicate that at least some portion of the unlined Lakeside Ash Pond bottom is actually located at an elevation of 530 feet.[39]

Potentiometric surface maps provided in Attachment A show the groundwater elevation in the Basal Sand Unit beneath the Lakeside Ash Pond decreases from a high of 565 feet above msl beneath the southeast corner of the pond to approximately 540 feet above msl along the northern berm. Comparing the lowest elevation of the base of the Lakeside pond (530 feet) to the elevation of the potentiometric surface beneath the impoundment shows that 10 to 35-feet of the waste in the Lakeside Ash Pond is saturated by groundwater flowing through the waste. Capping the Lakeside Ash Pond wastes in place will not stop groundwater from flowing laterally through 10 to 35-feet of waste as it migrates toward discharge areas along Sugar Creek.

Similarly, we now know that at least some portion of the Dallman Ash Pond bottom is actually located at an elevation of 523 feet above msl.[40] The potentiometric surface maps (Attachment A) show the groundwater elevation in the Basal Sand Unit beneath the Dallman Ash Pond is will range in elevation from 525 and 535 feet above msl. Comparing the lowest elevation of the base of the Dallman Ash Pond (523 feet) to the potentiometric surface elevation shows that between 2 and 12-feet of waste in the Dallman Ash Pond is expected to remain saturated even if a cap is installed. Since neither of the ponds have been dewatered to date, the current elevation of the zone of saturation and thickness of saturated waste within ponds is very likely much greater than estimated here.

Vertical flow of groundwater between the Basal Sand Unit and the Lakeside and Dallman Ash Pond wastes has largely gone unaddressed in reports and submittals to regulators for many years. However, vertical flow was addressed in the hydrogeologic investigation conducted for the Flue Gas Desulfurization Sludge Landfill which is located immediately adjacent to both the Lakeside and Dallman CCR impoundments.[41] The hydrogeologic report compared hydraulic heads

[38] Andrews Engineering (2022), Closure Plans, City Water, Light, And Power, Springfield, Sangamon County, Illinois, Sheet 7, contained in Attachment 8 to the Closure Construction Permit Application, February 2022

[39] CWLP (2024), Coal Combustion Residuals Surface Impoundment Operating and Construction Permit Application Review Letter, September 9, 2024, Response to Item 1.7.15

[40] CWLP (2024), Coal Combustion Residuals Surface Impoundment Operating and Construction Permit Application Review Letter, September 9, 2024, Response to Item 1.7.15

[41] Patrick Engineering (1995), 1995 FGDS Hydrogeological Report Volume 4 or 5, Hydrogeologic Investigation, Addendum #2 to Attachment 28, CWLP - 007359

measured in shallow soils to heads measured in the Basal Sand Unit.[42] CWLP's own consultants concluded that:

> "… water level elevations in the basal sand generally appear to be one to two feet higher than the shallow water level elevations. This is consistent with the original interpretation of groundwater conditions that water within the near surface geologic layers is being recharged by the groundwater within the Basal Sand Unit."[43]

The absence of low conductivity materials above the Basal Sand Unit over some portions of the abandoned creek channel facilitates saturation of wastes located below the potentiometric surface. Placement of waste below the potentiometric surface in both CWLP ash ponds indicates that that the proposed cap-in place closure cannot be expected to eliminate the flow of groundwater through disposed waste, nor the downgradient migration of CCR-related contaminants. The Lakeside and Dallman Ash Ponds must not be allowed to close in place in the absence of additional actions to eliminate interaction between groundwater and waste.

Capping the CWLP impoundments in place will restrict infiltration from above, but will do nothing to eliminate inflow of groundwater through the side and bottom of either the Lakeside or Dallman Ash Ponds. As was described above, natural low conductivity materials have been replaced with fill beneath portions of the impoundments, especially over sections of abandoned creek channel segments.[44] The groundwater head within the basal sand must be expected to maintain saturation of 10 to 35 feet of waste in the Lakeside impoundment, and 2 to 12 feet of waste in the Dallman impoundment, even after the observed groundwater mounding has dissipated.

The proposed closure of the CWLP Dallman CCR impoundments leaving waste in contact with groundwater fails to meet either the federal or Illinois performance standards for CCR facility closures specified in 40 C.F.R. 257.102(d)(2)(i), and Illinois Title 35, Section 845.750, respectively. The United States Environmental Protection Agency (EPA) has repeatedly notified the owners of CCR facilities that proposed closure plans that cap CCR in place while leaving waste in contact with groundwater are insufficient. EPA has clearly stated that the performance standard requires the facility to take measures,

> "such as engineering controls that will "control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste" as well as "post-closure releases to the groundwater" from the sides and bottom of the unit."[45]

Further, EPA has recently denied approval of the Alabama Department of Environmental Management (ADEM) CCR program due to recurring failures of ADEM to require each CCR

[42] Patrick Engineering (1995), Addendum #2 to Attachment 28, Hydrogeologic Investigation, CWLP - 007359
[43] Patrick Engineering (1995), Addendum #2 to Attachment 28, Hydrogeologic Investigation, CWLP - 007359
[44] Stabilize (2010), City Water , Light, and Power – 35 IAC 620 Ash Pond Assessment, p. 8, CWLP - 001702
[45] For example see: EPA (2022), Letter from USEPA to Duke Energy, January 11, 2022, p. 3

unit in the State to achieve compliance with this minimum standard.[46] Approving closure of the CWLP impoundments by capping the waste in place without meeting the minimum performance standard could open Illinois EPA to similar action.

Illinois CCR regulations include a performance standard that is nearly identical to the federal standard.[47] The Illinois standard states:

> "The owner or operator of a CCR surface impoundment must ensure that, at a minimum, the CCR surface impoundment is closed in a manner that will:
>
> 1) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere;"[48]

Capping the CWLP CCR in place with waste in regular contact with groundwater in no way meets either the federal or Illinois performance standards for CCR closures.

Flow and Transport Modeling

There are many disconnects between real world hydrogeologic conditions and the assumptions made in the overly simplistic and flawed contaminant transport modeling that was performed to support selection of the CWLP proposed in place closure.[49] For example:

- The model assumptions state that all geologic units are homogenous and isotropic[50] with respect to all lithologic and hydrogeologic parameters. The descriptions of the various geologic materials contained in CWLP submittals clearly show that this assumption is not met because the composition and hydraulic properties of individual units vary widely.
- The model assumptions state that all layers are laterally extensive and the thickness of each layer is uniform. Actual site conditions do not conform to these assumptions. Investigations done to date have all shown that thickness and composition of each of the alluvial sediment layers vary widely, including areas where cohesive deposits are completely missing from above the abandoned creek channel.
- The model assumes that the liquid head within the closed impoundments will be controlled by the rates of infiltration through the proposed cap and vertical (downward) seepage rates through the pond bottom calculated by the HELP model. These

[46] EPA (2024), Alabama: Denial of State Coal Combustion Residuals Permit Program, 89 Fed. Reg. (June 7, 2024) (40 C.F.R. Part 257), p. 48774, available at https://www.govinfo.gov/content/pkg/FR-2024-06-07/pdf/2024-11692.pdf

[47] https://www.ilga.gov/commission/jcar/admincode/035/035008450G07500R.html

[48] 35 Ill. Administrative Code, Section 845.750(a)(1)

[49] Andrews Engineering (2021), Closure Alternatives Assessment- Contaminant Transport Model, October 2021, p. 10, contained in Attachment 11 of the Closure Construction Permit Application

[50] Isotropic means that the properties of the materials do not change between locations, something that is known to be incorrect.

calculations assume that there is no recharge of impounded wastes from the sides and/or from below, something that is known to be false as discussed above. Groundwater is clearly in contact with impounded wastes and recharge from the underlying Basal Sand Unit will continue to maintain saturation of several feet of the disposed waste.

- The conceptual model for the modeling[51] assumes that groundwater flows only downward through the alluvial sediments that overlie the Basal Sand Unit even though the horizontal hydraulic conductivity of the overlying sedimentary units is typically one to three orders of magnitude higher in the horizontal direction and hydraulic head within the Basal Sand drives recharge of the overlying sediments from below.
- The modeling[52] predicts that once capped, leachate head within the Dallman Ash Pond will drop to within 0.12-feet above the pond bottom to an elevation of 527.12 feet. This modeled result indicates that the elevation of leachate within the impoundment is predicted to drop below the assumed elevation of surrounding groundwater (528 feet) and far below the real world potentiometric head (530 to 535-feet msl) in the basal sand unit (Attachment A), neither of which are correct. Capping the waste in place in the CWLP ash ponds without further engineering intervention (e.g. engineered barriers to prevent groundwater flow into the waste from the sides and bottom) will not reduce the leachate head within the impoundments to below the elevation of the underlying and surrounding groundwater.

Groundwater Quality Monitoring

The Annual Groundwater Monitoring and Corrective Action Report,[53] dated January 31, 2024, shows that impacts to groundwater quality downgradient of the ash ponds continue. The groundwater monitoring system at the Lakeside and Dallman Ash Ponds has been expanded over time to consist of two upgradient monitoring wells (AP-4 and AP-5) and six downgradient monitoring wells (AP-1, AP-2, AP-3, AP-6, AP-7, and RW-3). Upgradient wells are supposed to be purposefully placed in areas where there is no evidence of impacts from the facility where they provide information about naturally occurring concentrations of chemical parameters. Downgradient monitoring wells are placed hydraulically downgradient of the waste unit, between the ash ponds and Sugar Creek, in order to detect changes in water chemistry. Each of the compliance wells in the Lakeside and Dallman groundwater monitoring system was constructed with screened intervals set to monitor the quality of water flowing immediately above the bedrock in the Basal Sand (Uppermost Aquifer).

[51] Andrews Engineering (2021), Closure Alternatives Assessment- Contaminant Transport Model, October 2021, Fig. 4 contained in Attachment 11 of the Closure Construction Permit Application

[52] Andrews Engineering (2021), Closure Alternatives Assessment- Contaminant Transport Model, October 2021, Fig. 4 contained in Attachment 11 of the Closure Construction Permit Application

[53] Andrews Engineering (2024), Annual Groundwater Monitoring and Corrective Action Report, January 31, 2024

A regular systematic groundwater monitoring program was initiated in February 2012 and continues to the present.[54] Water from all of the tested wells is sampled and analyzed for a wide range of ash-related parameters including antimony, arsenic, barium, boron, beryllium, cadmium, calcium, chloride, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, pH, selenium, sulfate, thallium, total dissolved solids (TDS), and radium 226 & 228. Analytical results are compared to statistically derived background concentrations and relevant water quality standards to determine if groundwater quality has been significantly impacted by site operations.

Detection monitoring conducted during 2023 continued to show Statistically Significant Increases (SSIs) in the concentration of parameters at wells shown below.

Parameters and Wells with SSI's in 2023 Detection Monitoring	
Boron	AP-1, AP-2, AP-3, AP-7, RW-3
Calcium	AP-1, AP-2
Chloride	AP-1, AP-2, AP-3, AP-4, AP-6, AP-7, RW-3
pH	AP-1, AP-2, AP-3
Sulfate	AP-1, AP-3
Total Dissolved Solids	AP-1, AP-2, AP-3

Assessment monitoring conducted during 2023 continued to show exceedances of Ground Water Protection Standards (GWPS) for two parameters in three different wells shown below.

Parameters and Wells with GWPS Exceedences in 2023 Assessment Monitoring	
Arsenic	AP-7, RW-3
Cobalt	AP-2

The monitoring report for 2023 also indicates that during the following year three additional monitoring wells (AP-14, AW-1, and G120) will be added to the monitoring program and that CWLP will be proposing to revise (increase) the background concentration for arsenic utilizing lower laboratory reporting limits. A letter submitted to the Illinois Environmental Protection Agency (IEPA) dated October 30, 2024 provided proposed arsenic background data based on 8 recent sampling events at background wells AP-4 and AP-5, as follows:[55]

Wells	Parameter	Units	7/7/23	10/26/23	2/22/24	4/25/24	5/13/24	6/12/24	7/26/24	8/12/24	Distribution	Proposed Background Value
AP-4	Arsenic, Total	ug/l	23.9	22.5	37.5	19.8	22.9	21.8	21.3	20.7	Non-Parametric – Propose Highest Detected Concentration as Prediction Limit/Background	37.50
AP-5	Arsenic, Total	ug/l	<1	<1	<1	<1	<1	<1	<1	<1		

[54] CWLP Ash Pond Groundwater Laboratory Reports 2010 to present. Bates 6.6
[55] CWLP (2024), Coal Combustion Residuals Surface Impoundment Operating and Construction Permit, Application Review Letter, Supplemental Response, dated October 30, 2024

Data from monitoring well AP-4, which is located downgradient of the Lakeside Ash Pond, shows total arsenic concentration ranging from 19.8 to 37.5 ug/l. The same document[56] provided porewater analyses from the Dallman and Lakeside Ash ponds. The total arsenic concentrations detected in Lakeside waste porewater ranged from 32.8 to 139 ug/l. This data clearly indicates that porewater contained in the Lakeside Ash Pond is an apparent source of arsenic that is impacting groundwater quality downgradient of the impoundment at AP-4. The data also show that unimpacted background groundwater quality from monitoring well AP-5 contains no reportable concentrations of arsenic. The new proposed background value (37.50 ug/l) is based on detections of high concentrations of arsenic only found in well AP-4 which is clearly located downgradient of a source of arsenic contamination.

Utilization of monitoring well AP-4 as a supposed "background" monitoring well has always been problematic. This supposedly "background" monitoring well is located on the Sugar Creek floodplain outside of the western berm and downgradient of the Lakeside Ash Pond. CWLP acknowledges that monitoring well AP-4 is:

> "not upgradient of the subject CCR impoundments in a hydrologic sense but is located on available CWLP property where it provides representative background groundwater quality, as allowed under 35 Ill. Adm. Code 845.630(a)."[57]

Westward flow of groundwater from the southeast corner of the property toward Sugar Creek indicates that monitoring well AP-4 is actually located downgradient of the Lakeside Ash Pond. That AP-4 is located hydraulically downgradient of the CWLP CCR impoundments was acknowledged in the 2021 Hydrogeologic and Monitoring Report.[58] The wells presence "on available CWLP property" in no way indicates that it is an appropriate background monitoring location. Inclusion of arsenic data from AP-4 in the background data creates an artificially high background value, designates what would appropriately be a downgradient well as a background well, and inappropriately masks exceedances of the Ground Water Protection Standard (GWPS) for arsenic in other downgradient locations. The data summary from the 2023 groundwater monitoring report (Attachment B) shows that, monitoring wells AP-3, AP-4, AP-7 and RW-3 would all have shown exceedances of the published Ground Water Protection Standard (0.01 ug/l) during 2023 had high arsenic concentration in AP-4 been appropriately treated as a downgradient well rather than as background.

Also problematic is the fact that the boring log for well AP-4 (Attachment C) shows that the borehole was advanced through approximately 10-feet of black fly ash. The presence of 10-feet of CCR outside of the Lakeside berm is a clear indication ash has been disposed of outside of the current footprint of the Lakeside Ash Pond and that the current footprint of the pond appears to

[56] CWLP (2024), Coal Combustion Residuals Surface Impoundment Operating and Construction Permit, Application Review Letter, Supplemental Response, dated October 30, 2024

[57] Andrews Engineering (2021b), Hydrogeologic Report, Groundwater Monitoring Program and Statistical Procedures, October 2021, p. 12

[58] Andrews Engineering (2021b), p. 12

be smaller than the historical footprint of the pond.[59] The Closure Plan approved for implementation at the CWLP Coal Ash Ponds must address ash within the entire historical footprint of the pond and areas affected by releases of ash from the impoundment.[60]

Monitoring well AP-4 should never have been used to establish background groundwater quality. The inappropriate and unsupported identification of well AP-4 as a background location creates an artificially high background value and minimize the number of exceedances of groundwater protection standards. Data from AP-4 must be recognized as representing downgradient water quality. The result of this action would be to that another downgradient well (AP-4) would consistently show highly elevated arsenic adjacent to Sugar Creek and provide realistic background values for use in evaluating other downgradient monitoring points.

Proposed Closure Plan

CWLP continues to pursue closure of the Lakeside and Dallman Ash Ponds by capping the material in place. The most recent description of proposed construction[61] indicates that installation of the final cover system will include:

- Dewatering of the CCR as necessary to promote final grading of the CCR to establish a final slope to promote precipitation runoff of the final cover.
- Placement of a 40 mil low density polyethylene (LDPE) cover
- Placement of a geomembrane to promote lateral drainage on top of the LDPE
- Placement of a three-foot soil protective layer, or as otherwise approved
- Establishment of final vegetation on the protective layer
- Stormwater management structures

CWLP is currently proposing to perform no actions to control or remove groundwater contaminants that are known to be migrating from the ash ponds. They propose to dewater the CCR "as necessary" to establish a surficial crust capable of supporting the machinery needed to grade and construct the cap.[62] The Closure plan indicates that no corrective action for groundwater is needed since the overly simplistic and flawed groundwater contaminant transport model discussed above predicts that water quality standards will be achieved by capping the waste,[63] and that contamination has been retained on CWLP property, conveniently ignoring the probability of cross media transfer of contaminants from groundwater to surface water. Based on groundwater monitoring reports submitted by CWLP, ash-related contaminants have been

[59] Hanson Engineers (1987), Engineering Report, Proposed Embankment Modifications, CWLP Ash Disposal Area, p. 17, contained in Attachment 2 of the Closure Construction Permit Application
[60] 35 Illinois Administrative Code 845.740(a)
[61] Andrews Engineering (2022), Closure Construction Permit Application, February 2022
[62] Andrews Engineering (2022), Closure Construction Permit Application, February 2022, p. 10
[63] Andrews Engineering (2022), Closure Construction Permit Application, February 2022, p. 12

present in the groundwater that flows from the CWLP impoundments and into Sugar Creek for many years.

EPA has repeatedly stated that the performance standard requires the facility to take measures, such as engineering controls that will control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste as well as post-closure releases to groundwater from the sides and bottom of the unit.[64] Similarly, the Illinois CCR regulations require that a facility "Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters."[65] The proposed closure of the CWLP Dallman CCR impoundments leaving waste in contact with groundwater fails to meet these performance standards.

The Post-Closure Care Plan for the capped ash ponds[66] indicates that the owner will maintain the closed impoundments for a minimum of 30 years. Unfortunately, the location of the Lakeside and Dallman Ash Ponds immediately downstream of Spalding Dam and on the floodplain of Sugar Creek continue the need for cap maintenance far into the future and creating a long-term risk of catastrophic release of wastes.

Flood Damage Potential

In responses IEPA comments on the Operating and Construction Permit[67] CWLP repeatedly claimed that because the Dallman Ash Pond Berms and accumulated ash is now higher than predicted water elevation north of the site during the 100-year flood there should somehow be no concern about flood induced damage or release of waste. The berms around the Dallman impoundment are not however the locations in most jeopardy during severe flooding.

FEMA flood mapping (Attachment D) indicates that the elevation of the 100-year flood in Lake Springfield is 562 feet above msl. The FEMA map also shows that floodwaters are expected to overtop Spalding Dam and drop to an elevation of 547 feet above msl immediately below the dam. Water from Lake Springfield is shown to cross the dam and flow onto the Lakeside Ash Pond and the overlying Lime Ponds. Flood water flowing across the surface of the Lakeside Pond is correctly called inundation by floodwaters. Water that flows across the Lakeside Pond will rapidly drop down the side of the embankments to creek level. The force of floodwater flowing down the exterior embankment will create significant erosive potential.

We can also assume that the proposed cap is in place prior to the next major storm event. In that case, floodwater that crosses the dam would likely enter the planned drainage ditch that closure drawings show would be located along the south and west edges of the cap. The combined flow

[64] For example see: EPA (2022), Letter from USEPA to Duke Energy, January 11, 2022, p. 3

[65] 35 Illinois Administrative Code Section 845.750(a)(1)

[66] Andrews Engineering (2022), Post-Closure Care Plan for Coal Combustion Residuals Surface Impoundments, February 2022

[67] CWLP (2024), Coal Combustion Residuals Surface Impoundment Operating and Construction Permit Application Review Letter, September 9, 2024

of normal run-off from the cap and water flowing across the dam from Lake Springfield has the potential to cause significant erosion of the western berm of the Lakeside Ash Pond.

It is well established that storm-related flooding currently considered to have a 1% chance of occurrence in any particular year is becoming more frequent and of course, there are flood events that are more intense than 100-year events. The potential for significant impacts to CCR containment structures during significant flood events must be recognized when considering the proposed cap-in-place Closure. The proposed closure would essentially transform a temporary waste storage impoundment into a permanent waste disposal cell on the floodplain of Sugar Creek. Floodplains are unsuitable locations for waste disposal facilities, either closed or open.

Closure Alternatives

Many sites located across the country initially proposed to close their impoundments by capping the waste in place, even though waste would remain in contact with groundwater. As utilities have reluctantly realized that capping waste in contact with groundwater does not meet the EPA performance standard, CCR closures are now being planned using alternative methods. Some the alternative closure methods now being planned for use where waste is in contact with groundwater include:

Leachate Collection and Treatment

Installation and operation of leachate collection systems such as sumps or wells inside the impoundments could lower the leachate head within the impoundment and reduce the flux of contaminants out of the impoundments. Collection of leachate from within an ash impoundment has been proposed for implementation at the Gallagher Generating Station in Indiana.[68] At Gallagher a combination of capping the waste, construction of low conductivity cut-off walls, and pumping and treatment of leachate that enters the impoundment from below to maintain an inward gradient is being pursued.[69]

Leachate collection and treatment is not recommended for implementation at the CWLP Ash Ponds. Collecting leachate within the impoundments would only be useful if waste disposal units were allowed to be closed in place on the floodplain with waste in continual contact with groundwater (which is not recommended). Collection of leachate from the CWLP impoundments would have to continue indefinitely since the waste would remain in contact with groundwater. Active operation and maintenance of the leachate collection and water treatment systems would be necessary for as long as leachate continues to be generated. This option also does nothing to reduce the risk of catastrophic release of ash during flood events.

[68] ATC (2020), Response to Request for Additional Information & Addendum No. 5, Proposed Ash Pond Closure and Post-Closure Plans, June 3, 2020.

[69] Duke Energy (2024), Closure Plan, Gallagher Generating Station, Primary Pond, North Ash Pond, Primary Pond Ash Fill, April 22,2024

Collection and Treatment of Contaminated Groundwater

Installation and operation of groundwater collection wells or trenches installed through high permeability materials below or outside of the impoundments could potentially be used to capture contaminated groundwater. Applicability of this option would need to be carefully evaluated to determine its feasibility given the proximity of Sugar Creek, as well as to determine the number of wells, spacing of trenches, and/or pumping rates necessary to capture contaminants released from the leaking impoundments.

In practice, it has often been difficult to intercept or contain all of the contaminants in a plume using wells or trenches installed in alluvial sediments. The highly variable composition, orientation, and discontinuous nature of alluvial sediments can hinder the ability of wells and trenches to capture enough of the contaminated groundwater to halt plume migration. For example, at the Colstrip generating station in Montana efforts to control the spread of CCR-related contamination utilizing both capture wells and interceptor trenches have been utilized for over 20 years in an effort to stop the spread of multiple contaminant plumes.[70] [71] The location of facilities on alluvial bedrock and sediments with highly variable composition and thickness, has limited the effectiveness of these measures.[72] The inherent natural variability of alluvial sediments is acknowledged by a limitation in the Colstrip Assessment of Corrective Actions that states:

> "…results of assessments made based on hydrogeological and hydrogeochemical conditions consistent with those of the complex depositional environment and suite of inorganic constituents found at the Colstrip SES are subject to and limited by the high degree of natural variability."[73]

Installation and operation of groundwater collection wells or trenches installed below or outside of the CWLP impoundments is not recommended for the CWLP Ash Ponds. Collecting leachate within the impoundments may be useful when units are closed in place, but closing the CWLP units in place is not recommended since they are located on the Sugar Creek floodplain and waste is in contact with groundwater. There is very little distance between the edge of the impoundments and Sugar Creek in some locations[74] on the site. Wells or trenches placed between the impoundments and Sugar Creek could unintentionally capture significant amounts of water from Sugar Creek rather than impacted groundwater flowing from the leaking

[70] Limitations of using groundwater collection and treatment systems to control migration of contaminants through alluvial materials are illustrated by experiences at the Colstrip Generating Station in Montana

[71] Geo-Hydro, Inc. (2014), Litigation Support, Montana Environmental Information Center et.al. v. Montana Department of Environmental Quality, et. al,. 16th Jud. Dist. No. DV 12-42, p. 8, available at https://apiproxy.utc.wa.gov/cases/GetDocument?docID=49&year=2015&docketNumber=151500

[72] Geo-Hydro, Inc. (2014), Litigation Support, Montana Environmental Information Center et.al. v. Montana Department of Environmental Quality, et. al,. 16th Jud. Dist. No. DV 12-42, p. 11, available at https://apiproxy.utc.wa.gov/cases/GetDocument?docID=49&year=2015&docketNumber=151500

[73] Hydrometrics (2019), Assessment of Corrective Measures, Colstrip 3&4 EP CCR Units, April 2019

[74] Figure 1 and observations made during a site visit conducted on March 1, 2019 indicate that the distance from the outside of the impoundment berms to Sugar Creek are on the order of a few tens of feet in the vicinity of the clarification pond and the northwest corner of the Dallman Pond.

impoundments. Active operation and maintenance of the leachate collection and water treatment systems would be necessary for as long as leachate continues to be generated and migrating from the impoundments, a time period that may continue for many decades following the last placement of waste. Groundwater collection and treatment alone is not a final closure remedy and does not reduce the risk of damage or catastrophic release of ash. For all of these reasons, I do not recommend collection and treatment of groundwater for the closure remedy at the CWLP Ash Ponds.

Physical Barriers

Construction of physical barriers such as low permeability walls around the perimeter of the impoundments could restrict lateral flow of groundwater. As is the case for groundwater collection wells and trenches, construction of an effective low permeability barrier in alluvial sediments can be problematic. The effectiveness of these remedies is often dependent on construction quality, the ability to obtain a positive seal between the barrier and underlying low permeability unit, and the ability of underlying low permeability unit to prevent flow beneath the barrier. Low permeability barriers are being planned to cut-off lateral migration from the Primary pond at the Gallagher Generating Station in Indiana in an effort to both minimize inward flow toward leachate collection wells and to control the spread of contaminants. [75]

Installation of low permeability barriers is only part of a potential final closure remedy because it must be combined with other remedies meant to eliminate or control the formation of leachate within the impoundments. Installation of physical barriers is not recommended for the CWLP Ash Ponds since the waste would remain on the floodplain and remain at risk of release of ash during a major flood event.

Retrofit Impoundments

In an evaluation of compliance with CCR Rule surface impoundment location restrictions[76] prepared for CWLP, Andrews Engineering concluded that;

> "unlined ponds are placed directly above and within 5 feet of the high water table for the uppermost aquifer. Either it must be demonstrated that there will not be intermittent, recurring or sustained hydraulic connection between any portion of the base of the CCR unit and the uppermost aquifer, or cessation of disposal and closure must begin."[77]

It goes on to state that "Hydraulic separation can be shown by retrofitting the ponds. A composite liner consisting of a two-foot (minimum) low hydraulic conductivity ($< 1.0 \times 10^{-7}$ cm/sec) clayey material overlain by a minimum 30 mil geomembrane (or equivalent) will be adequate to demonstrate hydraulic separation."[78]

[75] Duke Energy (2024), Closure Plan, Gallagher Generating Station, Primary Pond, North Ash Pond, Primary Pond Ash Fill, April 22,2024

[76] Andrews Engineering (2018), p. 3

[77] Andrews Engineering (2018), p. 3

[78] Andrews Engineering, 2018, p. 3

Retrofitting the impoundments at the CWLP site to the specifications identified by Andrews would require that the waste that is currently located in the impoundments be removed so that a new composite liner system could be constructed. Low hydraulic conductivity clay soils would then be trucked to the impoundment, spread and compacted. Following placement of the low conductivity base material a synthetic liner system would be installed. Once completed, the retrofitted impoundments could again be utilized for waste disposal, if desired. The newly retrofitted impoundments would however remain potentially susceptible to damage or catastrophic release of wastes during flood events.

Retrofitting the impoundments is not recommended for implementation. While retrofitting the impoundments may have made operational and economic sense in the past, I know of no current need for waste storage capacity as coal ash is no longer being disposed in the impoundments. CWLP would incur the costs of removing existing wastes in preparation for retrofitting the impoundments with a liner system. Once the waste is removed from the current leaking impoundments, disposal should be at an appropriately located and constructed disposal facility.

In-Situ Stabilization

Chemically treating disposed wastes in-situ within the Lakeside and Dallman Ash ponds could be considered. In-situ stabilization (ISS) (a.k.a. encapsulation) is done by drilling closely spaced boreholes through the waste and mixing/injecting reagents (typically Portland cement and/or others) that site-specific testing shows is capable reducing hydraulic conductivity and/or leachability of the treated waste and/or soil.

This method is currently planned for implementation in discrete locations in the North Ash Basin at the Gibson Generating Station in Indiana.[79] The intent at Gibson is to perform ISS on soils and CCR in discrete locations on the impoundment bottom to increase strength and reduce the permeability of soil and CCR materials on the bottom of the impoundment that are or have the potential to be in contact with groundwater.

Although I have seen no indication that this alternative has been seriously considered, I recommend that ISS on disposed materials in the Lakeside and Dallman ponds be evaluated for its potential to reduce the hydraulic conductivity and leachability of disposed CCR. Laboratory and bench-scale testing with various treatment reagents would be needed to establish the feasibility of this option. In addition in reducing contaminant release, the increased strength of treated materials could also have the benefit of reducing potential for catastrophic releases during a major flood event.

Cap in Place

After years of detecting groundwater contamination in downgradient compliance monitoring wells[80] CWLP has proposed closing the Ash Ponds by capping the materials in place as the only

[79] Atlas Technical Consultants (2023), Closure Plan Revision, North Ash Basin System, Gibson Generating Station, March 7, 2023

[80] Andrews Engineering (2024), Annual Groundwater Monitoring and Corrective Action Report, January 2024, p.4

proposed remedy. Closure in place is proposed even though groundwater would continue to interact with the waste beneath the cap. This remedial option is only effective in locations where there is separation between the bottom of the waste and the groundwater, which is not the case at CWLP. Inflow of water through the bottom and sides of the Lakeside and Dallman ash impoundments will maintain leachate within the disposed CCR up to the elevation of the potentiometric surface measured in the Basal Sand.

Capping the CWLP Ash Ponds in place is an inappropriate remedy that I recommend be rejected for the CWLP Ash Pond closures for a variety of reasons, including:

- The CWLP impoundments are described as being "unlined ponds are placed directly above and within 5 feet of the high water table for the uppermost aquifer."[81]
- New information developed by CWLP in the past year shows that the bottoms of the impoundments are actually deeper than has previously been reported. The elevations of the bottom of the Lakeside and Dallman ponds are now known to be as deep as 530 and 524 feet, respectively.[82]
- The potentiometric surface elevation in the Basal Sand Unit beneath the Lakeside Ash Pond decreases from a high of 565 feet above msl beneath the southeast corner of the pond to approximately 540 feet above msl along the northern berm.[83] The potentiometric surface elevation beneath the Dallman Ash Pond is generally between 530 and 535 feet above msl.[84]
- Comparing the groundwater head within the basal sand to the new pond bottom data shows that we could expect 10 to 35 feet of saturated waste in the Lakeside impoundment, and 2 to 12 feet of saturated waste in the Dallman impoundment, even after the observed groundwater mounding has dissipated.
- Waste placed below the potentiometric surface will be continually saturated with groundwater even though the cap may function as planned.
- Contaminants mobilized from saturated CCR will continue to move downgradient from the impoundments toward discharge areas along and/or beneath Sugar Creek.

[81] Andrews Engineering, 2018, Evaluation of CCR Location Restrictions, contained in Attachment 6 to the CWLP Initial Operating Permit Application (Oct. 2021)

[82] CWLP (2024), Coal Combustion Residuals Surface Impoundment Operating and Construction Permit Application Review Letter, September 9, 2024, Response to Item 1.7.15

[83] Andrews Engineering (2021b), Hydrogeologic Report, Groundwater Monitoring Program and Statistical Procedures, October 2021, Appendix C, contained in Attach. 11 to CWLP Initial Operating Permit Application (Oct. 2021)

[84] Andrews Engineering (2021b), Hydrogeologic Report, Groundwater Monitoring Program and Statistical Procedures, October 2021, Appendix C, contained in Attach. 11 to CWLP Initial Operating Permit Application (Oct. 2021)

- The proposed cap-in-place remedy for the Lakeside and Dallman Ash Ponds does not meet the Illinois performance standard for CCR closures[85] which requires the facility to take measures, such as engineering controls that will control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste as well as post-closure releases to groundwater from the sides and bottom of the unit.
- Capping waste in place would also leave the units susceptible to damage or releases during flood events.

Excavation and Beneficial Reuse

Excavation and beneficial reuse of the waste stored in the Dallman impoundment is a final closure option that should be carefully evaluated when the site is closed. Beneficial reuse of some of the coal combustion wastes that are currently being produced and disposed in the CWLP impoundments has occurred in the past and continues to occur. In fact, William Antonacci indicated in his deposition that most of the ash contained in the Dallman Ash Pond was taken for beneficial use in rebuilding a highway interchange as recently as 2008 or 2009.[86] It is currently unclear if an appropriate use for all of the waste stored in the CWLP impoundments could readily be found, however it is clear that beneficial reuse opportunities are occasionally available. Excavation and disposal in an appropriately located and constructed disposal facility could be pursued to supplement beneficial reuse opportunities.

Benefits of excavation and beneficial reuse include: eliminate the source of groundwater and surface water contaminants, eliminate the risk of a catastrophic release to the environment in the event of flooding, elimination of at least 30 years of site monitoring and maintenance costs, and elimination potential liabilities of disposing of waste in another disposal facility. Excavation and beneficial reuse could be periodically supplemented with excavation and disposal when reuse opportunities are not available. For all of these reasons excavation and beneficial reuse of the CCR in the CWLP impoundments should be considered the most appropriate closure method.

Excavation and Disposal

Excavation and disposal of CCR in a properly lined, permitted landfill that meets all regulatory requirements and doesn't create further environmental liability is recommended as an appropriate and effective closure alternative. Disposal of excavated ash in a new or existing landfill capable of minimizing contact between ash and water, and containing ash contaminants would: eliminate the source of groundwater and surface water contaminants, eliminate the risk of a catastrophic release to the environment in the event of flooding, and eliminate at least 30 years of site monitoring and maintenance costs.

Utilities across the country have chosen to implement excavation and removal of waste as a technically effective and economically reasonable closure method. This method is most often used in locations, such as at the CWLP Ash Ponds, where there is inadequate separation between

[85] 35 Ill. Admin. Code Section 845.750(a)(1)
[86] See page 47 of transcript of William Antonacci deposition dated January 16, 2016.

the bottom of the impoundments and groundwater, or where disposal areas are located near surface water bodies. Identification of 100 different units where excavation and removal of waste was selected as the appropriate closure method is provided in Table 1.

I recommend that excavation and disposal of the CWLP waste in an appropriately located and constructed disposal facility be implemented as an alternative, or as a supplement, to excavation and beneficial reuse. In the event that beneficial ruse opportunities are not continuously available, excavation and disposal could occur between beneficial reuse opportunities. Excavation and disposal or excavation and beneficial reuse are the only closure options that remove ash from the Sugar Creek floodplain and remove the sources of known sources of groundwater contaminants from the environment.

Summary

Closing the impoundments by capping them in place would likely reduce infiltration into the waste from above, but waste located at or below the potentiometric surface will continue to release contaminants. Closed-in-place impoundments would also be susceptible to damage or release of wastes during flood events. For all of the reasons discussed in this report I recommend that capping the waste in place on the Sugar Creek floodplain be rejected as a final closure remedy

Other remedial options may reduce contaminant concentrations to some extent for as long as one or more systems are operated and maintained. The overarching problem with this site would however remain. The CWLP impoundments were constructed in a location that is very poorly suited to waste disposal facilities. Because they are located immediately adjacent to Sugar Creek and in regular contact with groundwater, there are few that will be effective at containing the CCR waste and controlling the release of contaminants into the environment. The CWLP ash is currently contained in:

- impoundments that have been inadequately designed and constructed,
- impoundments known to be releasing ash-related contaminants to groundwater in concentrations well above Illinois Class I Groundwater Quality Standards,
- impoundments with bottoms located at or below the water table, and
- impoundments located on the Sugar Creek 100-year floodplain.

For these reasons I see no responsible choices other than to recommend that the wastes either be excavated and beneficially reused or disposed in a properly located and constructed disposal facility.

Concluding Remarks

This report sets forth my opinions and the information upon which I relied in forming those opinions. I recommend that the Illinois pollution Control Board require that the groundwater monitoring system at the CWLP ash ponds be updated to address the inappropriate inclusion of

an impact downgradient well in the monitoring system and direct that closure of the impoundments be done in a manner that will meet the EPA Performance Standard for CCR site closures. I reserve the right to supplement this report and/or my opinions as new or additional information is brought to light in the future.

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Illinois Licensed Professional Geologist No. 196.001465

GEO-HYDRO, INC

Table 1

Units Closed by Removal of CCR

Table 1[1]

Units Closed by Removal of CCR

Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
AES Somerset LLC	Sludge Stabilization Basin	Somerset Operating Company, LLC	https://scoc1.weebly.com/	NY	Barker	Closed	Removal
Asheville Steam Electric Plant	1982 Ash Basin	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	NC	Arden	Closed, no certification	Removal
Big Bend Power Station	Economizer Ash and Pyrite Pond System	TECO Energy	https://www.tampaelectric.com/communityresponsibility/environment/ccr-compliance/	FL	Apollo Beach	Closed	Removal
Big Bend Power Station	West Slag Disposal Pond	TECO Energy	https://www.tampaelectric.com/communityresponsibility/environment/ccr-compliance/	FL	Apollo Beach	Closed	Removal
Big Sandy Plant	Bottom Ash Pond	American Electric Power, Kentucky Power Co.	https://www.aep.com/about/codeofconduct/CCRRule/	KY	Louisa	Closed	Removal
Big Stone Plant	Slag Pond Area	Otter Tail Power Company	http://www.ccr-bsp.net/	SD	Big Stone City	Closed	Removal
Black Dog Plant	Inactive Ash Pond 1	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	MN	Burnsville	Closed	Removal
Black Dog Plant	Inactive Ash Pond 2	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	MN	Burnsville	Closed	Removal

[1] Contents of Table 1 updated on October 15, 2022, data obtained from https://earthjustice.org/coalash/data-2022

Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
Black Dog Plant	Inactive Ash Pond 3	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	MN	Burnsville	Closed	Removal
Boswell Energy Center	Old Bottom Ash Surface Impoundment	Minnesota Power	http://mp-ccr.azurewebsites.net/Boswell	MN	Cohasset	Closed	Removal
Brayton Point Power Station	Basin A	Brayton Point LLC	http://www.cdcco.com/ccr/brayton-point/	MA	Somerset	Closed	Removal
Brayton Point Power Station	Basin B	Brayton Point LLC	http://www.cdcco.com/ccr/brayton-point/	MA	Somerset	Closed	Removal
Brayton Point Power Station	Basin C	Brayton Point LLC	http://www.cdcco.com/ccr/brayton-point/	MA	Somerset	Closed	Removal
Bremo Power Station	East Ash Pond, Inactive	Dominion Energy	https://www.dominionenergy.com/projects-and-facilities/electric-projects/coal-ash/ccr-rule-compliance-data-and-information	VA	Bremo Bluff	Closed, no certification	Removal
Bremo Power Station	West Ash Pond, Inactive	Dominion Energy	https://www.dominionenergy.com/projects-and-facilities/electric-projects/coal-ash/ccr-rule-compliance-data-and-information	VA	Bremo Bluff	Closed, no certification	Removal
Cherokee Station	Center Ash Pond	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	CO	Denver	Closed, no certification	Removal
Cherokee Station	Cooling Tower Retention Pond	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	CO	Denver	Closed, no certification	Removal
Cherokee Station	East Ash Pond	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	CO	Denver	Closed, no certification	Removal
Cherokee Station	West Ash Pond	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	CO	Denver	Closed, no certification	Removal

Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
Cheswick Generating Station	Bottom Ash Emergency Pond	GenOn	https://www.genon.com/ccr-rule-compliance	PA	Cheswick	Closed	Removal
Cheswick Generating Station	Bottom Ash Recycle Pond	GenOn	https://www.genon.com/ccr-rule-compliance	PA	Cheswick	Closed	Removal
Columbia Municipal Power Plant	More's Lake Surface Impoundment	City of Columbia	https://www.como.gov/utilities/coal-combustion/	MO	Columbia	Closed	Removal
Coyote Station	Slag Pond	Otter Tail Power Company	http://www.ccr-cs.net/	ND	Beulah	Closed	Removal
Coyote Station	Sluice Outfall	Otter Tail Power Company	http://www.ccr-cs.net/	ND	Beulah	Closed	Removal
Coyote Station	Nelsen Pond	Otter Tail Power Company	http://www.ccr-cs.net/	ND	Beulah	Closed	Removal
Cross Generating Station	Gypsum Pond	Santee Cooper	https://www.santeecooper.com/About/CCR-Data-Rule/Cross/Index.aspx	SC	Cross	Closed	Removal
Crystal River Energy Complex	Backup FGD Blowdown Treatment Pond	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	FL	Crystal River	Closed	Removal
Crystal River Energy Complex	Primary FGD Blowdown Treatment Pond	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	FL	Crystal River	Closed	Removal
Dan River Steam Station	Secondary Ash Basin	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	NC	Eden	Closed	Removal

Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
East Bend Electric Plant	Ash Basin	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	KY	Union	Closed	Removal
Fox Lake Generating Station	Inactive Surface Impoundment	Interstate Power and Light Company	http://ccr.alliantenergy.com/FoxLake/index.htm	MN	Sherburn	Closed	Removal
Gallagher Generating Station	Secondary Settling Pond	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	IN	New Albany	Closed, no certification	Removal
Ghent Generating Station	Reclaim Pond/Gypsum Stack Surge Pond	Kentucky Utilities Company	https://lge-ku.com/CCR/GH	KY	Ghent	Closed	Removal
Gibson Generating Station	East Settling Basin	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	IN	Owensville	Closed	Removal
Gibson Generating Station	South Settling Basin	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	IN	Owensville	Closed	Removal
Hennepin Power Station	Hennepin Old West Polishing Pond	Luminant (formerly Dynegy Inc.)	http://www.luminant.com/ccr	IL	Hennepin	Closed	Removal
Hudson Generating Station	Bottom Ash Pond	HRP Hudson, LLC (formerly PSEG Power LLC)	https://www.hilcoredev.com/former-hudson-generating-station	NJ	Jersey City	Closed, no certification	Removal
Hudson Generating Station	North Fly Ash Pond	HRP Hudson, LLC (formerly PSEG Power LLC)	https://www.hilcoredev.com/former-hudson-generating-station	NJ	Jersey City	Closed, no certification	Removal

Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
Hudson Generating Station	South Fly Ash Pond	HRP Hudson, LLC (formerly PSEG Power LLC)	https://www.hilcoredev.com/former-hudson-generating-station	NJ	Jersey City	Closed, no certification	Removal
James DeYoung Power Plant	Ash Pond 1	Holland Board of Public Works	https://hollandbpw.com/en/about-us/publications	MI	Holland	Closed	Removal
James DeYoung Power Plant	Ash Pond 2	Holland Board of Public Works	https://hollandbpw.com/en/about-us/publications	MI	Holland	Closed	Removal
James DeYoung Power Plant	Ash Pond 3	Holland Board of Public Works	https://hollandbpw.com/en/about-us/publications	MI	Holland	Closed	Removal
James River Power Station	East Pond	City Utilities of Springfield	https://www.cityutilities.net/corporate/legal/ccr/	MO	Springfield	Closed	Removal
James River Power Station	West Pond	City Utilities of Springfield	https://www.cityutilities.net/corporate/legal/ccr/	MO	Springfield	Closed	Removal
JB Sims Power Generation Plant	Unit 3 Ash Ponds East (A) and West (B)	Grand Haven Board of Light and Power	https://ghblp.org/environmental-compliance-reports/coal-combustion-residuals-compliance/	MI	Grand Haven	Closed, no certification	Removal
JC Weadock Power Plant	Bottom Ash Pond	Consumers Energy Co.	https://www.consumersenergy.com/community/sustainability/environment/waste-management/coal-combustion-residuals	MI	Essexville	Closed, no certification	Removal
JH Campbell Power Plant	Unit 3 North & 3 South	Consumers Energy Co.	https://www.consumersenergy.com/community/sustainability/environment/waste-management/coal-combustion-residuals	MI	West Olive	Closed, no certification	Removal
JH Campbell Power Plant	Units 1-2 North and 1-2 South	Consumers Energy Co.	https://www.consumersenergy.com/community/sustainability/environment/waste-management/coal-combustion-residuals	MI	West Olive	Closed, no certification	Removal

Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
John Twitty Energy Center	East Pond	City Utilities of Springfield	https://www.cityutilities.net/corporate/legal/ccr/	MO	Springfield	Closed	Removal
John Twitty Energy Center	West Pond	City Utilities of Springfield	https://www.cityutilities.net/corporate/legal/ccr/	MO	Springfield	Closed	Removal
L.V. Sutton Energy Complex	1971 Ash Basin	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	NC	Wilmington	Closed, no certification	Removal
L.V. Sutton Energy Complex	1984 Ash Basin	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	NC	Wilmington	Closed, no certification	Removal
La Cygne Generating Station	Bottom Ash Impoundment	Evergy	https://www.evergy.com/ccr	KS	La Cygne	Closed	Removal
Lawrence Energy Center	Area 2 Pond	Evergy	https://www.evergy.com/ccr	KS	Lawrence	Closed, no certification	Removal
Lawrence Energy Center	Area 3 Pond	Evergy	https://www.evergy.com/ccr	KS	Lawrence	Closed, no certification	Removal
Lawrence Energy Center	Area 4 Pond	Evergy	https://www.evergy.com/ccr	KS	Lawrence	Closed, no certification	Removal
Limestone Electric Generating Station	Secondary E Pond Unit (Unit 003)	NRG	http://www.nrg.com/legal/coal-combustion-residuals/	TX	Jewett	Closed	Removal
Mayo Steam Electric Plant	FGD Forward Flush Pond	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	NC	Roxboro	Closed	Removal

Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
Mayo Steam Electric Plant	FGD Settling Pond	Duke Energy	https://www.duke-energy.com/our-company/environment/compliance-and-reporting/ccr-rule-compliance-data	NC	Roxboro	Closed	Removal
Mercer Generating Station	North Fly Ash Pond	HRP Mercer, LLC (formerly PSEG Power LLC)	https://www.hilcoredev.com/former-mercer-generating-station	NJ	Hamilton Township	Closed, no certification	Removal
Mercer Generating Station	South Fly Ash Pond	HRP Mercer, LLC (formerly PSEG Power LLC)	https://www.hilcoredev.com/former-mercer-generating-station	NJ	Hamilton Township	Closed, no certification	Removal
Mill Creek Generating Station	Dead Storage Pond	Louisville Gas & Electric Company	https://lge-ku.com/CCR/MC	KY	Louisville	Closed	Removal
Mill Creek Generating Station	Clearwell Pond	Louisville Gas & Electric Company	https://lge-ku.com/CCR/MC	KY	Louisville	Closed	Removal
Mill Creek Generating Station	Construction Runoff Pond	Louisville Gas & Electric Company	https://lge-ku.com/CCR/MC	KY	Louisville	Closed	Removal
Mill Creek Generating Station	Emergency Pond	Louisville Gas & Electric Company	https://lge-ku.com/CCR/MC	KY	Louisville	Closed	Removal
Montrose Generating Station	North Ash Impoundment	Evergy	https://www.evergy.com/ccr	MO	Clinton	Closed	Removal
Montrose Generating Station	South Ash Impoundment	Evergy	https://www.evergy.com/ccr	MO	Clinton	Closed	Removal

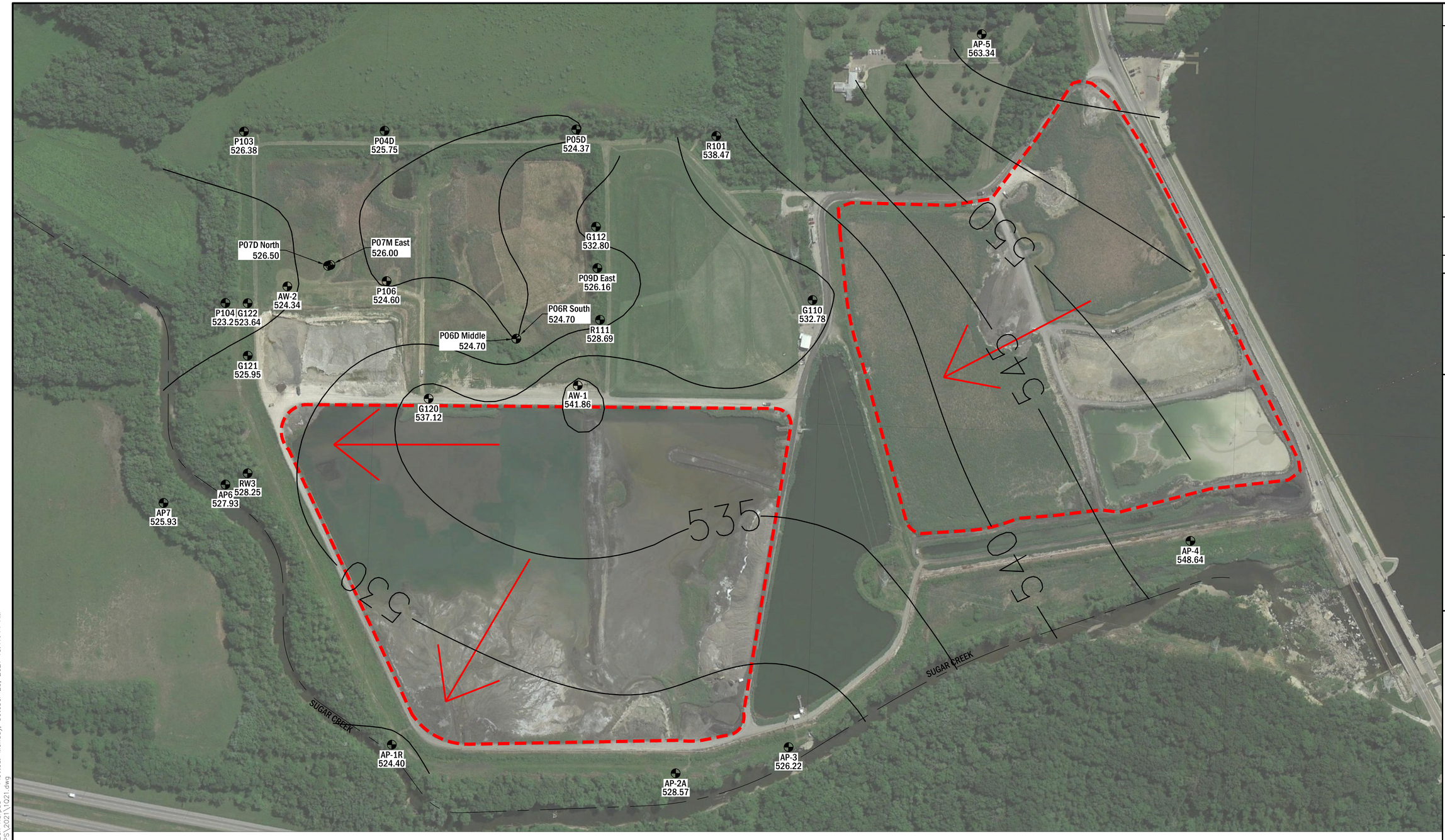
Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
Muskogee Generating Station	Emergency Ash Basin	OG&E Energy Corp.	https://www.oge.com/wps/portal/ord-hidden/coal-combustion	OK	Fort Gibson	Closed, no certification	Removal
Neal North Energy Center	Impoundment 1 N & S	MidAmerican Energy Co.	https://berkshirehathawayenergyco.com/ccr/mec.html	IA	Sergeant Bluff	Closed, no certification	Removal
Neal North Energy Center	Impoundment 2	MidAmerican Energy Co.	https://berkshirehathawayenergyco.com/ccr/mec.html	IA	Sergeant Bluff	Closed, no certification	Removal
Neal North Energy Center	Impoundment 3A	MidAmerican Energy Co.	https://berkshirehathawayenergyco.com/ccr/mec.html	IA	Sergeant Bluff	Closed, no certification	Removal
Nearman Creek Power Station	Bottom Ash Pond	Kansas City Board of Public Utilities	https://www.bpu.com/ccr-surface-impoundment-groundwater-monitoring.aspx	KS	Kansas	Closed	Removal
Nelson Dewey Station	WPDES Pond	Wisconsin Power & Light Co.	https://ccr.alliantenergy.com/NelsonDewey?utm_source=WS&utm campaign=NelsonDewey/index.htm	WI	Cassville	Closed	Removal
New Castle Generating Station	North Ash Pond	GenOn	https://www.genon.com/ccr-rule-compliance	PA	West Pittsburg	Closed	Removal
New Madrid Power Plant	Pond 004	Associated Electric Coop.	https://www.aeci.org/responsible/ccr/	MO	New Madrid	Closed	Removal
Pawnee Station	Ash Water Recovery Pond	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	CO	Brush	Closed, no certification	Removal
Pawnee Station	Bottom Ash Storage Pond	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	CO	Brush	Closed, no certification	Removal
Plant Jack McDonough	Ash Pond 2	Georgia Power Company	https://www.georgiapower.com/company/environmental-compliance/ccr-rule-compliance-data/ccr-rule-compliance-plant-list.html	GA	Smyrna	Closed, no certification	Removal

Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
Plant McManus	AP-1, inactive	Georgia Power Company	https://www.georgiapower.com/company/environmental-compliance/ccr-rule-compliance-data/ccr-rule-compliance-plant-list.html	GA	Brunswick	Closed, no certification	Removal
Plant Yates	Ash Pond 1	Georgia Power Company	https://www.georgiapower.com/company/environmental-compliance/ccr-rule-compliance-data/ccr-rule-compliance-plant-list.html	GA	Newman	Closed, no certification	Removal
Plant Yates	Ash Pond A	Georgia Power Company	https://www.georgiapower.com/company/environmental-compliance/ccr-rule-compliance-data/ccr-rule-compliance-plant-list.html	GA	Newman	Closed, no certification	Removal
Possum Point Power Station	Pond A	Dominion Energy	https://www.dominionenergy.com/projects-and-facilities/electric-projects/coal-ash/ccr-rule-compliance-data-and-information	VA	Dumfries	Closed	Removal
Possum Point Power Station	Pond B	Dominion Energy	https://www.dominionenergy.com/projects-and-facilities/electric-projects/coal-ash/ccr-rule-compliance-data-and-information	VA	Dumfries	Closed	Removal
Possum Point Power Station	Pond C	Dominion Energy	https://www.dominionenergy.com/projects-and-facilities/electric-projects/coal-ash/ccr-rule-compliance-data-and-information	VA	Dumfries	Closed	Removal
Possum Point Power Station	Pond E	Dominion Energy	https://www.dominionenergy.com/projects-and-facilities/electric-projects/coal-ash/ccr-rule-compliance-data-and-information	VA	Dumfries	Closed	Removal
R.D. Morrow, Sr. Generating Station	Emergency Scrubber Surge Pond	Cooperative Energy	https://cooperativeenergy.com/energy-resources/ccr-documentation/	MS	Purvis	Closed	Removal
R.D. Morrow, Sr. Generating Station	Scrubber Supply Pond	Cooperative Energy	https://cooperativeenergy.com/energy-resources/ccr-documentation/	MS	Purvis	Closed	Removal
Reid Gardner Generating Station	SI B-2	NV Energy	http://www.berkshirehathawayenergyco.com/ccr/nve.html	NV	Moapa	Closed	Removal

Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
Reid Gardner Generating Station	SI B-3	NV Energy	http://www.berkshirehathawayenergyco.com/ccr/nve.html	NV	Moapa	Closed	Removal
Reid Gardner Generating Station	SI E-1	NV Energy	http://www.berkshirehathawayenergyco.com/ccr/nve.html	NV	Moapa	Closed	Removal
Reid Gardner Generating Station	SI B-1	NV Energy	http://www.berkshirehathawayenergyco.com/ccr/nve.html	NV	Moapa	Closed	Removal
Sibley Generating Station	Slag Settling Impoundment	Evergy	https://www.evergy.com/ccr	MO	Sibley	Closed	Removal
St. Clair Power Plant	Scrubber Impoundment	DTE Electric Co.	https://www.dteenergy.com/us/en/residential/community-and-news/environment/Coal-Combustion-Residual-Rule-Compliance-Data-and-Information.html	MI	East China Twp	Closed	Removal
Tecumseh Energy Center	Bottom Ash Settling Pond	Evergy	https://www.evergy.com/ccr	KS	Tecumseh	Closed	Removal
Thomas Hill Energy Center	Cell 2 West	Associated Electric Coop.	https://www.aeci.org/responsible/ccr/	MO	Clifton Hill	Closed	Removal
Valmont Station	CCR Impoundment 3A	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	CO	Boulder	Closed, no certification	Removal
Valmont Station	CCR Impoundment 3B	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	CO	Boulder	Closed, no certification	Removal
Valmont Station	EPRI Ash Settling Pond	Xcel Energy	https://corporate.my.xcelenergy.com/s/energy/sources/coal/coal-ash-management	CO	Boulder	Closed, no certification	Removal
Wateree Generating Station	Ash Pond	Dominion Energy	https://www.dominionenergy.com/projects-and-facilities/electric-projects/coal-ash/ccr-rule-compliance-data-and-information	SC	Eastover	Closed, no certification	Removal

Name of Plant or Site	CCR Unit	Operator	CCR Website	State	City	Closure Status	Closure Method
Winyah Generating Station	Slurry Pond 2	Santee Cooper	https://www.santeecooper.com/About/CCR-Data-Rule/Winyah/Index.aspx	SC	Georgetown	Closed, no certification	Removal

Attachment A
2021 Potentiometric Surface Maps



LEGEND

- MONITORING WELL LOCATION
- CCR SURFACE IMPOUNDMENT
- GROUNDWATER FLOW DIRECTION

NOTES

1. SAMPLING DATE: 1/22/2021
2. CONTOUR INTERVAL = 5 FEET
3. IMAGE SOURCE: GOOGLE EARTH PRO, IMAGE DATE MAY 15, 2012
4. ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM (1988).

N

0 150 300 600

SCALE: IN FEET

NO.	DATE	REVISION DESCRIPTION	BY

ANDREWS ENGINEERING
3300 GINGER CREEK DRIVE
SPRINGFIELD, ILLINOIS 62711-7233
PH (217) 787-2334 WWW.ANDREWS-ENG.COM
PONTIAC, IL • LOMBARD, IL • INDIANAPOLIS, IN • WARRENTON, MO

APPROVED BY: BJH | DESIGNED BY: MTH | DRAWN BY: BCK

POTENTIOMETRIC SURFACE MAP
1ST QUARTER 2021

PLANS PREPARED FOR
CITY, WATER, LIGHT, AND POWER
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: OCTOBER 2021

PROJECT ID: 150077/0021

SHEET NUMBER:

1Q21

Tab: 1Q21 Last Saved: October 25, 2021, by Ben Korpus Plotted: Monday, October 25, 2021 10:17:44 AM
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P103 538.60
P04D 541.01
P05D 532.73
R101 540.48
AP-5 573.78
530
G112 527.00
P07D North 526.50
P07M East 526.00
P09D East 527.37
P106 524.60
AW-2 526.46
P104 533.05
G122 526.76
P06R South 524.70
G110 529.80
P06D Middle 524.70
R111 529.54
545
550
G121 529.23
530
AW-1 543.11
G120 536.70
GP1 529.48
GP7 526.38
RW3 531.51
AP6 531.38
AP7 528.62
535
AP-4 549.43
GP3 534.69
AP14 537.82
540
AP8 533.29
SUGAR CREEK
SUGAR CREEK
AP-1R 527.56
AP13 533.65
AP-3 526.92
AP-2A 529.32
AP9 524.96
AP10 534.86
AP12 527.88

LEGEND

- MONITORING WELL LOCATION
- CCR SURFACE IMPOUNDMENT
- GROUNDWATER FLOW DIRECTION

NOTES

1. SAMPLING DATE: 5/27/2021
2. CONTOUR INTERVAL = 5 FEET
3. IMAGE SOURCE: GOOGLE EARTH PRO, IMAGE DATE MAY 15, 2012
4. ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM (1988).

N

0 150 300 600

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PONTIAC, IL • LOMBARD, IL • INDIANAPOLIS, IN • WARRENTON, MO

DESIGNED BY: MTH | DRAWN BY: BCK | CHECKED BY: MTH | APPROVED BY: BJH

POTENTIOMETRIC SURFACE MAP
2ND QUARTER 2021

PLANS PREPARED FOR
CITY, WATER, LIGHT, AND POWER
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: OCTOBER 2021

PROJECT ID: 150077/0021

SHEET NUMBER:

2Q21

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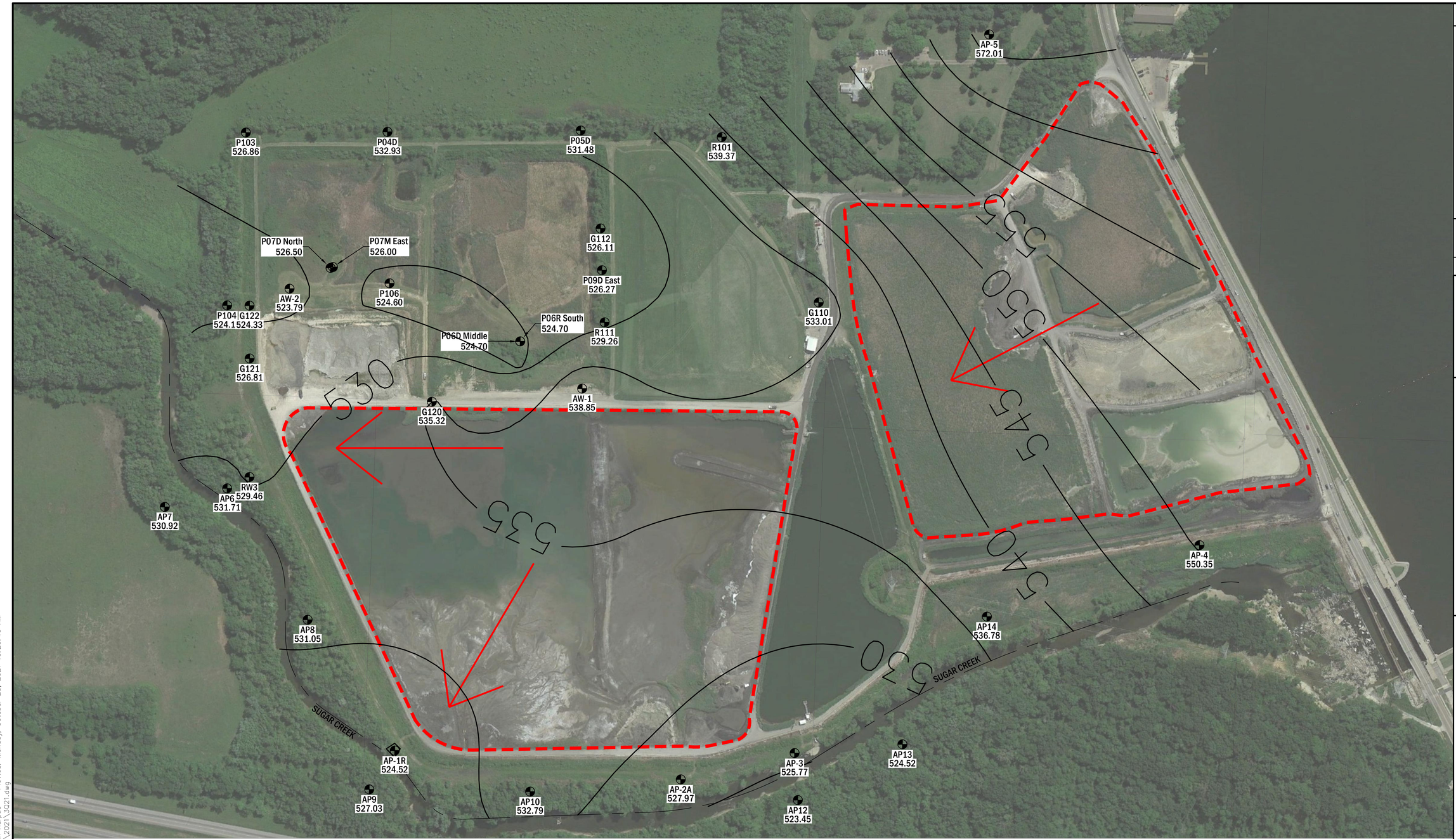

LEGEND

- MONITORING WELL LOCATION
- CCR SURFACE IMPOUNDMENT
- GROUNDWATER FLOW DIRECTION

NOTES

1. SAMPLING DATE: 8/25/2021
2. CONTOUR INTERVAL = 5 FEET
3. IMAGE SOURCE: GOOGLE EARTH PRO, IMAGE DATE MAY 15, 2012
4. ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM (1988).

N

0 150 300 600

SCALE: IN FEET

NO.	DATE	REVISION DESCRIPTION	BY

ANDREWS ENGINEERING
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APPROVED BY: BJH | DESIGNED BY: MTH | DRAWN BY: BCK

POTENTIOMETRIC SURFACE MAP
3RD QUARTER 2021

PLANS PREPARED FOR
CITY, WATER, LIGHT, AND POWER
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: OCTOBER 2021

PROJECT ID: 150077/0021

SHEET NUMBER: 3Q21

Tab: 3Q21 Last Saved: October 25, 2021, by Ben Korpus Plotted: Monday, October 25, 2021 10:20:40 AM
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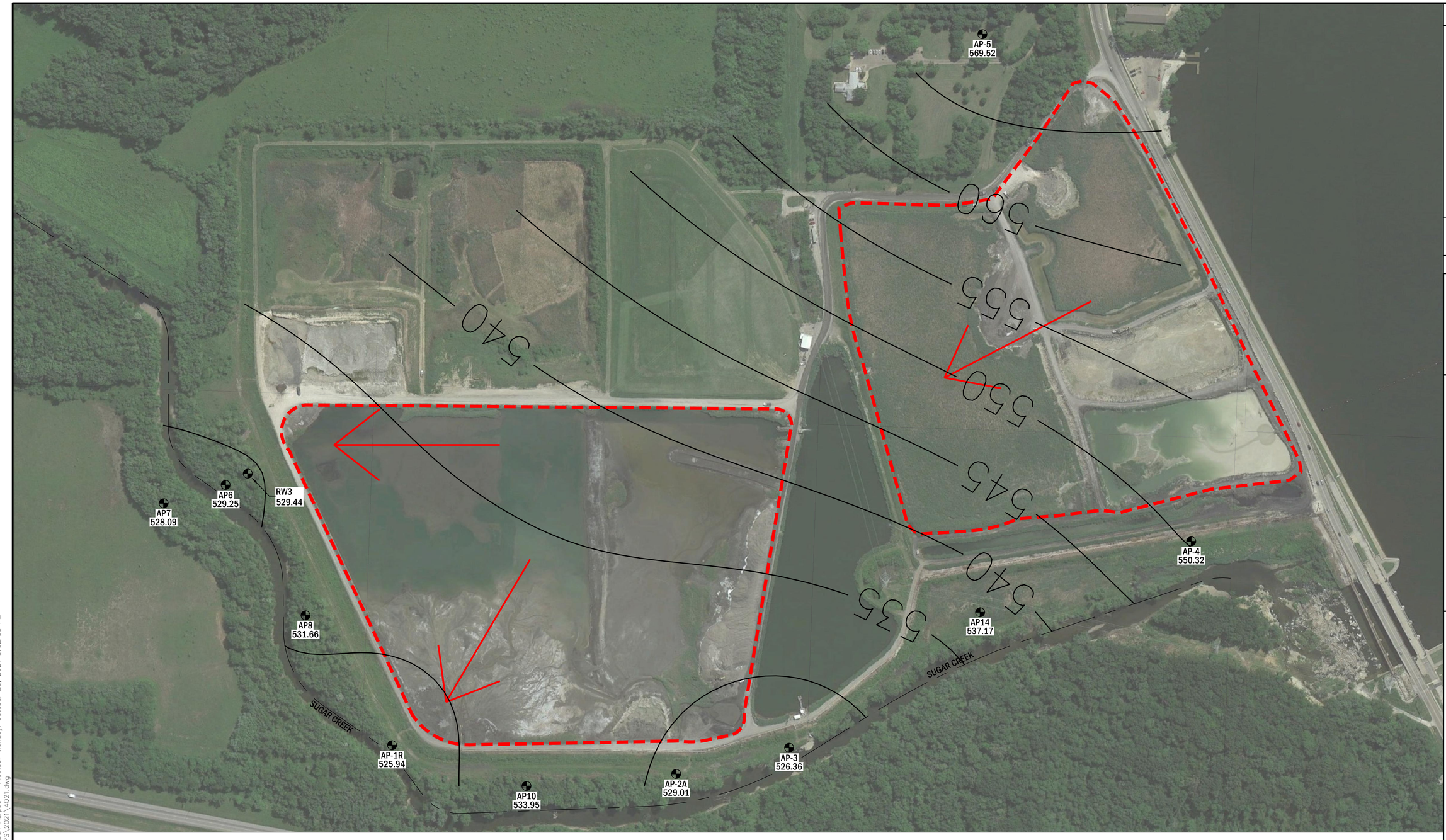


LEGEND

- MONITORING WELL LOCATION
- CCR SURFACE IMPOUNDMENT
- GROUNDWATER FLOW DIRECTION

NOTES

1. SAMPLING DATE: 10/21/2021
2. CONTOUR INTERVAL = 5 FEET
3. IMAGE SOURCE: GOOGLE EARTH PRO, IMAGE DATE MAY 15, 2012
4. ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM (1988).

N

0 150 300 600

SCALE: IN FEET

NO.	DATE	REVISION DESCRIPTION	BY

ANDREWS ENGINEERING
3300 GINGER CREEK DRIVE
SPRINGFIELD, ILLINOIS 62711-7233
PH (217) 787-2334 WWW.ANDREWS-ENG.COM
PONTIAC, IL • LOMBARD, IL • INDIANAPOLIS, IN • WARRENTON, MO

APPROVED BY: BJH | DESIGNED BY: MTH | DRAWN BY: BCK

POTENTIOMETRIC SURFACE MAP
4TH QUARTER 2021

PLANS PREPARED FOR
CITY, WATER, LIGHT, AND POWER
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: OCTOBER 2021

PROJECT ID: 150077/0021

SHEET NUMBER: 4Q21

Tab: 4Q21 Last Saved: October 25, 2021, by Ben Korpus Plotted: Monday, October 25, 2021 3:32:53 PM
J:\S\Springfield CWLP\CWLP Ash Pond\DWG\PMAPS\2021\4Q21.dwg

GEO-HYDRO, INC

Attachment B
2022 Monitoring Data Summary

City Water, Light and Power
Power Plant Ash Impoundment
2023 Groundwater Analytical Summary Data

Well	Parameter	Units	MCL[1]	Published GWPS[2]	Site-Specific Background	Final GWPS	2023-Q1 Jan 26-27, 2023	2023-Q2 Apr 11-17, 2023	2023-Q3 Jul 6-7, 2023	2023-Q4 Oct 25-26, 2023
AP-7	Sulfate, total	mg/L	na	na	55.5	55.5	16		20	
RW-3	Sulfate, total	mg/L	na	na	55.5	55.5	< 10		22	
AP-1	Total Dissolved Solids	mg/L	na	na	609	609	1520	1540	1190	1360
AP-2	Total Dissolved Solids	mg/L	na	na	609	609	1180	1100	1600	1020
AP-3	Total Dissolved Solids	mg/L	na	na	609	609	1040	984	990	1080
AP-4	Total Dissolved Solids	mg/L	na	na	609	609	515		560	
AP-5	Total Dissolved Solids	mg/L	na	na	609	609	374		400	
AP-6	Total Dissolved Solids	mg/L	na	na	609	609	322		268	
AP-7	Total Dissolved Solids	mg/L	na	na	609	609	328		300	
RW-3	Total Dissolved Solids	mg/L	na	na	609	609	420		290	
Appendix IV										
AP-1	Antimony, total	mg/L	na	0.006	0.001	0.006	< 0.001		< 0.001	
AP-2	Antimony, total	mg/L	na	0.006	0.001	0.006	< 0.001		< 0.001	
AP-3	Antimony, total	mg/L	na	0.006	0.001	0.006	< 0.001		< 0.001	
AP-4	Antimony, total	mg/L	na	0.006	0.001	0.006	< 0.001		< 0.001	
AP-5	Antimony, total	mg/L	na	0.006	0.001	0.006	< 0.001		< 0.001	
AP-6	Antimony, total	mg/L	na	0.006	0.001	0.006	< 0.001		< 0.001	
AP-7	Antimony, total	mg/L	na	0.006	0.001	0.006	< 0.001		< 0.001	
RW-3	Antimony, total	mg/L	na	0.006	0.001	0.006	< 0.001		< 0.001	
AP-1	Arsenic, total	mg/L	na	0.01	0.0266	0.0266	< 0.025		< 0.001	
AP-2	Arsenic, total	mg/L	na	0.01	0.0266	0.0266	< 0.025		0.002	
AP-3	Arsenic, total	mg/L	na	0.01	0.0266	0.0266	< 0.025		0.0109	
AP-4	Arsenic, total	mg/L	na	0.01	0.0266	0.0266	< 0.025		0.0239	
AP-5	Arsenic, total	mg/L	na	0.01	0.0266	0.0266	< 0.025		< 0.001	
AP-6	Arsenic, total	mg/L	na	0.01	0.0266	0.0266	< 0.025		0.004	
AP-7	Arsenic, total	mg/L	na	0.01	0.0266	0.0266	< 0.025		0.0412	0.075
RW-3	Arsenic, total	mg/L	na	0.01	0.0266	0.0266	0.169	0.185	0.0831	0.74
AP-1	Barium, total	mg/L	na	2	0.519	2	0.236		0.271	
AP-2	Barium, total	mg/L	na	2	0.519	2	0.0744		0.0719	
AP-3	Barium, total	mg/L	na	2	0.519	2	0.111		0.0993	
AP-4	Barium, total	mg/L	na	2	0.519	2	0.39		0.396	
AP-5	Barium, total	mg/L	na	2	0.519	2	0.0408		0.0461	
AP-6	Barium, total	mg/L	na	2	0.519	2	0.0938		0.0844	
AP-7	Barium, total	mg/L	na	2	0.519	2	0.111		0.106	
RW-3	Barium, total	mg/L	na	2	0.519	2	0.168		0.106	
AP-1	Beryllium, total	mg/L	na	0.004	0.0025	0.004	< 0.0005		< 0.0005	
AP-2	Beryllium, total	mg/L	na	0.004	0.0025	0.004	< 0.0005		< 0.0005	
AP-3	Beryllium, total	mg/L	na	0.004	0.0025	0.004	< 0.0005		< 0.0005	
AP-4	Beryllium, total	mg/L	na	0.004	0.0025	0.004	< 0.0005		< 0.0005	
AP-5	Beryllium, total	mg/L	na	0.004	0.0025	0.004	< 0.0005		< 0.0005	

Attachment C
AP-4 Boring Log

Professional Service Industries, Inc.
480 North Street
Springfield, Illinois 62704
Telephone: 217/544-6663
Fax: 217/544-6143

LOG OF BORING AP-4

PSI Job No.: 0020522
Project: Piezometer Installation
Location: CWLP Ash Pond
East Lake Shore Drive
Springfield, Illinois

Drilling Method: Hollow Stem Auger
Sampling Method: Split Spoon
Hammer Type: CME Automatic; ETR = 86%
Boring Location: See attached boring location plan.

WATER LEVELS
While Drilling 11 feet
Upon Completion N/A
Delay N/A

Station: N/A
Offset: N/A

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0			1	17	Brown silty CLAY, some brown sand, firm to stiff, slightly moist (FILL)	CL	4-4-3 N_{60}=10	
	5			2	18	Brown silty CLAY, trace roots, firm to stiff, moist (FILL)	CL	4-3-2 N_{60}=7	
				3	10	Brown SILT, trace gray, firm to stiff, moist (FILL)	ML	6-3-2 N_{60}=7	
	10			4	12	5" Brown SAND transitioning to Black FLY ASH at 9.4', stiff to very stiff, slightly moist (FILL)		2-2-4 N_{60}=9	
				5	18			2-2-2 N_{60}=6	
	15			6	16		SAND/FLY ASH	2-1-1 N_{60}=3	
				7	16			6-6-5 N_{60}=16	
	20			8	18	Black FLY ASH, some fine sub-round gravel, stiff to very stiff, moist to saturated (FILL)	FLY ASH	3-3-3 N_{60}=9	
						Gray/green (organic?) CLAY, stiff, trace fine sand, moist to saturated			
	25			9	1		CL	3-3-4 N_{60}=10	
	30			10	18	Brown/gray silty CLAY, fiorm to stiff, saturated	CL	2-2-3 N_{60}=7	
	35			11	18	Gray SILT, stiff to very stiff, saturated		3-3-4 N_{60}=10	
				12	18		ML	4-4-4 N_{60}=11	
	45			13	18			4-4-6 N_{60}=14	
	50			14	18	Gray fine to coarse SAND, medium dense, saturated		4-5-7 N_{60}=17	
	55			15	18		SW	5-5-7 N_{60}=17	
				16	1	Gray SHALE, hard, moist	CL	50/1"	
	60					Boring terminated at -60'			

STANDARD PENETRATION TEST DATA
N in blows/ft
Moisture: X
PL: ◪
LL: ✱
0 25 50
STRENGTH, tsf
Qu: ▲
Qp: ✳
0 2.0 4.0

Additional Remarks

Well Diagram
J-Plug
Concrete Cap
2" PVC Solid Riser
Bentonite Seal
Sand Filter Pack
0.01" PVC Slotted Screen

Completion Depth: 60.0 ft
Date Boring Started: 4/20/10
Date Boring Completed: 4/20/10
Logged By: Rob Preuss
Drilling Contractor: PSI, Inc.

Sample Types:
Auger Cutting
Split-Spoon
Rock Core
Shelby Tube
Hand Auger
Texas Cone

Latitude:
Longitude:
Drill Rig: ATV D50
Remarks: N_{60} denotes the normalization to 60% efficiency as described in ASTM D4633. Moistures determined by visual methods.

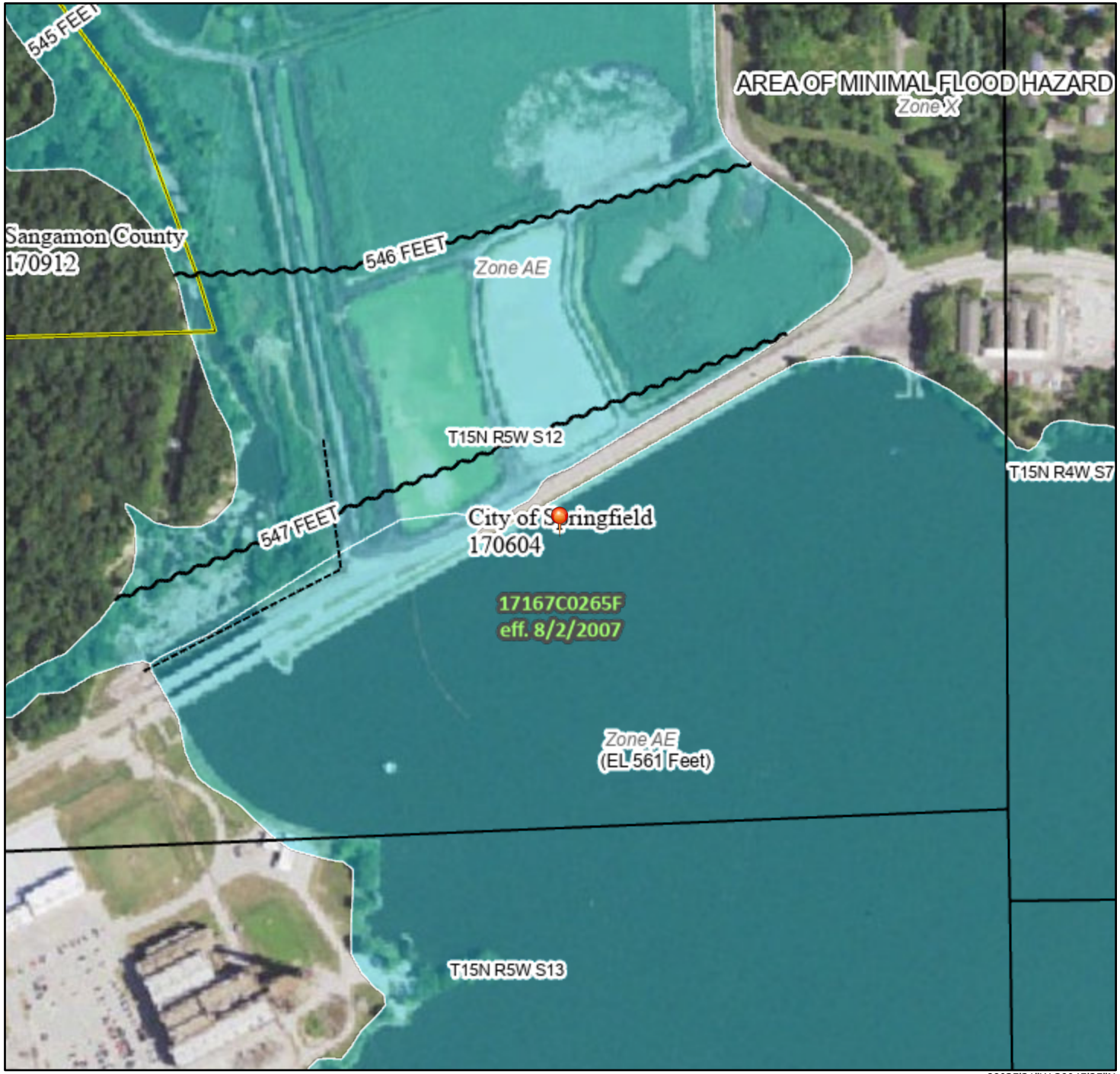
The stratification lines represent approximate boundaries. The transition may be gradual.

Attachment D
FEMA Flood Map

National Flood Hazard Layer FIRMette

FEMA

89°36'8"W 39°45'52"N



89°35'31"W 39°45'25"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/17/2024 at 4:39 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Appendix
Resume of Mark A. Hutson, P.G.

Mark A. Hutson, P.G.

Summary of Qualifications

Over 40 years professional experience performing and managing site characterization, RI/FS's, RFI's, and soil and/or groundwater remediation projects. Management experience includes all aspects of projects for industrial, governmental, and non-profit clients. I have provided technical review, comments, and oversight on preparation of numerous permit applications and a wide array of projects.

Professional Experience

Geo-Hydro, Inc., 2006-Present, Principal/Senior Scientist
Weston Solutions, Inc., 2002-2006, Senior Project Manager/Business Line Operations Manager
Ellis Environmental Group, LLC, 2001-2002, Senior Project Manager
Foothill Engineering Consultants, 1997-2001, Senior Project Manager
Burns & McDonnell Waste Consultants, Inc., 1996-1997, Senior Project Manager
Hydro-Search, Inc., 1990-1996, Senior Project Manager/Operations Manager
Roy F. Weston, Inc., 1984-1990, Senior Geologist/ Project Manager
University of Illinois at Chicago, 1982-1984, Teaching Assistant
Ecology and Environment, Inc., 1980-1982, Hydrogeologist
Illinois Environmental Protection Agency, 1978-1980, Environmental Protection Specialist

Professional Registrations, Memberships, and Affiliation

Professional Geologist - Georgia (No. PG-002341), Illinois (196.001465), Indiana (No. 754), Kansas (No. 709), Wisconsin (No. 889)
Colorado Ground Water Association - (Past-President 2015-2016), President 2014-2015, Vice President 2013-2014, Education Committee Chair, 2011-2020)

Education

M.S., Geology, University of Illinois at Chicago, 1989
B.S., Geology, Northern Illinois University, 1978
Graduate Studies in Business, Northern Illinois University, 1979-81
Various courses on computer software and geographic information systems

Select Project Experience

Technical Oversight and Consulting

- Consultant engaged by client to review documents and provide support to the community surrounding the Valmont Generating Plant in Boulder, CO. Documents reviewed included but is not limited to, facility construction history, monitoring system design and implementation reports, hydrogeologic reports, permit applications and regulatory comments and permitting/closure documents.

- Consultant engaged by client to review and provide technical comments on documents prepared and submitted by several generating facilities. Generating facilities reviewed included Michigan City Generating Station, Baily Generating Station, Four Corners Power Plant, Cardinal Generating Station, H.L. Spurlock Power Station. Documents reviewed included but is not limited to, facility construction history, monitoring system design and implementation reports, hydrogeologic reports, permit applications and regulatory comments and permitting documents.

- Consultant tasked with reviewing and preparing comments on several CCR disposal units at generating facilities in Georgia and Alabama. Sites reviewed included Plants Hammond, McDonough, Scherer, Wansley, and Yates in Georgia. Alabama sites reviewed included Plant Barry, Gaston, and Gorgas. Reviewed documentation required by the 2015 CCR rule, prepared comments, and in some cases presented findings to regulators and others interested parties.

- Consultant retained to review and provide comments on the proposed Twin Pines titanium mine in Georgia. The mine is proposed for construction on Trail Ridge, a sandy dune feature that restricts flow to the east from the Okefenokee Swamp. Presented findings and discussed likely environmental impacts of the proposed mine at meetings with state and federal regulators.

- Consultant retained by client to review documents and prepare technical comments on several CCR disposal sites in Indiana including the Gibson, Wabash, Harding Street, and Eagle Valley Generating Stations. Documents reviewed included but is not limited to, facility construction history, monitoring system design and implementation reports, hydrogeologic reports, permit applications and regulatory comments and permitting/closure documents.

- Consultant retained by client to review documents and prepare an Expert Report on conditions at the Springfield CWLP CCR disposal ponds in Illinois. Participated in a site inspection and review documents including, but is not limited to, facility construction history, monitoring system design and implementation reports, hydrogeologic reports, permit applications and regulatory comments and permitting/closure documents.

- Consultant tasked with reviewing and summarizing water quality data from 66 Coal Combustion Residual sites to gain insight into the nature and magnitude of the documented impacts that CCR units have on groundwater quality. Results were submitted to EPA by my client during the public comment period on proposed revisions to the 2015 Coal Combustion Residual Rules.

- Consultant tasked with reviewing and providing my Expert Opinions on EPA's proposed revisions to the 2015 Coal Combustion Residual rules. Opinions were submitted to EPA by my client during the public comment period.

- Consultant tasked with reviewing and providing comments on Site Assessment Plans, Comprehensive Site Assessments, and Corrective Action Plans for coal ash impoundments at the Mayo, Roxboro, and Belews Creek Generating Stations in North Carolina. Coal ash impoundments at each of these sites were constructed in stream valleys and resulted in burying perennial streams below sluiced ash.

- Consultant for the Western Environmental Law Center initially tasked with reviewing and providing comments on the mine permit application for the Bull Mountains Mine, Montana. I was subsequently asked to provide testimony about concerns over inadequate evaluation of potential impacts to springs and seeps as well as water supplies on surrounding properties.

- Consultant tasked with reviewing closure plan information and monitoring reports from the Santee Cooper Grainger Generating Station ash pond closure. The site is located near Conway, SC. Documents were reviewed to evaluate the effectiveness of the proposed closure plan and comments were provided to counsel for use in negotiations with the company.

- Technical Consultant tasked with reviewing and preparing comments on the Draft Environmental Impact Statement for the Four Corners Power Plant and Navajo Mine Energy Project in New Mexico. Reviewed documentation from Office of Surface Mining Reclamation and Enforcement sources and prepared comments covering the effects of current and previous mining and coal ash disposal practices and identifying proposed activities likely to adversely impact environmental quality.

- Consultant providing support to counsel by reviewing and providing comments on Groundwater Assessment Work Plans and Drinking Water Supply Well and Receptor Surveys at 14 coal ash disposal facilities located in the southeast. The document reviews were conducted in order to evaluate the appropriateness of proposed characterization, make recommendations to improve characterization, and identify any sites that showed a particularly high risk to off-site receptors.

- Consultant tasked with reviewing and preparing comments on the 2012 reports covering the Plant Area, Stage One and Stage Two Evaporation Ponds Area, and Units 3 & 4 Evaporation Holding Ponds Area of the Colstrip Steam Electric Station located at Colstrip, MT. Reviewed documents and prepared comments and talking points that were submitted subsequently submitted to regulators.

- Consultant on the Pines Groundwater Plume Site through a USEPA Technical Assistance Program grant from PRPs to local citizens' group. The Pines site is a coal combustion waste landfill with significant spread of contaminants. Provide assistance to the citizens through grant to provide assessment and feedback on site work products as they are developed and implemented, explain the remediation processes and activities to the citizens, and serve as technical liaison between citizens and remediation team.

- Technical Consultant tasked by with reviewing a variety of documents and monitoring data from the Rosebud Mine located near Colstrip, MT. Document and data reviews included groundwater monitoring data, MPDES permits and discharge monitoring reports, and permit renewal documents. In each case, documentation and data were reviewed and comments were prepared and submitted to counsel.

- Technical Consultant providing support at the Massachusetts Military Reservation (MMR) on Cape Cod, MA. Under contract to the Corps of Engineers, provided third-party technical support services for the Selectmen of four towns surrounding MMR from 1998 thru 2011. The project involved oversight of impact area characterization and remediation activities including UXO location and disposal, and characterization of explosive impacted soil and groundwater, volatile organics, and perchlorate. Provided technical review of remediation data as well as comments and advice to the Selectmen on technical issues.

- Environmental Consultant to the City of Afton, MN to review and provide comments on an application to develop a coal combustion waste landfill on the site of a former sand and gravel mining operation. On behalf of the City of Afton, GHI reviewed the available materials, identified data gaps and potential concerns, and submitted detailed comments on the plan. Major concerns included the susceptibility of the local water supply to contamination from the facility, the unacceptable geologic characteristics of the site for construction of a waste disposal facility, poor characterization of wastes to be placed in the facility, improper modeling of the site conducted in support of the EIS, and the location of many potential receptors downgradient of the facility.

- Project Manager and Consultant tasked with reviewing and providing technical comments on the Faulkner, Westland and Brandywine coal combustion waste disposal facilities in rural Maryland. Provided comments on the adequacy of characterization of the nature and extent of contaminants released from these facilities. Subsequently supported the legal team in negotiating the details of necessary actions to be taken during closure of these facilities to protect human health and the environment.

- Consultant tasked with reviewing and preparing comments on a permit amendment application for the Savage Mine located in eastern Montana. Comments submitted to counsel primarily concerned the adequacy of the site characterization, the hydrologic balance and probable hydrologic consequences of proposed application.

- Project Manager and Consultant on the review and preparation of technical comments on an application by a major utility to develop an unlined coal combustion waste (CCW) disposal facility in western Kansas. Major issues included the leachability of CCW in the landfill environment, inadequacy of the proposed groundwater monitoring plan and the lack of necessary groundwater protection systems in the design. Comments were provided to counsel for inclusion in the public review process.

- Environmental Consultant tasked with reviewing and preparing comments on a permit application for a proposed lignite mine located near South Heart, North Dakota. Comments submitted to counsel included identification of inadequacies in the site characterization, the monitoring plan, the Probable Hydrologic Consequences, and the evaluation of potential alluvial valley floors. Comments were submitted to counsel.

- Project Manager and Consultant for Robinson Township and Environmental Integrity Project on a review of a permit application submitted to the State of Pennsylvania to mine coal refuse, generate electricity and dispose of coal combustion waste at the location of a large coal refuse pile. Services included permit application review and preparation of comments. Review identified deficiencies in the characterization of geologic materials, groundwater, surface water, and the hydrologic balance provided in the permit application.

- Geologist on a geologic and hydrogeologic assessment of a proposed regional landfill in Kendall County, Il. Research documented problems with the geologic and hydrogeologic characterization, including karst features in the area that had not been noted or anticipated in the permit application materials.

Site Characterization and Remediation

- Lead author on a Groundwater Impact Assessment at a coal combustion waste disposal facility in Illinois. This project was conducted to assist an electric generating station investigate the nature and extent of contaminants that had been released to the groundwater and to investigate remedial options necessary to minimize future releases. Results of this study are currently being implemented by the company and are projected to adequately contain contamination and avoid exposures to surrounding residents.

- PCP Contaminated Soil Remediation, Beaver Wood Products, Columbia Falls, MT, Project Manager. Manager of a project to investigate, excavate and bio-remediate PCP impacted soils at a former pole treatment site. Soil treatment was conducted via an on-site Land Treatment Unit (LTU). At the time of project completion over 20,000 cubic yards of impacted soil had been excavated, treated, and returned to the site. Responsible for project planning and execution, budget and schedule tracking, and cost control.

- Project Manager of a project to remediate and remove an oil interceptor pond containing PCB-contaminated sediment at a generating facility in North Dakota. Oily sludge in the pond contained PCB's in sufficient concentrations to require special handling and disposal. Responsible for all aspects of the project including evaluating remedial action alternatives, preparing construction plans, representing the client with regulatory agencies, and implementation of the approved site closure. Fly ash was added as a stabilizing agent to stabilize the sediment within the pond. Stabilized and characterized sediment was shipped to a permitted TSCA facility for disposal.

- Remediation of hydrocarbon contaminated soils at natural gas collection and pumping Stations, KN Energy, Project Manager. The project consisted of identification of areas of visually impacted soils, excavation of soils to visually clean, screening soils with field instrumentation, collecting verification samples for laboratory analysis, directing contaminated soil excavation, and replacing excavated soil with clean backfill. Impacted soil was transported to pre-existing landfarm areas for treatment by the client.

- Project Manager and Principal Investigator on a mixed waste treatability study performed for Kerr-McGee Corporation to investigate methods of making radiologically impacted hydrocarbon sludge acceptable for disposal without increasing the total volume. The project included characterization of the physical, chemical, and radiologic composition of the available waste materials, and evaluating the feasibility of combining wastes to produce an acceptable material. Pilot scale testing was conducted on the most promising materials to identify the proportions necessary to produce an optimum mixture.

- Project Manager on a groundwater remedial design project at a Phillips Petroleum facility in Beatrice, Nebraska. Project tasks included a general site characterization, geophysical surveys, soil borings and chemical analysis, pump testing, and design of ground water remediation system. Remedial technologies selected utilized air stripping and carbon absorption.

- Project Geologist involved in the installation of a petroleum hydrocarbon recovery system at the Hess Oil refinery on St. Croix US Virgin Islands. Activities included daily coordination with refinery personnel and drilling contractors, logging and installing recovery wells, and performing recovery tests on completed installations.

- Project Manager of a program to investigate, design and construct ground water remediation systems at three Chevron facilities in Puerto Rico. Project included ground water characterization, pump testing and conceptual and detailed designs of remediation systems. Systems were constructed, operated for a period of approximately 2 years and have now been removed.

- Prepared Detailed Plans and Specifications for construction and operation of a land treatment unit to remove hydrocarbon and volatile organics from soil in North Dakota, Project Manager. Managed a team of people involved in preparation of a complete design and specifications package for construction and operation of a land treatment unit to treat soils impacted with petroleum hydrocarbon and chlorinated solvents. This project was completed on schedule, has been built and was successfully completed.

- Project Manager and author of a revised and updated Site Decommissioning Plan for the Kerr-McGee facility in Cushing, OK. Plan preparation included summarizing site conditions, establishing clean-up criteria, specifying remedial actions for each of 16 radioactive materials areas (RMAs) including measurement and sorting of materials, and planning final survey procedures. The scope of the remediation was negotiated with Nuclear Regulatory Commission headquarters and regional personnel as the document was being drafted to attempt to minimize the time for subsequent review and approval.

- Project Manager of a multi-million dollar U.S. Army program to identify and properly abandon wells located on Rocky Mountain Arsenal (RMA) that could possibly be conduits for downward migration of contamination. This work was conducted in accordance with an Administrative Order ceasing remedial activities at RMA. Over 350 wells were identified and abandoned under this program.

- Project Manager on the characterization of Bombing Target 5 for the Pueblo of Laguna, NM. Portions of the Laguna Pueblo were used during WWII as a bombing practice area. The project consisted of preparation of detailed UXO planning documents, surface clearance of the area around the target, and excavation of the target to a depth of 5-feet below the surface. Material found to potentially present and explosive hazard were collected on-site and detonated on-site at the end of the project. The Pueblo of Laguna and the Corps of Engineers approved all procedures and field activities.

- Multi-phase AFCEE Soil And Groundwater Investigation And Monitoring Program at the Former Bergstrom Air Force Base in Austin, Texas, Project Manager. Investigation areas included an oil-water separator at an engine test facility, a former maintenance facility, and the base landfills. Soils were contaminated with heavy metals including lead and solvents. Contaminated soils were excavated and disposed at an off-site facility. Closure reports for all three areas were submitted and approved by TNRCC.

- Project Manager on a contract to the Department of Energy to perform a surface clearance for UXO at three former bombing targets at the Tonopah Test Site in Nevada. Materials encountered included practice bombs and rockets that had been fired several decades ago. UXO technicians inspected each piece of material for potential explosive hazards. Materials that potentially contained explosive hazards were blown-in-place by Tonopah personnel. Scrap material was secured on-site and disposed appropriately at the end of the project.

- Project Manager for the investigation of subsurface contamination at several high priority solid waste management units at Rocky Flats Plant. Work included identification and characterization of surface and subsurface soil contamination, source characterization, and evaluation of ground water quality and movement.

- Project Manager under contract to Rockwell International to develop usable and defensible background geochemical data sets for various media at the Rocky Flats Plant. The occurrence of low-level radioactive material contamination from many years of plant operations, surrounding land uses, and atomic test fallout necessitated an extensive program to develop data and apply statistical analysis to describe background conditions. Additional statistical testing was performed to identify investigative results that showed results above defensible background values.

- Project Manager on a multi-phase soil and groundwater investigation and monitoring program at the former Bergstrom Air Force Base in Austin, Texas. Investigation areas included an oil-water separator at an engine test facility, a former maintenance facility, and the base landfills. Closure reports for all three areas are currently being prepared.

- Project Manager on a geophysical survey program at the Rocky Flats Plant designed to identify sources of chemical and radiological contamination at high priority solid waste management units. Surveys included electromagnetic, magnetic, and electrical resistivity methods used in conjunction with aerial photographs to identify possible source areas.

- Project Manager on a contract for USEPA Region 5 to plan and execute an investigation of the Federal Marine Terminals site near Detroit, Michigan. The investigation included a detailed review of historical aerial photographs, geophysical surveys of potential burial sites, soil sampling, monitoring well construction and sampling, and preparation of a site investigation report. Documentation and depositions on findings were provided to Region 5 enforcement.

- Project Geologist on a preliminary investigation of possible JP-4 impacts to soil and groundwater from the fueling system at Forbes Field Air National Guard base in Topeka, KS. The investigation included drilling through runway and ramp areas, around fuel storage facilities, and evaluation of possible migration pathways.

- Project Geologist on a project to use electromagnetic geophysical techniques to trace the lateral migration of shallow, high TDS groundwater plumes associated with three DOE uranium mill tailings sites located in different parts of the western U.S. Results of these surveys showed that electromagnetics was useful for tracing the plumes and allowed a minimal number of subsequent monitoring wells to be installed to quantify leading edge impacts.

Remedial Investigations/Feasibility Studies

- Project Manager for the Remedial Investigation at a former Atlas Missile site located near Holton, Kansas, Responsible for completion of a site investigation and risk assessment for the Kansas City District. Direct push soil sampling, sonic drilling and well installation, and indoor air, surface water, sediment, and groundwater sampling have been conducted in and around the former facility to determine the level and extent of contamination that may be present. An ecological and human health risk assessment was conducted to evaluate the potential health risks associated with the site.

- Project Manager on a Remedial Investigation and Focused Feasibility Study of JP-4 contaminated soils at the Fire Protection Training Area at Minot Air Force Base. Performed under contract to the U.S. Corp of Engineers, this project utilized Laser Induced Fluorescence, an innovative investigation technique, to characterize the extent of subsurface contamination. The Focused Feasibility Study examined eight potential remedial actions and was successful in gaining State acceptance of on-site land treatment as the chosen remedial alternative.

- Project Manager for the Remedial Investigation/Feasibility Study (RI/FS) of the Landfill Solids and Gases Operable Units at the Lowry Landfill CERCLA site. This project involves the characterization and assessment of the extent of potential contamination within the unsaturated solid and gaseous phases of the materials at this high profile site. Responsible for coordinating the activities of up to 30 project staff assigned to multiple concurrent tasks. Responsibilities also included extensive coordination and interaction with multiple clients and PRP groups as well as the Colorado Department of Health and Environment and USEPA Region 8 personnel.

- Technical Advisor under contract to EPA Region V on the Remedial Investigation at the Marion Bragg Landfill CERCLA site. Provided technical assistance to the project team related to investigation techniques to be used in characterizing the landfill and surrounding areas, including evaluating and providing remedies to difficult well installation encountered during the remedial investigation.

- Project Manager on a Feasibility Study/Risk Assessment program at a former Rocketdyne fuel test facility located near Spanish Springs, NV. This program included performing a risk assessment on an impacted groundwater plume, performing a feasibility study to evaluate appropriate remedial options, and performing treatability studies on two alternatives to verify and quantify effectiveness and estimate costs.

- Project Geologist and Site Manager on contract to USEPA Region V on the Remedial Investigation of the Skinner Landfill CERCLA site located near Cincinnati, OH. Prepared planning documents including the Sampling and Analysis Plan, Quality Assurance Project Plan, and Health and Safety Plan. Managed implementation of the remedial investigation that included geophysical surveys, aquatic biology surveys, well installation, and soil and groundwater sampling.

Testimony and Depositions

Littleton, CO, 2021 - Indiana Office of Environmental Adjudication, 20-S-J-5107, Objection to the Issuance of Approval of Closure/Post Closure Plan, Tanners Creek Fly Ash Pond, Tanners Creek Development LLC, Floyd County, Indiana. Qualified as an expert witness in the areas of geology and hydrogeology, and provided testimony concerning opinions expressed in Expert Report.

Littleton, CO, 2021 - Indiana Office of Environmental Adjudication, 20-S-J-5107, Objection to the Issuance of Approval of Closure/Post Closure Plan, Tanners Creek Fly Ash Pond, Tanners Creek Development LLC, Floyd County, Indiana. Deposition concerning opinions expressed in Expert Report.

Littleton, CO, 2020, Illinois Pollution Control Board, R 20-19, Standards For The Disposal Of Coal Combustion Residuals in Surface Impoundments: Proposed New 35 Ill. Adm. Code 845. Provided Expert Report and Testimony to the Illinois Pollution Control Board concerning the proposed Illinois CCR rules.

Littleton CO, 2020, Indiana Office of Environmental Adjudication, 20-S-J-5095, Objection to the Issuance of Partial Approval of Closure/Post Closure Plan, Duke Gallagher Generating Station Ash Pond System, Duke Energy Indiana LLC, Floyd County Indiana. Deposition concerning opinions expressed in Expert Report.

Littleton, CO, 2020, Montana Board of Environmental Review, Cause No. BER 2016-07 SM, Appeal Amendment Application AM3, Signal Peak Energy LLC's Bull Mountain Mine No. 1, Permit No. C1993017. Qualified as an expert witness in the areas of geology, hydrogeology, and fluvial sedimentology, and provided testimony concerning opinions expressed in Expert Report.

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City Water, Light & Power
Springfield, Sangamon County, Illinois

Annual Groundwater Monitoring and Corrective Action Report
Year Ending December 31, 2024

January 2025

Prepared for:
City Water, Light & Power
3100 E. Lake Shore Drive
Springfield, Illinois

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1. INTRODUCTION

In accordance with 35 Ill. Adm. Code 845.550(a)(3) provided herein is the Annual Groundwater Monitoring and Corrective Action Report for year ending December 31, 2024. Pursuant to Section 845.610(e)(1), the Annual Groundwater Monitoring and Corrective Action Report must be included as part of the annual consolidated report required by Section 845.550.

City Water, Light and Power (CWLP) owns and operates two (2) existing coal combustion residual (CCR) surface impoundments. The CWLP CCR surface impoundments are located north and east of the former Lakeside Power Generating Station and Dallman Power Generating Station in the Eastern ½ of Section 12, Township 15 North, Range 5 West, in Springfield, Illinois (see Figure 1). These CCR surface impoundments are identified as the Lakeside Ash Pond and the Dallman Ash Pond (see Figure 2).

The former Lakeside Power Generating Station and Dallman Power Generating Station are situated on the northwestern bank of Lake Springfield in Springfield, Illinois. The Lakeside Ash Pond is immediately north of Spaulding Dam at the northern end of Lake Springfield. The Dallman Ash Pond is immediately northwest of the Lakeside Ash Pond. Placed into service prior to 1958, the Lakeside Ash Pond is primarily a diked embankment. The Lakeside Ash Pond consists of four separate ponds (i.e., three lime ponds and a settling pond) totaling approximately 35.0 acres. The Lakeside Ash Pond ceased receiving ash in 2009. The Dallman Ash Pond was placed into service in approximately 1976 and is also a diked embankment. The Dallman Ash Pond is approximately 34.5 acres and ceased receiving ash in 2021.

All CCR and non-CCR waste streams ceased flowing into the Lakeside Ash Pond and Dallman Ash Pond as of October 13, 2023.

Status of the Groundwater Monitoring and Corrective Action Programs

Pursuant to Section 845.610(e)(4), the annual report must provide an overview of the groundwater monitoring program and corrective action plan. The summary must:

A) Specify whether groundwater monitoring data shows a statistically significant increase over background concentrations for one or more constituents listed in Section 845.600;

Pursuant to 35 Ill. Adm. Code 845.600, CWLP submitted to the Illinois EPA and placed into the facility record a Groundwater Monitoring Program (GMP) for the CCR surface impoundments on October 28, 2021. The background concentrations presented in the 2021 GMP were based upon eight independent samples collected from each background and downgradient well and analyzed for the monitoring parameters listed in Section 845.600:

- Antimony
- Arsenic
- Barium
- Beryllium
- Boron
- Cadmium
- Calcium
- Chloride
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- pH
- Radium 226/228
- Selenium
- Sulfate
- Thallium
- Total Dissolved Solids

CWLP updated the GMP in September 2024 as part of correspondence with the United States EPA as well as in response to Illinois EPA comments on the Initial Operating and Construction Permit applications. The 2024 GMP update included revising background concentrations based on eight independent samples collected between the first quarter 2016 and fourth quarter 2017. For the parameters antimony, cobalt, calcium and lead background sampling was conducted between the first quarter 2020 through the fourth quarter 2021 using lower practical quantitation limits (PQLs). The arsenic background concentration was calculated based on eight independent samples collected between July 7, 2023 through August 12, 2024.

The present groundwater monitoring network includes two upgradient wells (wells AP-4 and AP-5), nine downgradient wells (RW-3, AP-1R, AP-2A, AP-3, AP-6, AP-7, AP-8, AP-10 and AP-14) and ten compliance boundary wells (AP-7, AP-9, AP-11, AP-12, AP-13, T-1, T-2, T-4, T-5 and T-6). Monitoring wells T-1, T-2, T-4, T-5 and T-6 were installed in April and May of 2024. During 2024, groundwater analytical results were compared to the groundwater protection/background values as presented in the September 2024 GMP submittal (see Table 1). Reports documenting exceedances of the calculated background were submitted to the Illinois EPA and placed into the facility record for 2024.

Pursuant to 35 Ill. Adm. Code 845.640(f), the selected statistical method used to evaluate groundwater monitoring data for each constituent is the Prediction Interval Procedure under 35 Ill. Adm. Code 845.640(f)(1)(C). For this procedure, an interval for each constituent is established from the distribution of the background data and then the level of each constituent in each compliance well (i.e., well/constituent) is compared to the upper prediction limit to assess if a statistically significant increase (SSI) over background has occurred.

Based upon this evaluation groundwater monitoring data for 2024 exhibits a statistically significant increase (SSI) over background concentrations for multiple constituents listed in Section 845.600.

B) Identify those constituents having a statistically significant increase over background concentrations and the names of the monitoring wells associated with the increase;

The constituents and wells that exhibit an SSI over background concentrations in 2024 are:

Parameter	AP-1	AP-2	AP-3	AP-4	AP-5	AP-6	AP-7	AP-8	AP-9	AP-10	AP-11	AP-12	AP-13	AP-14	RW-3
Antimony, total									X			X			
Arsenic, total							X	X							X
Barium, total										X					
Boron, total	X	X	X			X	X			X				X	X
Calcium, total	X	X	X									X		X	
Chloride, total	X	X	X	X		X	X	X	X	X	X	X	X	X	X
Cobalt, total		X	X												
Fluoride, total						X									
Lithium															
pH	X	X	X							X	X	X	X		
Sulfate, total	X	X	X		X					X	X	X	X	X	
Total Dissolved Solids	X	X	X						X	X	X	X	X	X	

Parameter	T-1	T-2	T-4	T-5	T-6
Antimony, total			X		
Arsenic, total					
Barium, total					
Boron, total	X	X			X
Calcium, total	X	X			
Chloride, total	X	X			X
Cobalt, total	X	X			
Fluoride, total					
Lithium	X	X	X		X
pH	X	X	X	X	X
Sulfate, total	X	X	X		
Total Dissolved Solids	X	X	X		

C) Specify whether there have been any exceedances of the groundwater protection standards for one or more constituents listed in Section 845.600;

Pursuant to Section 845.120, "Exceedance of the groundwater protection standard" means:

For existing CCR surface impoundments and inactive CCR surface impoundments:

- an analytical result with a concentration greater than the numerical value of the constituents listed in Section 845.600(a), in a down gradient well; or
- when the up gradient background concentration of a constituent exceeds the numerical value listed in Section 845.600(a), an analytical result with a concentration at a statistically significant level above the up gradient background concentration, in a down gradient well.

Based upon this evaluation, groundwater monitoring data for 2024 exhibits a SSI of the groundwater protection standards (GWPS) for multiple constituents listed in Section 845.600.

D) Identify those constituents with exceedances of the groundwater protection standards in Section 845.600 and the names of the monitoring wells associated with the exceedance;

The constituents that exhibit an SSI of a GWPS in 2024 are:

Parameter	*AP-1*	*AP-2*	*AP-3*	*AP-4*	*AP-5*	*AP-6*	*AP-7*	*AP-8*	*AP-9*	*AP-10*	*AP-11*	*AP-12*	*AP-13*	*AP-14*	*RW-3*
Arsenic, total							*X*	*X*							*X*
Boron, total	*X*	*X*	*X*							*X*				*X*	
Calcium, total	*X*	*X*										*X*		*X*	
Cobalt, total		*X*	*X*												
pH		*X*	*X*												
Sulfate, total	*X*	*X*	*X*									*X*		*X*	
Total Dissolved Solids	*X*											*X*		*X*	

Parameter	*T-1*	*T-2*	*T-4*	*T-5*	*T-6*
Calcium, total		*X*			
Chloride, total	*X*	*X*			
Total Dissolved Solids		*X*			

E) Provide the date when the assessment of corrective measures was initiated for the CCR surface impoundment;

The assessment of corrective measures was initiated May 2021.

F) Provide the date when the assessment of corrective measures was completed for the CCR surface impoundment

An assessment of alternatives containing an assessment of corrective measures and closure alternatives analysis was completed and posted on the facility's CCR compliance website on October 25, 2021. A public meeting occurred on December 2, 2021 to present the closure alternatives and corrective action analysis and to receive and respond to public comments. Based on the assessment of closure alternatives it has been determined that closure-in-place with a final cover system is most appropriate.

As provided in Section 845.660(e), the owner/operator may combine the corrective measures assessment and the closure alternatives analysis into one assessment of alternatives. The groundwater monitoring program has identified constituent concentrations in downgradient wells that require implementation of assessment of corrective measures. The facility anticipates conducting closure activities simultaneously with corrective action based on results from groundwater sampling and analyses.

G) Specify whether a remedy was selected under Section 845.670 during the current annual reporting period, and if so, the date of remedy selection; and

Pursuant to Section 845.710 closure of the surface impoundments may be completed by either:

- leaving the CCR in place and installing a final cover system, or;
- through removal of the CCR and decontamination of the surface impoundments.

At this time, CWLP has chosen closure in place with a final cover system as the most appropriate remedy. CWLP submitted a construction permit application for closure by installing a final cover system pursuant to Section 845.750 on February 1, 2022. CWLP received a review letter from the Illinois EPA dated October 10, 2023. CWLP provided Illinois EPA responses to the review letter on September 9, 2024 and October 30, 2024.

H) Specify whether remedial activities were initiated or are ongoing under Section 845.780 during the current annual reporting period.

In April 2019, CWLP submitted notification of intent to comply with the Alternative Closure Requirements of 40 CFR 257.103(a) since no alternative disposal capacity is currently available. Since then, CWLP has shut down Dallman Units 31, 32 and 33 and has completed the relocation of the lime ponds. All CCR and non-CCR waste streams ceased flowing into the impoundments since October 2023. While it has been CWLP's intent to commence closure of the Lakeside Ash Pond and the Dallman Ash Pond with the completion of the new lime pond processing area, closure of the CCR ash impoundments cannot begin until a closure construction permit is issued by IEPA. CWLP submitted an Operating Permit Application to the Illinois EPA on October 28,

2021 and a Construction Permit Application to the Illinois EPA on February 1, 2022. CWLP provided Illinois EPA responses to the review letter on September 9, 2024 and October 30, 2024.

2. GROUNDWATER MONITORING PROGRAM

As required Section 845.650(a), CWLP prepared and placed into the facility record a Groundwater Monitoring Program for the CCR surface impoundments on October 28, 2021. The GMP was updated in September 2024 and provided to Illinois EPA as part of the review letter response on September 9, 2024. The present groundwater monitoring network includes two upgradient wells (wells AP-4 and AP-5), nine downgradient wells (RW-3, AP-1R, AP-2A, AP-3, AP-6, AP-7, AP-8, AP-10 and AP-14) and ten compliance boundary wells (AP-7, AP-9, AP-11, AP-12, AP-13, T-1, T-2, T-4, T-5 and T-6). Monitoring wells T-1, T-2, T-4, T-5 and T-6 were installed in April and May of 2024. The well locations are depicted in Figure 2.

A Groundwater Monitoring System Certification has been provided for the Groundwater Monitoring Program, placed in the site record and uploaded to the facility Illinois CCR Compliance website - https://www.cwlp.com/IllinoisCCRCompliance.aspx.

The following sections of the report address the annual groundwater monitoring and corrective action report requirements outlined in Section 845(e)(2) and (3).

3. SECTION 845.610(e)(2): KEY ACTIONS, PROBLEMS ENCOUNTERED, AND KEY ACTIVITIES FOR 2024

3.1 Key Actions

The following items identify key actions that occurred in 2024 specifically related to the Groundwater Monitoring Program.

3.1.1 Assessment Monitoring

In accordance with Section 845.660(a) CWLP has initiated an assessment of corrective measures in response to the statistically significant increase (SSI) over background concentrations or the groundwater quality standards for one or more parameters listed in Section 845.600(a). Pursuant to Section 845.660(b), CWLP shall continue to monitor groundwater in accordance with the monitoring program as specified in Section 845.650.

Assessment monitoring, which includes all Section 845.600(a) parameters, calcium and turbidity, continued throughout 2024 for all wells in the groundwater monitoring system. A summary of the 2024 groundwater analytical reports and field sampling notes are included in Appendix C. The chemical analyses results are summarized in Table 1.

3.1.2 Assessment Monitoring Investigation

Pursuant to Section 845.650(d)(1), the nature and extent of affected groundwater must be determined such that potential remedies can be evaluated and selected, if necessary. Characterization of the nature and extent of affected groundwater is regulated pursuant to Section 845.650(d)(1)(A-D).

Seven wells were installed in February 2021 to augment the monitor well network and evaluate exceedances of the GWPSs, all in conformance with Section 845.650(d)(1). Wells AP-10 and AP-14 were installed along the west side of the impoundments and compliance boundary wells AP-9, AP-11, AP-12 and AP-13 were installed west of the creek.

Five additional wells were installed north and west of the creek in April and May 2024. These wells are identified as T-1, T-2, T-4, T-5 and T-6 (see Figure 3).

GWPS exceedances were observed and confirmed in downgradient wells (AP-1R, AP-2A, AP-3, AP-7, AP-8, AP-10, AP-14, RW-3, T-1 and T-2) and compliance boundary well (AP-12) during the 2024 quarterly groundwater sampling events (see Table 2).

Pursuant to 35 Ill. Adm. Code 845.650(d) CWLP has submitted notification of the exceedances of the GWPS to the Illinois EPA and posting each notification to their Illinois EPA CCR Compliance web page (https://www.cwlp.com/IllinoisCCRCompliance.aspx).

An alternate source demonstration pursuant to 35 Ill. Adm. Code 845.650(e) was submitted to the Illinois EPA on October 28, 2024 to address the exceedances observed at monitoring well AP-7. Illinois EPA issued a letter of non-concurrence on November 14, 2024 citing three data gaps. CWLP responded on December 9, 2024 with supplemental information to address the cited data gaps. Illinois EPA issued a non-concurrence letter on January 9, 2025 citing 35 Il Adm. Code 845.650(e)(6) does not allow for resubmittal of an ASD. CWLP is at an impasse as the requirement to initiate an assessment of corrective measures per 35 Ill Adm. Code 845.660 has already been completed and submitted to Illinois EPA as part of the Closure Construction permit application on February 1, 2022 which is still under review by Illinois EPA.

The remaining exceedances (i.e., at wells AP-1R, AP-2A, AP-3, AP-10, AP-14 and RW-3) have been delineated pursuant to 35 Ill. Adm. Code 845.650(d)(1).

Assessment monitoring data collected for the 2024 quarterly sampling events are provided in tabular format in Table 1. The data includes the sample dates and identifies the Section 845.600 parameters.

Assessment monitoring shall continue at the CWLP CCR surface impoundments pursuant to Section 845.660(b).

3.2 Assessment of Corrective Measures

As provided in Section 845.660(e), the owner/operator may combine the assessment of corrective measures and the closure analysis into one assessment of closure alternatives. The groundwater monitoring program has identified constituent concentrations in downgradient wells that require implementation of assessment of corrective measures. The facility anticipates conducting closure activities simultaneously with corrective action based on results from groundwater sampling and analyses. The assessment of corrective measures has been conducted pursuant to Section 845.660 and is incorporated into the assessment of alternatives pursuant to Section 845.660(e).

Pursuant to Section 845.700(b) the surface impoundments must either retrofit and/or close, which are the long term corrective measures. The closure alternative analysis was completed and posted to the facility website on October 25, 2021. A public meeting was held on December 2, 2021 to present the closure alternatives assessment and assessment of corrective measures and to receive and respond to public comments. Based on the assessment of closure alternatives it has been determined that closure-in-place with a final cover system is most appropriate. Once the ash impoundments are capped, it will take approximately 13 years to achieve the groundwater protection standards.

Both of these assessments were submitted to the Illinois EPA on February 1, 2022 as part of the closure construction permit application prepared pursuant to Section 845.700(c), and containing a final closure plan in accordance with the application schedule under Section 845.700(h). CWLP provided Illinois EPA responses to the review letter on September 9, 2024 and October 30, 2024.

3.3 Problems Encountered

All activities which occurred in 2024 are discussed in Section 3.1 and 3.2 above. No problems were encountered.

3.4 Key Activities for Upcoming Year (2025)

Assessment monitoring shall continue at the CWLP CCR surface impoundments pursuant to Section 845.660(b).

Closure of the CCR ash impoundments cannot begin until a closure construction permit is issued by IEPA. CWLP submitted an Operating Permit Application to the Illinois EPA on October 28, 2021 and a Construction Permit Application to the Illinois EPA on February 1, 2022. The Illinois EPA has provided comments in response to the applications; a meeting was held November 16, 2023 to discuss the comments, in part. CWLP has begun the process of modifying their NPDES

permit to allow dewatering of the surface impoundments in preparation of closure with a final cover system. It is expected that additional information will be submitted in 2025 that may affect the impoundment closure design and process.

CWLP is evaluating porewater data collected from within the CCR surface impoundments as well as information obtained from the installation of monitoring wells T1, T2, T4, T5 and T6 to determine the possibility of preparing an Alternate Source Demonstration for some of the observed GWPS exceedances.

4. SECTION 845.610(e)(3)(A-F)

Additional requirements for the Annual Groundwater Monitoring and Corrective Action Report are detailed in Section 854.610(e)(3)(A-F). Each of the requirements is reproduced below along with the response.

(A) - A map, aerial image, or diagram showing the CCR surface impoundment, all background (or upgradient) and downgradient monitoring wells, including the well identification numbers, that are part of the groundwater monitoring program for the CCR surface impoundment, and a visual delineation of any exceedances of the groundwater protection standards.

Maps depicting the CCR surface impoundments, all background and downgradient monitoring wells and delineation of the identified exceedances of the groundwater protection standards are provided in Appendix A.

(B) - Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken.

Five additional CCR surface impoundment monitoring wells CCR T-1, T-2, T-4, T-5 and T-6 were installed north and west of the creek in April and May 2024.

(C) - A potentiometric surface map for each groundwater elevation sampling event required by Section 845.650(b)(2).

Potentiometric surface maps for each of the monthly sampling events are provided in Appendix B.

As depicted on the potentiometric surface maps, groundwater generally flows radially from the CCR surface impoundment locations with an overall northerly groundwater flow.

(D) - In addition to all the monitoring data obtained under this Subpart, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, and the dates the samples were collected.

Pursuant to Section 845.650(b)(1), groundwater samples are collected on a quarterly basis. The laboratory analytical reports for the parameters at Section 845.600(a), calcium, and turbidity for each of the quarterly groundwater sampling events are provided in Appendix C.

(E) - A narrative discussion of any statistically significant increases over background levels for the constituents listed in Section 845.600; and

Sampling and analyses has occurred at each of the wells listed above for the parameters identified in Section 845.600(a)(1) including calcium and turbidity. The results of 2024 quarterly sampling indicate exceedance of the GWPSs for seven parameters: arsenic, boron, calcium, pH, sulfate and TDS. A summary table of the exceedances is provided as Table 2. The exceedances of the GWPSs for these parameters are discussed below.

Arsenic, total
Confirmed exceedances of the GWPS occurred for total arsenic (0.0375 mg/L) at downgradient groundwater monitoring wells AP-7, AP-8 and RW-3 during 2024. A revised background concentration was established for total arsenic in 2024 resulting in a lower background value.

The total arsenic concentrations at well AP-8 ranged from 0.0386 to 0.0461 mg/L, respectively. Total arsenic concentrations at well AP-8 have been above the recently derived background groundwater concentration with no upward or downward trend. The concentrations at this location appear to be related to some spatial variation.

The total arsenic concentrations at well RW-3 ranged from 0.107 to 0.306 mg/L, respectively. Total arsenic concentrations at well RW-3 have been above the background groundwater concentration with no upward or downward trend with isolated spikes in concentrations. These increases were observed in the first quarter 2020 and the fourth quarter 2023 prior to return to normal concentrations. The concentrations at this location appear to be related to some spatial variation. Total arsenic concentrations are typically low to non-detect (<0.025 mg/L) in other downgradient groundwater monitoring wells. There are two wells located downgradient/north of RW-3. These wells are AP-6 and compliance boundary well AP-7.

The total arsenic concentrations at groundwater monitoring well AP-6 installed at a distance of 83 feet downgradient of RW-3, were non-detect (<0.25 mg/L) for the first and second quarters of

2023 and 0.004 mg/L and 0.0183 mg/L from the third quarter 2023 through the fourth quarter 2024.

Compliance boundary well AP-7 is located further north of both AP-6 and RW-3, at a distance of 298 feet downgradient of RW-3. The total arsenic concentrations at compliance boundary well AP-7 ranged from 0.0395 to 0.0947 mg/L. Total arsenic concentrations at well AP-7 have historically been above the statistically derived background groundwater concentration with no upward or downward trend. The concentrations at this location also appear to be related to some spatial variation.

Alternate source demonstrations were submitted October 28 and December 9, 2024 for the total arsenic at well AP-7. The results of the demonstrations identified the source of arsenic detected in AP- 7 to be north of Sugar Creek, likely due to natural geochemistry within the monitored zone. Groundwater movement at AP-7 is from north to south towards the impoundments, not from the impoundments, indicating the impoundments are not the source of the arsenic.

Boron, total

Confirmed exceedances of the total boron GWPS (2 mg/L) occurred at downgradient wells AP-1R, AP-2A, AP-3, AP-10 and AP-14 during each of the quarterly groundwater sampling events for 2024.

The concentrations of total boron at well AP-1R ranged from 22.7 to 23.6 mg/L, from 3.1 to 3.52 mg/L at well AP-2A, 14.5 to 14.9 mg/L at well AP-3, 3.71 to 3.95 mg/L at well AP-10, and 20.0 to 22.3 mg/L at well AP-14.

Groundwater monitoring wells AP-7, AP-9, AP-11, AP-12 and AP-13 are located adjacent to the impoundments but on the opposite side of Sugar Creek. The analytical results for these compliance boundary wells demonstrate that the GWPS for total boron is not exceeded beyond the limits of Sugar Creek in this area.

The concentrations of total boron detected at wells AP-1R, AP-2A, AP-3, AP-10 and AP-14 have consistently been above the GWPS with no upward or downward trend.

Calcium, total

There were confirmed exceedances of the GWPS for total calcium (176.63 mg/L) at downgradient groundwater monitoring wells AP-1R, AP-2A, AP-12, AP-14, and T-2 during 2024. The calcium concentrations at AP-1R ranged from 237 to 250 mg/L, 194 to 222 mg/L at AP-2A, 203 to 258 mg/L at AP-12, and 237 to 263 mg/L at well AP-14. The total calcium concentration at T-2 ranged from 150 to 218 mg/L.

Total calcium concentrations at wells AP-1R, AP-2A, AP-12, AP-14 and T-2 are consistent with historical concentrations; there does not appear to be any upward or downward trend. It should be pointed out that the concentrations at AP-12, located on the west side of Sugar Creek opposite the CCR surface impoundment are consistently higher than the concentrations of calcium observed in monitoring wells located adjacent to the CCR surface impoundments. This supports the September 12, 2022 alternate source demonstration that the GWPS exceedances for total calcium observed at compliance boundary well AP-12 are likely a result of an off-site source. In May 2024, CWLP installed 5 additional groundwater monitoring wells around the periphery of the facility to further evaluation groundwater quality in support of updating the alternate source demonstration.

Cobalt, total

There were confirmed exceedances of the GWPS for total cobalt (0.006 mg/L) at downgradient groundwater monitoring wells AP-2A and AP-3 during 2024. At AP-2A, cobalt concentrations ranged from 0.0068 to 0.0102 mg/L. At AP-3 total cobalt concentrations ranged from below the method detection limit of 0.005 up to 0.0071 mg/L.

Total cobalt concentrations at wells AP-2A and AP-3 are consistent with historical concentrations. There does not appear to be any upward or downward trend.

pH (Field)

There were confirmed exceedances of the field measured water quality parameter pH GWPS (6.5 to 9 pH units) at wells AP-2A and AP-3. At well AP-2A, pH values ranged from 6.21 to 6.58 s.u. during 2024. At well AP-3 pH for the first and second quarters of 2024 were 6.42 and 6.45 s.u. with the pH returning to the GWPS the pH values ranged from 6.2 to 6.55. There is no upward or downward trend in pH for the groundwater monitoring wells and the fluctuation is attributed to season fluctuations.

Sulfate, total

There were confirmed exceedances of the GWPS for total sulfate (400 mg/L) at downgradient groundwater monitoring wells AP-1R, AP-2A, AP-3, AP-12 and AP-14 during year 2024 groundwater sampling events. The concentrations at well AP-1R ranged from 790 to 849 mg/L, 393 to 440 mg/L at well AP-2A, 493 to 558 mg/L at AP-3, m 457 to 612 mg/L at well AP-12 , and 679 to 909 mg/L at well AP-14 .

Total sulfate concentrations at wells in wells AP-1R, AP-2A, AP-3, AP-12 and AP-14 are consistent with historical concentrations. There does not appear to be any upward or downward trend.

Total Dissolved Solids

There were confirmed exceedances of the GWPS (1200 mg/L) for total dissolved solids (TDS) at downgradient monitoring wells AP-1R, AP-12, AP-14 and T-2 for the 2024 review period. TDS concentrations at AP-1R ranged from 1400 to 1640 mg/L, 1290 to 1670 mg/Lat well AP-12, 1480 to 1840 mg/L at well AP-14, and 1060 to 1580 mg/L at well T-2 .

TDS concentrations at well AP-1R has historically been elevated. TDS is the sum of the cations and anions in the water. TDS provides a qualitative measure of the amount of dissolved ions but not the nature or ion relationships. The elevated TDS in these wells is likely an indicator of the higher boron, calcium, chloride and sulfate concentrations detected in these wells.

The elevated TDS concentrations at compliance boundary wells AP-12 and T-2 are similarly attributed to elevated cation and anion concentrations in groundwater. However, the TDS concentrations at AP-12 and T-2 do not appear to be attributed to the CCR surface impoundments but to an offsite sources west of Sugar Creek.

(F) - Other information required to be included in the annual report as specified in 35 Ill. Adm. Code 845.Subpart F.

All applicable information has been provided in the narrative above.

5. CONCLUSION

This annual groundwater monitoring and corrective action report has been provided in accordance with Section 845.550(a)(3). The next annual report for monitoring year 2025 will be provided by January 31, 2026.

6. STATEMENT

This Annual Groundwater Monitoring and Corrective Action Report for Coal Combustion Residuals Surface Impoundments was completed for CWLP by Andrews Engineering, Inc. in accordance with the requirements under 35 IAC Part 845.610(e).

Karl W. Finke, P.E.

1/27/25
Date

CITY WATER, LIGHT AND POWER
CITY OF SPRINGFIELD, ILLINOIS
MISTY BUSCHER, MAYOR
DOUG BROWN, CHIEF UTILITY ENGINEER

July 15, 2025

Illinois Environmental Protection Agency DWPC – Permits #15
Attn: Part 845 Coal Combustion Residual Rule Submittal
2520 W Iles Avenue
P.O. Box 19276
Springfield, IL 62794-9276

Re: City Water, Light and Power – CCR Surface Impoundments
Lakeside Ash Pond – W1671200052-01
Dallman Ash Pond – W1671200052-02
Notification of Exceedances of Proposed GWPS First Quarter 2025

CCR Coordinator:

Pursuant to 35 IAC 845.650(d), provided herein is notification of exceedances of the proposed Groundwater Protection Standards (GWPS) from the First Quarter 2025. The groundwater sampling event was completed on February 20, 2025. Statistical analysis of the monitoring results per 35 IAC 845.640(h)(2) was completed on April 15, 2025. Confirmation sampling was completed on May 27, 2025. Statistical analysis of the confirmation results was completed on July 15, 2025.

The exceedances of the proposed GWPS have been delineated pursuant to 35 IAC 845.650 (d)(1). The Assessment of Corrective Measures required pursuant to 35 IAC 845.660 was completed concurrently with the Closure Alternatives Assessment in October 2021. Both of these assessments were submitted to the Illinois EPA on February 1, 2022 as part of our Closure Construction Permit Application. This permit application is currently under review by the Illinois EPA.

If you have any questions, please feel free to contact Eric Staley of my staff at (217) 757-8610. Thank you.

Sincerely,

P.J. Becker
Environmental Health and Safety Manager

Enclosure

Cc: Deborah Williams (w/o att.)
Andrews Engineering

CITY WATER LIGHT AND POWER

ASH POND GROUNDWATER MONITORING PROGRAM

35 IAC 845 Proposed Groundwater Protection Standard Standards

1st Quarter 2025 Confirmed Exceedances

Well #	Parameter	Units	Proposed GWPS	2/20/2025	Resample 5/27/2025	Confirmed Exceedance
RW3	Arsenic	mg/L	0.0239	0.0961	0.0808	Yes
AP1	Boron	mg/L	2	21.7	20.8	Yes
AP1	Calcium	mg/L	181.6	245	225	Yes
AP1	Sulfate	mg/L	400	834	858	Yes
AP1	Total Dissolved Solids	mg/L	1200	1600	1740	Yes
AP2	pH	s.u.	6.5-9.0	6.44	6.45	Yes
AP2	Boron	mg/L	2	3.53	3.12	Yes
AP2	Calcium	mg/L	181.6	198	183	Yes
AP2	Cobalt	mg/L	0.006	0.014	0.0095	Yes
AP3	Boron	mg/L	2	12.1	12.9	Yes
AP3	Sulfate	mg/L	400	569	505	Yes
AP7	Arsenic	mg/L	0.0239	0.0248	0.0289	Yes
AP8	Arsenic	mg/L	0.0239	0.0487	0.0446	Yes
AP10	Boron	mg/L	2	3.36	4.5	Yes
AP12	Calcium	mg/L	181.6	197	204	Yes
AP12	Sulfate	mg/L	400	433	416	Yes
AP12	Total Dissolved Solids	mg/L	1200	1250	1190	No
AP14	Boron	mg/L	2	21.5	21.7	Yes
AP14	Calcium	mg/L	181.6	268	276	Yes
AP14	Sulfate	mg/L	400	866	909	Yes
AP14	Total Dissolved Solids	mg/L	1200	1650	1620	Yes

City Water, Light & Power
Coal Combustion Residuals Surface Impoundments

Annual Groundwater Monitoring and Corrective Action Report Year Ending December 31, 2023

January 2024

Prepared for:
City Water, Light & Power
3100 E. Lake Shore Drive
Springfield, Illinois

ANDREWS ENGINEERING

3300 Ginger Creek Drive, Springfield, IL 62711 | 217.787.2334

ILLINOIS | MISSOURI | INDIANA

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APPENDICES

1. INTRODUCTION

In accordance with 35 Ill. Adm. Code 845.550(a)(3) provided herein is the Annual Groundwater Monitoring and Corrective Action Report for year ending December 31, 2023. Pursuant to Section 845.610(e)(1), the Annual Groundwater Monitoring and Corrective Action Report must be included as part of the annual consolidated report required by Section 845.550.

City Water, Light and Power (CWLP) owns and operates two (2) existing coal combustion residual (CCR) surface impoundments. The CWLP CCR surface impoundments are located north and east of the former Lakeside Power Generating Station and Dallman Power Generating Station in the Eastern ½ of Section 12, Township 15 North, Range 5 West, in Springfield, Illinois (see Figure 1). These CCR surface impoundments are identified as the Lakeside Ash Pond and the Dallman Ash Pond (see Figure 2).

The former Lakeside Power Generating Station and Dallman Power Generating Station are situated on the northwestern bank of Lake Springfield in Springfield, Illinois. The Lakeside Ash Pond is immediately north of Spaulding Dam at the northern end of Lake Springfield. The Dallman Ash Pond is immediately northwest of the Lakeside Ash Pond. Placed into service prior to 1958, the Lakeside Ash Pond is primarily a diked embankment. The Lakeside Ash Pond consists of four separate ponds (i.e., three lime ponds and a settling pond) totaling approximately 35.0 acres. The Lakeside Ash Pond ceased receiving ash in 2009. The Dallman Ash Pond was placed into service in approximately 1976 and is also a diked embankment. The Dallman Ash Pond is approximately 34.5 acres and ceased receiving ash in 2021.

As of October 13, 2023, all CCR and non-CCR waste streams ceased flowing into the Lakeside Ash Pond and Dallman Ash Pond.

Status of the Groundwater Monitoring and Corrective Action Programs

Pursuant to Section 845.610(e)(4), the annual report must provide an overview of the groundwater monitoring program and corrective action plan. The summary must:

A) Specify whether groundwater monitoring data shows a statistically significant increase over background concentrations for one or more constituents listed in Section 845.600;

Pursuant to 35 Ill. Adm. Code 845.600, CWLP submitted to the Illinois EPA and placed into the facility record a Groundwater Monitoring Program (GMP) for the CCR surface impoundments on October 28, 2021. The background concentrations presented in the GMP are based upon eight independent samples collected from each background and downgradient well and analyzed for the monitoring parameters listed in Section 845.600:

- Antimony
- Arsenic
- Barium
- Beryllium
- Boron
- Cadmium
- Calcium
- Chloride
- Chromium
- Cobalt
- Fluoride
- Lead
- Lithium
- Mercury
- Molybdenum
- pH
- Radium 226/228
- Selenium
- Sulfate
- Thallium
- Total Dissolved Solids

The initial eight independent samples were collected over the second quarter 2015 through first quarter 2017. The detection monitoring program was initiated with the first sampling event on November 9, 2017. At that time, the groundwater monitoring network was comprised of two upgradient wells (AP-4 and AP-5) and four downgradient wells (AW-3, AP-1R, AP-2A and AP-3).

The present groundwater monitoring network includes two upgradient wells (wells AP-4 and AP-5), eight downgradient wells (RW-3, AP-1R, AP-2A, AP-3, AP-6, AP-7, AP-8, AP-10 and AP-14) and five compliance boundary wells (AP-7, AP-9, AP-11, AP-12 and AP-13). During 2023, groundwater analytical results were compared to the groundwater protection/background values as presented in the October 28, 2021 submittal (see Table 1). Reports documenting exceedances of the calculated background were submitted to the Illinois EPA and placed into the facility record for 2023.

As indicated in the section identified as Groundwater Monitoring Information [35 Ill. Adm. Code 845.230(d)(2)(I)] of the Illinois EPA's October 10, 2023 review letter regarding CWLP's CCR Surface Impoundment Operating and Construction Permit Application and supporting information submitted October 28, 2021 and February 1, 2022, groundwater protection/background values should be recalculated. CWLP will be revising the background values for the groundwater analytical parameters based upon the Illinois EPA's guidance.

Pursuant to 35 Ill. Adm. Code 845.640(d) the background groundwater quality has been established for each of the constituents listed in 35 Ill. Adm. Code 845.600 by using the upgradient and background wells described under 35 Ill. Adm. Code 845.630(a)(1), as applicable for groundwater monitoring requirements (35 Ill. Adm. Code 845.650). The upgradient and background wells include AP-4 and AP-5.

Pursuant to 35 Ill. Adm. Code 845.640(f), the selected statistical method used to evaluate groundwater monitoring data for each constituent is the Prediction Interval Procedure under 35 Ill. Adm. Code 845.640(f)(1)(C). For this procedure, an interval for each constituent is established from the distribution of the background data and then the level of each constituent in each

compliance well (i.e., well/constituent) is compared to the upper prediction limit to assess if a statistically significant increase (SSI) over background has occurred.

Based upon this evaluation groundwater monitoring data for 2023 exhibits a statistically significant increase (SSI) over background concentrations for multiple constituents listed in Section 845.600.

B) Identify those constituents having a statistically significant increase over background concentrations and the names of the monitoring wells associated with the increase;

The constituents and wells that exhibit an SSI over background concentrations in 2023 are:

Parameter	*AP-1*	*AP-2*	*AP-3*	*AP-4*	*AP-5*	*AP-6*	*AP-7*	*AP-8*	*AP-9*	*AP-10*	*AP-11*	*AP-12*	*AP-13*	*AP-14*	*RW-3*
Arsenic, total															*X*
Boron, total	*X*	*X*	*X*							*X*				*X*	
Calcium, total	*X*	*X*	*X*									*X*		*X*	
Chloride, total	*X*	*X*	*X*			*X*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*X*	*X*
pH	*X*	*X*	*X*							*X*	*X*	*X*	*X*		
Sulfate, total	*X*	*X*	*X*							*X*	*X*	*X*	*X*	*X*	
Total Dissolved Solids	*X*	*X*	*X*							*X*	*X*	*X*		*X*	

C) Specify whether there have been any exceedances of the groundwater protection standards for one or more constituents listed in Section 845.600;

Pursuant to Section 845.120, "Exceedance of the groundwater protection standard" means:

For existing CCR surface impoundments and inactive CCR surface impoundments:

- an analytical result with a concentration greater than the numerical value of the constituents listed in Section 845.600(a), in a down gradient well; or
- when the up gradient background concentration of a constituent exceeds the numerical value listed in Section 845.600(a), an analytical result with a concentration at a statistically significant level above the up gradient background concentration, in a down gradient well.

Based upon this evaluation, groundwater monitoring data for 2023 exhibits a SSI of the groundwater protection standards (GWPS) for multiple constituents listed in Section 845.600.

D) Identify those constituents with exceedances of the groundwater protection standards in Section 845.600 and the names of the monitoring wells associated with the exceedance;

The constituents that exhibit an SSI of a GWPS in 2023 are:

Parameter	*AP-1*	*AP-2*	*AP-3*	*AP-4*	*AP-5*	*AP-6*	*AP-7*	*AP-8*	*AP-9*	*AP-10*	*AP-11*	*AP-12*	*AP-13*	*AP-14*	*RW-3*
Arsenic, total															*X*
Boron, total	*X*	*X*	*X*							*X*				*X*	
Calcium, total	*X*	*X*	*X*									*X*		*X*	
pH		*X*									*X*	*X*			
Sulfate, total	*X*	*X*	*X*									*X*		*X*	
Total Dissolved Solids	*X*											*X*		*X*	

E) Provide the date when the assessment of corrective measures was initiated for the CCR surface impoundment;

The assessment of corrective measures was initiated May 2021.

F) Provide the date when the assessment of corrective measures was completed for the CCR surface impoundment

An assessment of alternatives containing an assessment of corrective measures and closure alternatives analysis was completed and posted on the facility's CCR compliance website on October 25, 2021. A public meeting occurred on December 2, 2021 to present the closure alternatives and corrective action analysis and to receive and respond to public comments. Based on the assessment of closure alternatives it has been determined that closure-in-place with a final cover system is most appropriate.

As provided in Section 845.660(e), the owner/operator may combine the corrective measures assessment and the closure alternatives analysis into one assessment of alternatives. The groundwater monitoring program has identified constituent concentrations in downgradient wells that require implementation of assessment of corrective measures. The facility anticipates conducting closure activities simultaneously with corrective action based on results from groundwater sampling and analyses.

G) Specify whether a remedy was selected under Section 845.670 during the current annual reporting period, and if so, the date of remedy selection; and

Pursuant to Section 845.710 closure of the surface impoundments may be completed by either:

- leaving the CCR in place and installing a final cover system, or;
- through removal of the CCR and decontamination of the surface impoundments.

At this time, CWLP has chosen closure in place with a final cover system as the most appropriate remedy. CWLP submitted a construction permit application for closure by installing a final cover system pursuant to Section 845.750 on February 1, 2022. CWLP received a review letter from the Illinois EPA dated October 10, 2023. CWLP is in the process of addressing the Illinois EPA comments.

H) Specify whether remedial activities were initiated or are ongoing under Section 845.780 during the current annual reporting period.

In April 2019, CWLP submitted notification of intent to comply with the Alternative Closure Requirements of 40 CFR 257.103(a) since no alternative disposal capacity is currently available. Since then, CWLP has shut down Dallman Units 31, 32 and 33 and has completed the relocation of the lime ponds. All CCR and non-CCR waste streams ceased flowing into the impoundments since October 2023. While it has been CWLP's intent to commence closure of the Lakeside Ash Pond and the Dallman Ash Pond with the completion of the new lime pond processing area, closure of the CCR ash impoundments cannot begin until a closure construction permit is issued by IEPA. CWLP submitted an Operating Permit Application to the Illinois EPA on October 28, 2021 and a Construction Permit Application to the Illinois EPA on February 1, 2022. CWLP is in the process of addressing the Illinois EPA comments presented in the October 10, 2023 review letter.

2. GROUNDWATER MONITORING PROGRAM

As required Section 845.650(a), CWLP prepared and placed into the facility record a Groundwater Monitoring Program for the CCR surface impoundments on October 28, 2021. The current monitoring network includes two upgradient wells (wells AP-4 and AP-5) and thirteen downgradient wells (AP-1R, AP-2A, AP-3, AP-6, AP-7, AP-8, AP-9, AP-10, AP-11, AP-12, AP-13, AP-14 and RW-3). Wells AP-7, AP-9, AP-11, AP-12 and AP-13 are compliance boundary wells. The well locations are depicted in Figure 2.

A Groundwater Monitoring System Certification has been provided for the Groundwater Monitoring Program, placed in the site record and uploaded to the facility Illinois CCR Compliance website - https://www.cwlp.com/IllinoisCCRCompliance.aspx.

The following sections of the report address the annual groundwater monitoring and corrective action report requirements outlined in Section 845(e)(2) and (3).

3. SECTION 845.610(E)(2): KEY ACTIONS, PROBLEMS ENCOUNTERED, AND KEY ACTIVITIES FOR 2024

3.1 Key Actions

The following items identify key actions that occurred in 2023 specifically related to the Groundwater Monitoring Program.

3.1.1 Assessment Monitoring

In accordance with Section 845.660(a) CWLP has initiated an assessment of corrective measures in response to the statistically significant increase (SSI) over background concentrations or the groundwater quality standards for one or more parameters listed in Section 845.600(a). Pursuant to Section 845.660(b), CWLP shall continue to monitor groundwater in accordance with the monitoring program as specified in Section 845.650.

Assessment monitoring, which includes all Section 845.600(a) parameters, calcium and turbidity, continued throughout 2023 for all wells in the groundwater monitoring system. A summary of the 2023 groundwater analytical results is The analytical reports and field sampling notes are provided in Table 1.

3.1.2 Assessment Monitoring Investigation

Pursuant to Section 845.650(d)(1), the nature and extent of affected groundwater must be determined such that potential remedies can be evaluated and selected, if necessary. Characterization of the nature and extent of affected groundwater is regulated pursuant to Section 845.650(d)(1)(A-D).

Seven wells were installed in February 2021 to augment the monitor well network and evaluate exceedances of the GWPSs, all in conformance with Section 845.650(d)(1). Wells AP-10 and AP-14 were installed along the west side of the impoundments and compliance boundary wells AP-9, AP-11, AP-12 and AP-13 were installed west of the creek.

GWPS exceedances were observed and confirmed in downgradient wells (AP-1R, AP-2A, AP-3, AP-10, AP-14 and RW-3) and compliance boundary wells (AP-11 and AP-12) during the 2023 quarterly groundwater sampling events (see Table 2).

Pursuant to 35 Ill. Adm. Code 845.650(d) CWLP has submitted notification of the exceedances of the GWPS to the Illinois EPA and posting each notification to their Illinois EPA CCR Compliance web page (https://www.cwlp.com/IllinoisCCRCompliance.aspx).

An alternate source demonstration pursuant to 35 Ill. Adm. Code 845.650(e) was submitted to the Illinois EPA on September 12, 2022 to address the exceedances observed at monitoring well AP-12. The remaining exceedances (i.e., at wells AP-1R, AP-2A, AP-3, AP-10, AP-14 and RW-3) have been delineated pursuant to 35 Ill. Adm. Code 845.650(d)(1). The alternate source demonstration is currently under review by the Illinois EPA.

Assessment monitoring data collected for the 2023 quarterly sampling events are provided in tabular format in Table 1. The data includes the sample dates and identifies the Section 845.600 parameters.

Assessment monitoring shall continue at the CWLP CCR surface impoundments pursuant to Section 845.660(b).

3.2 Assessment of Corrective Measures

As provided in Section 845.660(e), the owner/operator may combine the assessment of corrective measures and the closure analysis into one assessment of closure alternatives. The groundwater monitoring program has identified constituent concentrations in downgradient wells that require implementation of assessment of corrective measures. The facility anticipates conducting closure activities simultaneously with corrective action based on results from groundwater sampling and analyses. The assessment of corrective measures has been conducted pursuant to Section 845.660 and is incorporated into the assessment of alternatives pursuant to Section 845.660(e).

Pursuant to Section 845.700(b) the surface impoundments must either retrofit and/or close, which are the long term corrective measures. The closure alternative analysis was completed and posted to the facility website on October 25, 2021. A public meeting was held on December 2, 2021 to present the closure alternatives assessment and assessment of corrective measures and to receive and respond to public comments. Based on the assessment of closure alternatives it has been determined that closure-in-place with a final cover system is most appropriate. Once the ash impoundments are capped, it will take approximately 13 years to achieve the groundwater protection standards.

Both of these assessments were submitted to the Illinois EPA on February 1, 2022 as part of the closure construction permit application prepared pursuant to Section 845.700(c), and containing a final closure plan in accordance with the application schedule under Section 845.700(h). CWLP is in the process of addressing the Illinois EPA comments presented in the October 10, 2023 review letter.

3.3 Problems Encountered

All activities which occurred in 2023 are discussed in Section 3.1 and 3.2 above. No problems were encountered.

3.4 Key Activities for Upcoming Year (2024)

Assessment monitoring shall continue at the CWLP CCR surface impoundments pursuant to Section 845.660(b).

Closure of the CCR ash impoundments cannot begin until a closure construction permit is issued by IEPA. CWLP submitted an Operating Permit Application to the Illinois EPA on October 28, 2021 and a Construction Permit Application to the Illinois EPA on February 1, 2022. The Illinois EPA has provided comments in response to the applications; a meeting was held November 16, 2023 to discuss the comments, in part. It is expected that additional information will be submitted in 2024 that may affect the impoundment closure process.

CWLP is currently in the process of recalculating backgrounds at the request of U.S. EPA and will be submitting proposed revised backgrounds for the 845 program for Illinois EPA approval in the near future.

4. SECTION 845.610(E)(3)(A-F)

Additional requirements for the Annual Groundwater Monitoring and Corrective Action Report are detailed in Section 854.610(e)(3)(A-F). Each of the requirements is reproduced below along with the response.

A map, aerial image, or diagram showing the CCR surface impoundment, all background (or upgradient) and downgradient monitoring wells, including the well identification numbers, that are part of the groundwater monitoring program for the CCR surface impoundment, and a visual delineation of any exceedances of the groundwater protection standards.

Maps depicting the CCR surface impoundments, all background and downgradient monitoring wells and delineation of the identified exceedances of the groundwater protection standards are provided in Appendix A.

Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken.

No CCR surface impoundment monitoring wells were installed or decommissioned in 2023.

A potentiometric surface map for each groundwater elevation sampling event required by Section 845.650(b)(2).

Potentiometric surface maps for each of the monthly sampling events are provided in Appendix B.

As depicted on the potentiometric surface maps, groundwater generally flows radially from the CCR surface impoundment locations with an overall northerly groundwater flow.

In addition to all the monitoring data obtained under this Subpart, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, and the dates the samples were collected.

Pursuant to Section 845.650(b)(1), groundwater samples are collected on a quarterly basis. The laboratory analytical reports for the parameters at Section 845.600(a), calcium, and turbidity for each of the quarterly groundwater sampling events are provided in Appendix C.

A narrative discussion of any statistically significant increases over background levels for the constituents listed in Section 845.600; and

Sampling and analyses has occurred at each of the wells listed above for the parameters identified in Section 845.600(a)(1) including calcium and turbidity. The results of 2023 quarterly sampling indicate exceedance of the GWPSs for seven parameters: arsenic, boron, calcium, pH, sulfate and TDS. A summary table of the exceedances is provided as Table 2. The exceedances of the GWPSs for these parameters are discussed below.

Arsenic, total

Confirmed exceedances of the GWPS occurred for total arsenic (0.0724 mg/L) at downgradient groundwater monitoring well RW-3 during 2023.

The total arsenic concentrations at well RW-3 ranged from 0.0831 to 0.74 mg/L, respectively. Total arsenic concentrations at well RW-3 have historically been above the statistically derived background groundwater concentration with no upward or downward trend. The concentrations at this location appear to be related to some spatial variation. Total arsenic concentrations are typically low to non-detect (<0.025 mg/L) in other downgradient groundwater monitoring wells. There are two wells located downgradient/north of RW-3. These wells are AP-6 and compliance boundary well AP-7.

The total arsenic concentrations at groundwater monitoring well AP-6 installed at a distance of 83 feet downgradient of RW-3, were non-detect (<0.25 mg/L) for the first and second quarters of 2023 and 0.004 mg/L and 0.0183 mg/L for the third and fourth quarters 2023, respectively. At compliance boundary well AP-7, located further north of RW-3, at a distance of 298 feet downgradient of RW-3 total arsenic was non-detect (<0.25 mg/L) for the first quarter 2023 and 0.0462 mg/L, 0.0412 mg/L and 0.075 mg/L for the second, third and fourth quarters 2023. Slightly higher than that detected at AP-6, located closer to RW-3.

Boron, total

Confirmed exceedances of the total boron GWPS (2 mg/L) occurred at downgradient wells AP-1R, AP-2A, AP-3, AP-10 and AP-14 during each of the quarterly groundwater sampling events for 2023.

The concentrations of total boron at well AP-1R ranged from 21.2 to 23.2 mg/L. At well AP-2A total boron concentrations ranged from 3.23 to 3.94 mg/L. Well AP-3 concentrations ranged from 14 to 15.2 mg/L. At well AP-10 total boron concentrations ranged from 3.32 to 3.81 mg/L. Lastly, at well AP-14 total boron concentrations ranged from 21.3 to 23 mg/L.

Groundwater monitoring wells AP-7, AP-9, AP-11, AP-12 and AP-13 are located adjacent to the impoundments but on the opposite bank of Sugar Creek. The analytical results for these compliance boundary wells demonstrate that the GWPS for total boron is not exceeded beyond the limits of Sugar Creek in this area.

The concentrations of total boron detected at wells AP-1R, AP-2A, AP-3, AP-10 and AP-14 have consistently been above the GWPS with no upward or downward trend.

Calcium, total

There were confirmed exceedances of the GWPS for total calcium (176.63 mg/L) at downgradient groundwater monitoring wells AP-1R, AP-2A, AP-3, AP-12 and AP-14 during 2023. The calcium concentrations at AP-1R ranged from 229 to 285 mg/L. At AP-2A, calcium concentrations ranged from 204 to 244 mg/L. The total calcium concentration at AP-3 ranged from 161 to 189 mg/L. At AP-12 total calcium concentrations ranged from 265 to 271 mg/L. Lastly at well AP-14 total calcium ranged from 209 to 278 mg/L.

Total calcium concentrations at wells AP-1R, AP-2A, AP-3, AP-12 and AP-14 are consistent with historical concentrations. There does not appear to be any upward or downward trend. It should be pointed out that the concentrations at AP-12, located on the bank of Sugar Creek opposite the CCR surface impoundment are consistently higher than the concentrations of calcium observed in monitoring wells located adjacent to the CCR surface impoundments. This supports the September 12, 2022 alternate source demonstration that the GWPS exceedances for total calcium observed at compliance boundary well AP-12 are likely a result of an off-site source. The September 12, 2022 alternate source demonstration is still under review by the Illinois EPA.

pH (Field)

There were confirmed exceedances of the field measured water quality parameter pH GWPS (6.5 to 9 pH units) at wells AP-2A, AP-11 and AP-12. At well AP-2A, pH values ranged from 6.4 to 6.44 s.u. over the first three quarters of 2023. However, the pH returned to the limits of the GWPS

during the fourth quarter 2023 (6.57 s.u.). At well AP-11 pH for the first and second quarters of 2023 were 6.42 and 6.45 s.u. with the pH returning to the GWPS during the third and fourth quarter 2023 (6.64 and 6.6 s.u., respectively). Similar to AP-11, the pH at well AP-12 exceeded the GWPS during the first and second quarters of 2023 (6.47 and 6.43 s.u.) and returned to the GWPS during the third and fourth quarter 2023 (6.57 and 6.62 s.u., respectively). There is not upward or downward trend in pH for the ash pond groundwater monitoring wells.

Sulfate, total

There were confirmed exceedances of the GWPS for total sulfate (400 mg/L) at downgradient groundwater monitoring wells AP-1R, AP-2A, AP-3, AP-12 and AP-14 during year 2023 groundwater sampling events. The concentrations at well AP-1R ranged from 443 to 781 mg/L. At well AP-2A total sulfate concentrations ranged from 380 to 795 mg/L. The total sulfate concentrations at AP-3 ranged from 461 to 495 mg/L. Well AP-12 total sulfate concentrations ranged from 563 to 659 mg/L. At well AP-14 total sulfate ranged from 699 to 806 mg/L.

Total sulfate concentrations at wells in wells AP-1R, AP-2A, AP-3, AP-12 and AP-14 are consistent with historical concentrations. There does not appear to be any upward or downward trend.

Total Dissolved Solids

There were confirmed exceedances of the GWPS (1200 mg/L) for total dissolved solids (TDS) at downgradient monitoring wells AP-1R, AP-12 and AP-14 for the 2023 review period. TDS concentrations at AP-1R ranged from 1190 to 1540 mg/L. At well AP-12, the TDS concentrations ranged from 1320 to 1640 mg/L. Total dissolved solids at well AP-14 ranged from 1280 to 1480 mg/L.

TDS concentrations at well AP-1R has historically been elevated. TDS is the sum of the cations and anions in the water. TDS provides a qualitative measure of the amount of dissolved ions but not the nature or ion relationships. The elevated TDS in these wells is likely an indicator of the higher boron, calcium, chloride and sulfate concentrations detected in these wells.

The elevated TDS concentrations at compliance boundary well AP-12 are similarly attributed to elevated cation and anion concentrations in groundwater. However, the TDS concentrations at AP-12 do not appear to be attributed to the CCR surface impoundments but to an offsite sources west of Sugar Creek.

Other information required to be included in the annual report as specified in 35 Ill. Adm. Code 845.Subpart F.

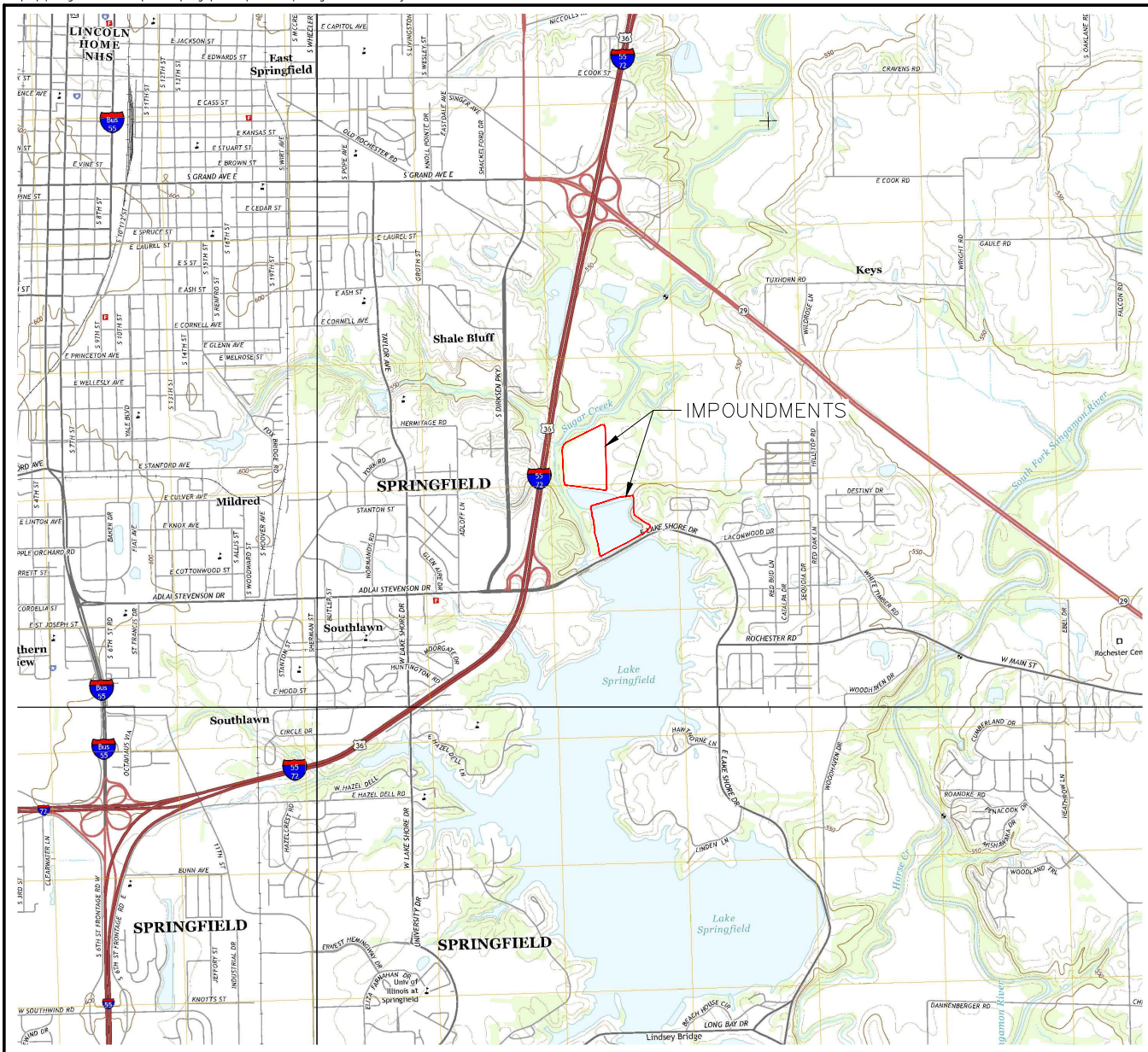
All applicable information has been provided in the narrative above.

5. CONCLUSION

This annual groundwater monitoring and corrective action report has been provided in accordance with Section 845.550(a)(3). The next annual report for monitoring year 2024 will be provided by January 31, 2025.

FIGURES

J:\S\Springfield CWLP\CWLP\dwg\2021\Site Map.dwg Tab: Layout1



N

0 200 4000 8000

SCALE: IN FEET

NOTE:
BACKGROUND IMAGE COURTESY OF UNITED STATES GEOLOGICAL SURVEY.

ANDREWS ENGINEERING
3300 GINGER CREEK DRIVE
SPRINGFIELD, ILLINOIS 62711-7233
PH (217) 787-2334 WWW.ANDREWS-ENG.COM
PONTIAC, IL • LOMBARD, IL • INDIANAPOLIS, IN • WARRENTON, MO

APPROVED BY: BJH | DESIGNED BY: BJH | DRAWN BY: MPN

SITE LOCATION

PLANS PREPARED FOR
CITY, WATER, LIGHT & POWER
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

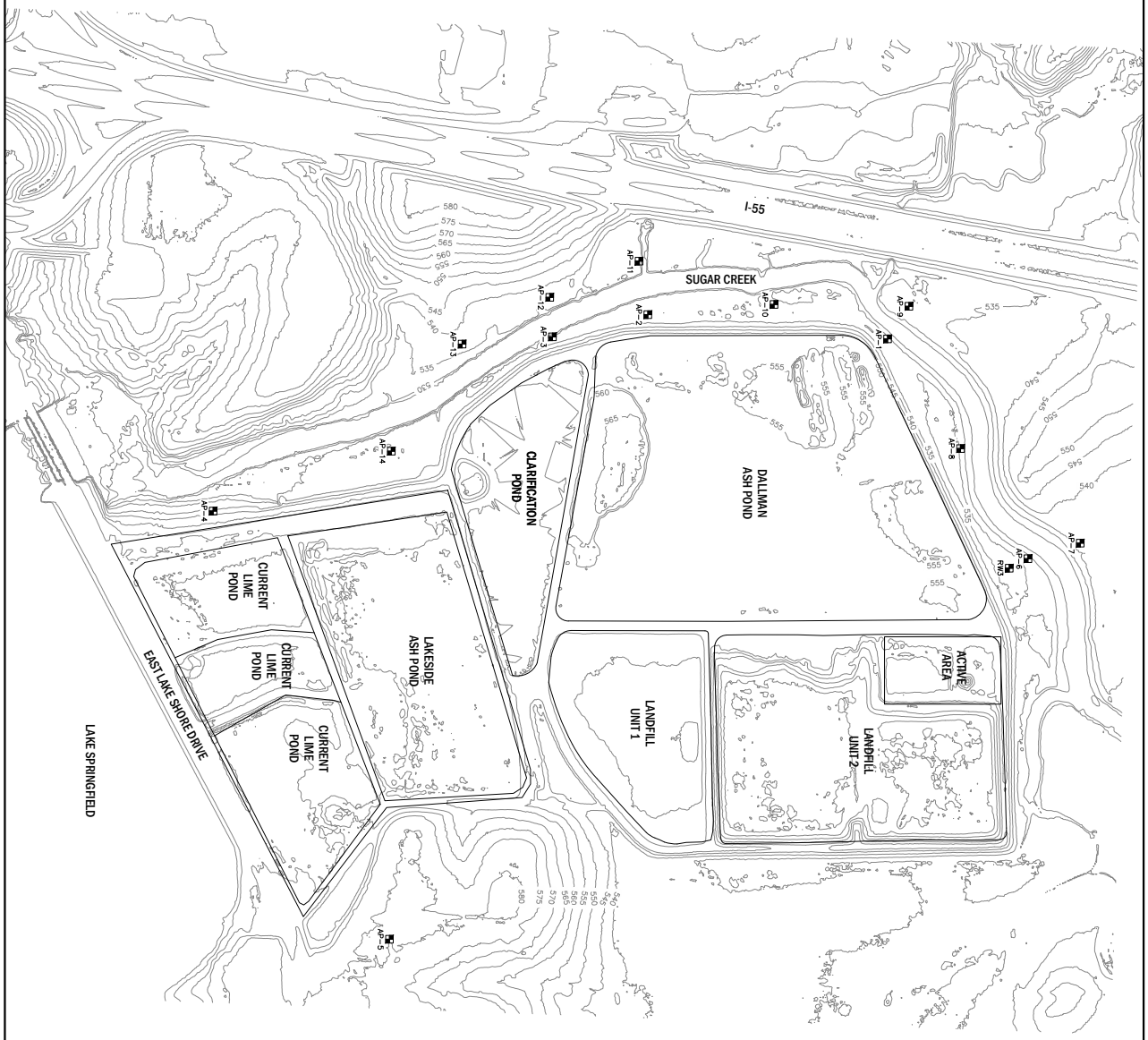
DATE: JANUARY 2023

PROJECT ID: 200387/0026

SHEET NUMBER:

FIGURE 1

Tab: SITE DETAILS MAP Last Saved: January 24, 2023, by Ben Karpus Plotted: Tuesday, January 24, 2023 10:52:38 AM
J:\S\Springfield CWLP\CWLP Ash Pond\DWG\2022\PMAPS\Potentiometric Surface Maps.dwg



0 200 400 800
SCALE: IN FEET

N

NOTES

1. LIDAR DATA DERIVED FROM USGS WEBSITE (FLIGHT DATE: OCTOBER 15, 2019).

LEGEND

MONITORING WELL

FIG 2

SITE DETAILS MAP

PREPARED FOR

CITY WATER, LIGHT, AND POWER

SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE: JANUARY 2023
PROJECT ID: 200387/0003
SHEET NUMBER:

ANDREWS ENGINEERING
3300 GINGER CREEK DRIVE
SPRINGFIELD, ILLINOIS 62711-7233
PH (217) 787-2334 WWW.ANDREWS-ENG.COM
PONTIAC, IL • LOMBARD, IL • INDIANAPOLIS, IN • WARRENTON, MO

APPROVED BY: BJH | DESIGNED BY: MTH | DRAWN BY: BCK

NO.	DATE	REVISION DESCRIPTION	BY

TABLE

TABLE 1:

2023 GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

City Water, Light and Power
Power Plant Ash Impoundment
2023 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600	BKGRD	GWPS	2023-Q1	2023-Q2	2023-Q3	2023-Q4
AP-1	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-2	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-3	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-4	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-5	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-6	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-7	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-8	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-9	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-10	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-11	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-12	Antimony, total	mg/l	0.006	0.016	0.016	0.0015	< 0.001	< 0.001	< 0.001
AP-13	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-14	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
RW-3	Antimony, total	mg/l	0.006	0.016	0.016	< 0.001	< 0.001	< 0.001	< 0.001
AP-1	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	< 0.001	< 0.001
AP-2	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	0.002	0.002
AP-3	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	0.0109	0.0182
AP-4	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	0.025	0.0239	0.0225
AP-5	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	< 0.001	< 0.001
AP-6	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	0.004	0.0183
AP-7	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	0.0462	0.0412	0.075
AP-8	Arsenic, total	mg/l	0.01	0.0724	0.0724	0.0336	0.0348	0.0513	0.0395
AP-9	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	0.0114	0.0062
AP-10	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	0.0013	< 0.001
AP-11	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	< 0.001	< 0.001
AP-12	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	< 0.001	0.0149
AP-13	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	0.0031	0.0075
AP-14	Arsenic, total	mg/l	0.01	0.0724	0.0724	< 0.025	< 0.025	0.0018	0.0036
RW-3	Arsenic, total	mg/l	0.01	0.0724	0.0724	0.169	0.185	0.0831	0.74
AP-1	Barium, total	mg/l	2	5.24	5.24	0.236	0.329	0.271	0.262
AP-2	Barium, total	mg/l	2	5.24	5.24	0.0744	0.0656	0.0719	0.0716
AP-3	Barium, total	mg/l	2	5.24	5.24	0.111	0.103	0.0993	0.113
AP-4	Barium, total	mg/l	2	5.24	5.24	0.39	0.404	0.396	0.381
AP-5	Barium, total	mg/l	2	5.24	5.24	0.0408	0.0451	0.0461	0.0471
AP-6	Barium, total	mg/l	2	5.24	5.24	0.0938	0.111	0.0844	0.16
AP-7	Barium, total	mg/l	2	5.24	5.24	0.111	0.162	0.106	0.158
AP-8	Barium, total	mg/l	2	5.24	5.24	0.36	0.375	0.378	0.374
AP-9	Barium, total	mg/l	2	5.24	5.24	0.284	0.295	0.324	0.399
AP-10	Barium, total	mg/l	2	5.24	5.24	0.509	0.602	0.596	0.583
AP-11	Barium, total	mg/l	2	5.24	5.24	0.37	0.161	0.113	0.126
AP-12	Barium, total	mg/l	2	5.24	5.24	0.0794	0.0649	0.0481	0.138
AP-13	Barium, total	mg/l	2	5.24	5.24	0.175	0.128	0.121	0.177
AP-14	Barium, total	mg/l	2	5.24	5.24	0.0413	0.0389	0.0349	0.0636
RW-3	Barium, total	mg/l	2	5.24	5.24	0.168	0.172	0.106	0.165
AP-1	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-2	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-3	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-4	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-5	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-6	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-7	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-8	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-9	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-10	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-11	Beryllium, total	mg/l	0.004	0.0164	0.0164	0.0009	< 0.0005	< 0.0005	< 0.0005
AP-12	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	0.0015
AP-13	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	0.0009
AP-14	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005

City Water, Light and Power
Power Plant Ash Impoundment
2023 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600	BKGRD	GWPS	2023-Q1	2023-Q2	2023-Q3	2023-Q4
RW-3	Beryllium, total	mg/l	0.004	0.0164	0.0164	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-1	Boron, total	mg/l	2	0.787	2	23.2	21.2	22.5	21.7
AP-2	Boron, total	mg/l	2	0.787	2	3.94	3.7	3.73	3.23
AP-3	Boron, total	mg/l	2	0.787	2	14.5	14.3	14	15.2
AP-4	Boron, total	mg/l	2	0.787	2	0.0918	0.101	0.0845	0.0841
AP-5	Boron, total	mg/l	2	0.787	2	0.0353	0.0311	0.0323	0.0455
AP-6	Boron, total	mg/l	2	0.787	2	0.13	0.174	0.0753	0.214
AP-7	Boron, total	mg/l	2	0.787	2	0.18	0.391	0.141	0.331
AP-8	Boron, total	mg/l	2	0.787	2	0.0849	0.11	0.0932	0.0896
AP-9	Boron, total	mg/l	2	0.787	2	0.0973	0.102	0.0807	0.0956
AP-10	Boron, total	mg/l	2	0.787	2	3.32	3.76	3.81	3.6
AP-11	Boron, total	mg/l	2	0.787	2	0.282	0.241	0.24	0.256
AP-12	Boron, total	mg/l	2	0.787	2	0.0277	< 0.02	< 0.02	0.038
AP-13	Boron, total	mg/l	2	0.787	2	0.0485	0.0328	0.0235	0.0386
AP-14	Boron, total	mg/l	2	0.787	2	21.3	23	22.6	22.1
RW-3	Boron, total	mg/l	2	0.787	2	0.175	0.186	0.0595	0.117
AP-1	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-2	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-3	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-4	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-5	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-6	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-7	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-8	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-9	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-10	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-11	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-12	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-13	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-14	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
RW-3	Cadmium, total	mg/l	0.005	0.0128	0.0128	< 0.002	< 0.002	< 0.002	< 0.002
AP-1	Calcium, total	mg/l	na	176.63	176.63	230	242	285	229
AP-2	Calcium, total	mg/l	na	176.63	176.63	217	210	244	204
AP-3	Calcium, total	mg/l	na	176.63	176.63	161	168	189	181
AP-4	Calcium, total	mg/l	na	176.63	176.63	115	125	132	118
AP-5	Calcium, total	mg/l	na	176.63	176.63	78.3	80.4	96.3	90.7
AP-6	Calcium, total	mg/l	na	176.63	176.63	52.4	60.9	49	65.8
AP-7	Calcium, total	mg/l	na	176.63	176.63	49.3	53.6	49.6	50.6
AP-8	Calcium, total	mg/l	na	176.63	176.63	95.1	99.1	107	101
AP-9	Calcium, total	mg/l	na	176.63	176.63	105	108	86.1	97.8
AP-10	Calcium, total	mg/l	na	176.63	176.63	139	144	138	138
AP-11	Calcium, total	mg/l	na	176.63	176.63	169	145	118	134
AP-12	Calcium, total	mg/l	na	176.63	176.63	265	269	271	268
AP-13	Calcium, total	mg/l	na	176.63	176.63	107	105	106	122
AP-14	Calcium, total	mg/l	na	176.63	176.63	209	233	235	278
RW-3	Calcium, total	mg/l	na	176.63	176.63	67.8	70.5	52.8	58.7
AP-1	Chloride, total	mg/l	200	24.2	200	58	60	36	53
AP-2	Chloride, total	mg/l	200	24.2	200	36	37	54	40
AP-3	Chloride, total	mg/l	200	24.2	200	60	59	51	57
AP-4	Chloride, total	mg/l	200	24.2	200	14	14	13	14
AP-5	Chloride, total	mg/l	200	24.2	200	3	4	4	5
AP-6	Chloride, total	mg/l	200	24.2	200	27	31	28	33
AP-7	Chloride, total	mg/l	200	24.2	200	45	70	39	60
AP-8	Chloride, total	mg/l	200	24.2	200	26	26	25	25
AP-9	Chloride, total	mg/l	200	24.2	200	36	60	28	26
AP-10	Chloride, total	mg/l	200	24.2	200	27	28	28	27
AP-11	Chloride, total	mg/l	200	24.2	200	140	123	79	90
AP-12	Chloride, total	mg/l	200	24.2	200	140	142	139	124
AP-13	Chloride, total	mg/l	200	24.2	200	29	26	26	27

City Water, Light and Power
Power Plant Ash Impoundment
2023 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600	BKGRD	GWPS	2023-Q1	2023-Q2	2023-Q3	2023-Q4
AP-14	Chloride, total	mg/l	200	24.2	200	59	71	73	89
RW-3	Chloride, total	mg/l	200	24.2	200	29	32	28	31
AP-1	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-2	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-3	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-4	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-5	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-6	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-7	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-8	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-9	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-10	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-11	Chromium, total	mg/l	0.1	0.811	0.811	0.0213	< 0.005	< 0.005	< 0.005
AP-12	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	0.0332
AP-13	Chromium, total	mg/l	0.1	0.811	0.811	0.0059	< 0.005	< 0.005	0.019
AP-14	Chromium, total	mg/l	0.1	0.811	0.811	0.0058	< 0.005	< 0.005	< 0.005
RW-3	Chromium, total	mg/l	0.1	0.811	0.811	< 0.005	< 0.005	< 0.005	< 0.005
AP-1	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	< 0.005
AP-2	Cobalt, total	mg/l	1	0.297	1	0.0091	0.0102	0.0085	0.0091
AP-3	Cobalt, total	mg/l	1	0.297	1	< 0.005	0.0054	< 0.005	0.0051
AP-4	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	< 0.005
AP-5	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	< 0.005
AP-6	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	< 0.005
AP-7	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	< 0.005
AP-8	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	< 0.005
AP-9	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	< 0.005
AP-10	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	< 0.005
AP-11	Cobalt, total	mg/l	1	0.297	1	0.011	< 0.005	0.0055	< 0.005
AP-12	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	0.0236
AP-13	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	0.0127
AP-14	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	0.0051	< 0.005
RW-3	Cobalt, total	mg/l	1	0.297	1	< 0.005	< 0.005	< 0.005	< 0.005
AP-1	Fluoride, total	mg/l	4	0.62	4	0.2	0.27	0.24	0.26
AP-2	Fluoride, total	mg/l	4	0.62	4	0.24	0.22	0.2	0.27
AP-3	Fluoride, total	mg/l	4	0.62	4	0.22	0.22	0.21	0.25
AP-4	Fluoride, total	mg/l	4	0.62	4	0.14	0.14	0.14	0.16
AP-5	Fluoride, total	mg/l	4	0.62	4	0.34	0.32	0.31	0.37
AP-6	Fluoride, total	mg/l	4	0.62	4	0.38	0.51	0.26	0.5
AP-7	Fluoride, total	mg/l	4	0.62	4	0.36	0.53	0.34	0.53
AP-8	Fluoride, total	mg/l	4	0.62	4	0.3	0.33	0.29	0.31
AP-9	Fluoride, total	mg/L	4	0.62	4	0.22	0.2	0.23	0.29
AP-10	Fluoride, total	mg/l	4	0.62	4	0.3	0.36	0.32	0.35
AP-11	Fluoride, total	mg/L	4	0.62	4	0.18	0.2	0.21	0.65
AP-12	Fluoride, total	mg/L	4	0.62	4	0.17	0.18	0.18	0.2
AP-13	Fluoride, total	mg/L	4	0.62	4	0.2	0.23	0.22	0.24
AP-14	Fluoride, total	mg/L	4	0.62	4	0.25	0.28	0.27	0.29
RW-3	Fluoride, total	mg/l	4	0.62	4	0.46	0.52	0.27	0.44
AP-1	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-2	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-3	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-4	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-5	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-6	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-7	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-8	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-9	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-10	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-11	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-12	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	0.0161

City Water, Light and Power
Power Plant Ash Impoundment
2023 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600	BKGRD	GWPS	2023-Q1	2023-Q2	2023-Q3	2023-Q4
AP-13	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
AP-14	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.015	< 0.015	< 0.015
RW-3	Lead, total	mg/l	0.0075	0.638	0.638	< 0.015	< 0.001	< 0.015	< 0.015
AP-1	Lithium	mg/l	0.04	0.05	0.05	0.0566	< 0.005	0.0109	0.0085
AP-2	Lithium	mg/l	0.04	0.05	0.05	0.0476	< 0.005	0.0063	0.0056
AP-3	Lithium	mg/l	0.04	0.05	0.05	0.0501	< 0.005	0.0063	0.0051
AP-4	Lithium	mg/l	0.04	0.05	0.05	0.0196	< 0.005	0.0078	0.0051
AP-5	Lithium	mg/l	0.04	0.05	0.05	0.0142	0.0074	0.0046	< 0.005
AP-6	Lithium	mg/l	0.04	0.05	0.05	0.014	< 0.005	< 0.003	< 0.005
AP-7	Lithium	mg/l	0.04	0.05	0.05	< 0.005	0.0113	0.0047	< 0.005
AP-8	Lithium	mg/l	0.04	0.05	0.05	0.0201	< 0.005	0.0074	< 0.005
AP-9	Lithium	mg/l	0.04	0.05	0.05	< 0.005	0.0067	0.0054	< 0.005
AP-10	Lithium	mg/l	0.04	0.05	0.05	< 0.005	< 0.005	0.01	< 0.005
AP-11	Lithium	mg/l	0.04	0.05	0.05	0.0115	0.0068	0.0045	< 0.005
AP-12	Lithium	mg/l	0.04	0.05	0.05	< 0.005	0.006	0.0072	0.0352
AP-13	Lithium	mg/l	0.04	0.05	0.05	0.0167	0.0152	0.0133	0.0237
AP-14	Lithium	mg/l	0.04	0.05	0.05	0.0716	< 0.005	0.0076	< 0.005
RW-3	Lithium	mg/l	0.04	0.05	0.05	0.0179	< 0.005	< 0.003	0.0147
AP-1	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-2	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-3	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-4	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-5	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-6	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-7	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-8	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-9	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-10	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-11	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-12	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-13	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-14	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
RW-3	Mercury, total	mg/l	0.002	0.0008	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-1	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-2	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-3	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-4	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-5	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-6	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-7	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-8	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-9	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-10	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-11	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-12	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-13	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-14	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
RW-3	Molybdenum	mg/l	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-1	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.6	6.52	6.51	6.71
AP-2	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.46	6.44	6.4	6.57
AP-3	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.58	6.64	6.53	6.69
AP-4	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.99	6.82	6.86	6.99
AP-5	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	7.06	7.08	7.16	7.17
AP-6	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	7.07	7.02	7.06	7.17
AP-7	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	7.2	7.11	7.28	7.15
AP-8	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.86	6.77	6.75	7.01
AP-9	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.85	6.69	6.88	6.81
AP-10	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.58	6.68	6.57	6.82
AP-11	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.42	6.45	6.64	6.6

City Water, Light and Power
Power Plant Ash Impoundment
2023 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600	BKGRD	GWPS	2023-Q1	2023-Q2	2023-Q3	2023-Q4
AP-12	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.47	6.43	6.57	6.62
AP-13	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.62	6.54	6.66	6.74
AP-14	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.69	6.97	6.93	7.06
RW-3	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.15	7.06	7.13	7.31
AP-1	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	1.38	1.4	< 2	0.85
AP-2	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	0.87	2.5	< 2	0.42
AP-3	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	0.54	0.36	< 2	0.65
AP-4	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	1.04	2.89	1.12	1.58
AP-5	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	1.29	0.57	< 2	1.26
AP-6	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	0.47	1.29	< 2	0.52
AP-7	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	2	1.54	< 2	0.8
AP-8	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	1.98	2.88	< 2	1.55
AP-9	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	2	0.15	< 2	0.64
AP-10	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	2.04	2.66	1.12	3.14
AP-11	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	2	0.47	< 2	0.52
AP-12	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	2	1.07	2	0.91
AP-13	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	1.22	0.24	2.54	0.69
AP-14	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	2	0.45	< 2	0.86
RW-3	Radium-226 + Radium-228	pCi/l	5	12.2	12.2	0.28	0.48	< 2	2.46
AP-1	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-2	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-3	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-4	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-5	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-6	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-7	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-8	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-9	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-10	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-11	Selenium, total	mg/l	0.05	0.0079	0.05	0.0018	< 0.001	< 0.001	< 0.001
AP-12	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-13	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-14	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
RW-3	Selenium, total	mg/l	0.05	0.0079	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-1	Sulfate, total	mg/l	400	84.5	400	781	768	443	740
AP-2	Sulfate, total	mg/l	400	84.5	400	485	462	795	380
AP-3	Sulfate, total	mg/l	400	84.5	400	461	483	467	495
AP-4	Sulfate, total	mg/l	400	84.5	400	< 10	< 10	< 10	< 10
AP-5	Sulfate, total	mg/l	400	84.5	400	37	44	43	45
AP-6	Sulfate, total	mg/l	400	84.5	400	12	11	22	13
AP-7	Sulfate, total	mg/l	400	84.5	400	16	< 10	20	15
AP-8	Sulfate, total	mg/l	400	84.5	400	< 10	< 10	< 10	< 10
AP-9	Sulfate, total	mg/l	400	84.5	400	38	64	24	23
AP-10	Sulfate, total	mg/l	400	84.5	400	96	100	100	91
AP-11	Sulfate, total	mg/l	400	84.5	400	105	89	65	81
AP-12	Sulfate, total	mg/l	400	84.5	400	641	659	632	563
AP-13	Sulfate, total	mg/l	400	84.5	400	133	146	139	151
AP-14	Sulfate, total	mg/l	400	84.5	400	699	707	714	806
RW-3	Sulfate, total	mg/l	400	84.5	400	< 10	< 10	22	16
AP-1	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-2	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-3	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-4	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-5	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-6	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-7	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-8	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-9	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-10	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002

City Water, Light and Power
Power Plant Ash Impoundment
2023 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600	BKGRD	GWPS	2023-Q1	2023-Q2	2023-Q3	2023-Q4
AP-11	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-12	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-13	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-14	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
RW-3	Thallium, total	mg/l	0.002	0.00556	0.00556	< 0.002	< 0.002	< 0.002	< 0.002
AP-1	Total Dissolved Solids	mg/l	1200	597.94	1200	1520	1540	1190	1360
AP-2	Total Dissolved Solids	mg/l	1200	597.94	1200	1180	1100	1600	1020
AP-3	Total Dissolved Solids	mg/l	1200	597.94	1200	1040	984	990	1080
AP-4	Total Dissolved Solids	mg/l	1200	597.94	1200	515	534	560	420
AP-5	Total Dissolved Solids	mg/l	1200	597.94	1200	374	404	400	396
AP-6	Total Dissolved Solids	mg/l	1200	597.94	1200	322	380	268	322
AP-7	Total Dissolved Solids	mg/l	1200	597.94	1200	328	444	300	352
AP-8	Total Dissolved Solids	mg/l	1200	597.94	1200	555	544	555	430
AP-9	Total Dissolved Solids	mg/l	1200	597.94	1200	586	638	515	524
AP-10	Total Dissolved Solids	mg/l	1200	597.94	1200	778	756	725	732
AP-11	Total Dissolved Solids	mg/l	1200	597.94	1200	820	726	670	640
AP-12	Total Dissolved Solids	mg/l	1200	597.94	1200	1440	1580	1640	1320
AP-13	Total Dissolved Solids	mg/l	1200	597.94	1200	495	538	530	465
AP-14	Total Dissolved Solids	mg/l	1200	597.94	1200	1280	1330	1480	1440
RW-3	Total Dissolved Solids	mg/l	1200	597.94	1200	420	430	290	340

Notes:
1. The 35 Ill. Adm. Code 845.600 list requires Radium-226 and Radium-228 combined. The established MCL is for the combined parameters. However, these parameters require two separate analysis and have been reported separately by the analytical laboratory. The sum of the values has been provided and compared to the MCL.

TABLE 2:

2023 GROUNDWATER ANALYTICAL RESULTS EXCEEDANCE SUMMARY TABLE

City Water, Light and Power

Power Plant Ash Impoundment

2023 Groundwater Analytical Results Exceedance Summary Table

Well	Parameter	Units	35 IAC 845.600	BKGRD	GWPS	2023-Q1	2023-Q2	2023-Q3	2023-Q4
RW-3	Arsenic, total	mg/l	0.01	0.0724	0.0724	0.169	0.185	0.0831	0.74
AP-1	Boron, total	mg/l	2	0.787	2	23.2	21.2	22.5	21.7
AP-2	Boron, total	mg/l	2	0.787	2	3.94	3.7	3.73	3.23
AP-3	Boron, total	mg/l	2	0.787	2	14.5	14.3	14	15.2
AP-10	Boron, total	mg/l	2	0.787	2	3.32	3.76	3.81	3.6
AP-14	Boron, total	mg/l	2	0.787	2	21.3	23	22.6	22.1
AP-1	Calcium, total	mg/l	na	176.63	176.63	230	242	285	229
AP-2	Calcium, total	mg/l	na	176.63	176.63	217	210	244	204
AP-3	Calcium, total	mg/l	na	176.63	176.63	161	168	189	181
AP-12	Calcium, total	mg/l	na	176.63	176.63	265	269	271	268
AP-14	Calcium, total	mg/l	na	176.63	176.63	209	233	235	278
AP-2	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.46	6.44	6.4	6.57
AP-11	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.42	6.45	6.64	6.6
AP-12	pH (field)	units	6.5-9.0	6.76 - 7.63	6.5-9.0	6.47	6.43	6.57	6.62
AP-1	Sulfate, total	mg/l	400	84.5	400	781	768	443	740
AP-2	Sulfate, total	mg/l	400	84.5	400	485	462	795	380
AP-3	Sulfate, total	mg/l	400	84.5	400	461	483	467	495
AP-12	Sulfate, total	mg/l	400	84.5	400	641	659	632	563
AP-14	Sulfate, total	mg/l	400	84.5	400	699	707	714	806
AP-1	Total Dissolved Solids	mg/l	1200	597.94	1200	1520	1540	1190	1360
AP-12	Total Dissolved Solids	mg/l	1200	597.94	1200	1440	1580	1640	1320
AP-14	Total Dissolved Solids	mg/l	1200	597.94	1200	1280	1330	1480	1440

Notes:

1. The 35 Ill. Adm. Code 845.600 list requires Radium-226 and Radium-228 combined. The established MCL is for the combined parameters. However, these parameters require two separate analysis and have been reported separately by the analytical laboratory. The sum of the values has been provided and compared to the MCL.

TABLES

TABLE 1:
2024 GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

City Water, Light and Power
Power Plant Ash Impoundment
2024 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600(a)(1)	Background	GWPS	2024-Q1	2024-Q2	2024-Q3	2024-Q4
AP-1	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001
AP-2	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	0.0021	< 0.001	< 0.001
AP-3	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001
AP-4	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001
AP-5	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001
AP-6	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	< 0.001	0.0021
AP-7	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	0.0016	< 0.001
AP-8	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001
AP-9	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	0.0017	< 0.001
AP-10	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	0.0014	< 0.001	< 0.001
AP-11	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001
AP-12	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	0.0018	< 0.001	< 0.001
AP-13	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001
AP-14	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001
RW-3	Antimony, total	mg/L	0.006	0.001	0.006	< 0.001	< 0.001	< 0.001	< 0.001
T-1	Antimony, total	mg/L	0.006	0.001	0.006		< 0.001	< 0.001	< 0.001
T-2	Antimony, total	mg/L	0.006	0.001	0.006		< 0.001	< 0.001	< 0.001
T-4	Antimony, total	mg/L	0.006	0.001	0.006		0.0013	< 0.001	< 0.001
T-5	Antimony, total	mg/L	0.006	0.001	0.006		< 0.001	< 0.001	< 0.001
T-6	Antimony, total	mg/L	0.006	0.001	0.006		< 0.001	< 0.001	< 0.001
AP-1	Arsenic, total	mg/L	0.01	0.0375	0.0375	< 0.001	< 0.001	< 0.001	< 0.001
AP-2	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0027	0.002	0.0031	0.0016
AP-3	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0101	0.0021	0.008	0.0182
AP-4	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0375	0.0229	0.0207	0.0246
AP-5	Arsenic, total	mg/L	0.01	0.0375	0.0375	< 0.001	< 0.001	< 0.001	< 0.001
AP-6	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0068	0.0121	0.0074	0.0108
AP-7	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0555	0.0395	0.0438	0.0947
AP-8	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0426	0.0461	0.0414	0.0386
AP-9	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0037	0.0024	0.0028	0.0019
AP-10	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0011	< 0.001	< 0.001	0.0011
AP-11	Arsenic, total	mg/L	0.01	0.0375	0.0375	< 0.001	0.0037	< 0.001	< 0.001
AP-12	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0013	0.0038	0.0015	< 0.001
AP-13	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0028	0.0032	0.0029	0.0038
AP-14	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0039	0.0019	0.0016	0.0022
RW-3	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.306	0.188	0.107	0.214
T-1	Arsenic, total	mg/L	0.01	0.0375	0.0375		< 0.001	0.0048	0.0019
T-2	Arsenic, total	mg/L	0.01	0.0375	0.0375		0.0023	0.0053	0.006
T-4	Arsenic, total	mg/L	0.01	0.0375	0.0375		0.0013	0.0055	0.0055
T-5	Arsenic, total	mg/L	0.01	0.0375	0.0375		< 0.001	< 0.001	0.0016
T-6	Arsenic, total	mg/L	0.01	0.0375	0.0375		0.0076	0.0108	0.0158
AP-1	Barium, total	mg/L	2	0.51918	2	0.292	0.3	0.269	0.269
AP-2	Barium, total	mg/L	2	0.51918	2	0.0678	0.0607	0.0751	0.0727
AP-3	Barium, total	mg/L	2	0.51918	2	0.095	0.0767	0.102	0.132
AP-4	Barium, total	mg/L	2	0.51918	2	0.39	0.407	0.374	0.39
AP-5	Barium, total	mg/L	2	0.51918	2	0.0515	0.051	0.0521	0.0525
AP-6	Barium, total	mg/L	2	0.51918	2	0.119	0.147	0.152	0.154
AP-7	Barium, total	mg/L	2	0.51918	2	0.118	0.0915	0.108	0.148
AP-8	Barium, total	mg/L	2	0.51918	2	0.374	0.373	0.407	0.364
AP-9	Barium, total	mg/L	2	0.51918	2	0.378	0.36	0.405	0.434
AP-10	Barium, total	mg/L	2	0.51918	2	0.613	0.605	0.638	0.628
AP-11	Barium, total	mg/L	2	0.51918	2	0.154	0.238	0.11	0.122
AP-12	Barium, total	mg/L	2	0.51918	2	0.0569	0.0707	0.0515	0.0458
AP-13	Barium, total	mg/L	2	0.51918	2	0.116	0.131	0.127	0.12
AP-14	Barium, total	mg/L	2	0.51918	2	0.0422	0.0329	0.0371	0.0413
RW-3	Barium, total	mg/L	2	0.51918	2	0.166	0.143	0.146	0.18
T-1	Barium, total	mg/L	2	0.51918	2		0.0862	0.118	0.0707
T-2	Barium, total	mg/L	2	0.51918	2		0.0771	0.246	0.225
T-4	Barium, total	mg/L	2	0.51918	2		0.0382	0.0562	0.0578
T-5	Barium, total	mg/L	2	0.51918	2		0.0478	0.0538	0.0564
T-6	Barium, total	mg/L	2	0.51918	2		0.314	0.323	0.306

City Water, Light and Power
Power Plant Ash Impoundment
2024 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600(a)(1)	Background	GWPS	2024-Q1	2024-Q2	2024-Q3	2024-Q4
AP-1	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-2	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-3	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-4	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-5	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-6	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-7	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-8	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-9	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-10	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-11	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-12	Beryllium, total	mg/L	0.004	0.0025	0.004	0.0006	< 0.0005	< 0.0005	< 0.0005
AP-13	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
AP-14	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
RW-3	Beryllium, total	mg/L	0.004	0.0025	0.004	< 0.0005	< 0.0005	< 0.0005	< 0.0005
T-1	Beryllium, total	mg/L	0.004	0.0025	0.004		< 0.0005	< 0.0005	< 0.0005
T-2	Beryllium, total	mg/L	0.004	0.0025	0.004		< 0.0005	< 0.0005	< 0.0005
T-4	Beryllium, total	mg/L	0.004	0.0025	0.004		< 0.0005	< 0.0005	< 0.0005
T-5	Beryllium, total	mg/L	0.004	0.0025	0.004		< 0.0005	< 0.0005	< 0.0005
T-6	Beryllium, total	mg/L	0.004	0.0025	0.004		< 0.0005	< 0.0005	< 0.0005
AP-1	Boron, total	mg/L	2	0.14973	2	23.5	22.7	22.9	23.6
AP-2	Boron, total	mg/L	2	0.14973	2	3.38	3.43	3.1	3.52
AP-3	Boron, total	mg/L	2	0.14973	2	14.8	14.5	14.6	14.9
AP-4	Boron, total	mg/L	2	0.14973	2	0.0871	0.0834	0.0825	0.082
AP-5	Boron, total	mg/L	2	0.14973	2	0.0434	0.0269	0.0339	0.0326
AP-6	Boron, total	mg/L	2	0.14973	2	0.171	0.238	0.25	0.248
AP-7	Boron, total	mg/L	2	0.14973	2	0.173	0.0978	0.244	0.332
AP-8	Boron, total	mg/L	2	0.14973	2	0.0866	0.0877	0.0855	0.084
AP-9	Boron, total	mg/L	2	0.14973	2	0.0932	0.0988	0.0979	0.0995
AP-10	Boron, total	mg/L	2	0.14973	2	3.71	3.92	3.9	3.95
AP-11	Boron, total	mg/L	2	0.14973	2	0.232	0.0555	0.211	0.261
AP-12	Boron, total	mg/L	2	0.14973	2	0.021	< 0.02	0.0241	< 0.02
AP-13	Boron, total	mg/L	2	0.14973	2	0.0356	0.0343	0.0357	< 0.02
AP-14	Boron, total	mg/L	2	0.14973	2	21.6	22.3	20	21
RW-3	Boron, total	mg/L	2	0.14973	2	0.116	0.154	0.122	0.137
T-1	Boron, total	mg/L	2	0.14973	2		0.227	0.141	0.15
T-2	Boron, total	mg/L	2	0.14973	2		0.189	0.0718	0.0507
T-4	Boron, total	mg/L	2	0.14973	2		0.0304	0.0537	0.0565
T-5	Boron, total	mg/L	2	0.14973	2		0.0639	0.0843	0.0791
T-6	Boron, total	mg/L	2	0.14973	2		0.201	0.214	0.21
AP-1	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-2	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-3	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-4	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-5	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-6	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-7	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-8	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-9	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-10	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-11	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-12	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-13	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
AP-14	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
RW-3	Cadmium, total	mg/L	0.005	0.0025	0.005	< 0.002	< 0.002	< 0.002	< 0.002
T-1	Cadmium, total	mg/L	0.005	0.0025	0.005		< 0.002	< 0.002	< 0.002
T-2	Cadmium, total	mg/L	0.005	0.0025	0.005		< 0.002	< 0.002	< 0.002
T-4	Cadmium, total	mg/L	0.005	0.0025	0.005		< 0.002	< 0.002	< 0.002
T-5	Cadmium, total	mg/L	0.005	0.0025	0.005		< 0.002	< 0.002	< 0.002
T-6	Cadmium, total	mg/L	0.005	0.0025	0.005		< 0.002	< 0.002	< 0.002

City Water, Light and Power
Power Plant Ash Impoundment
2024 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600(a)(1)	Background	GWPS	2024-Q1	2024-Q2	2024-Q3	2024-Q4
AP-1	Calcium, total	mg/L	Background	181.6	181.6	250	248	244	237
AP-2	Calcium, total	mg/L	Background	181.6	181.6	210	194	206	222
AP-3	Calcium, total	mg/L	Background	181.6	181.6	177	176	175	185
AP-4	Calcium, total	mg/L	Background	181.6	181.6	119	123	118	< 0.1
AP-5	Calcium, total	mg/L	Background	181.6	181.6	96.7	94.1	96.3	92.6
AP-6	Calcium, total	mg/L	Background	181.6	181.6	61.4	65.8	65.6	66
AP-7	Calcium, total	mg/L	Background	181.6	181.6	55.6	52.3	59.5	61.9
AP-8	Calcium, total	mg/L	Background	181.6	181.6	99.3	99.4	89.5	98.4
AP-9	Calcium, total	mg/L	Background	181.6	181.6	97.9	101	103	104
AP-10	Calcium, total	mg/L	Background	181.6	181.6	141	141	133	140
AP-11	Calcium, total	mg/L	Background	181.6	181.6	150	217	126	124
AP-12	Calcium, total	mg/L	Background	181.6	181.6	228	240	258	203
AP-13	Calcium, total	mg/L	Background	181.6	181.6	101	109	106	103
AP-14	Calcium, total	mg/L	Background	181.6	181.6	263	245	237	253
RW-3	Calcium, total	mg/L	Background	181.6	181.6	63.4	67.3	63.2	67.2
T-1	Calcium, total	mg/L	Background	181.6	181.6		105	183	172
T-2	Calcium, total	mg/L	Background	181.6	181.6		150	218	211
T-4	Calcium, total	mg/L	Background	181.6	181.6		62.7	77.3	96.8
T-5	Calcium, total	mg/L	Background	181.6	181.6		65.4	64.6	70.3
T-6	Calcium, total	mg/L	Background	181.6	181.6		91.3	84.3	91.4
AP-1	Chloride, total	mg/L	200	12.3	200	54	29	59	52.1
AP-2	Chloride, total	mg/L	200	12.3	200	39	36	39	35.1
AP-3	Chloride, total	mg/L	200	12.3	200	54	53	55.9	59.5
AP-4	Chloride, total	mg/L	200	12.3	200	13	13	15	12.3
AP-5	Chloride, total	mg/L	200	12.3	200	8	8	8	7.59
AP-6	Chloride, total	mg/L	200	12.3	200	30	33	37	34.5
AP-7	Chloride, total	mg/L	200	12.3	200	42	43	50	62.1
AP-8	Chloride, total	mg/L	200	12.3	200	24	26	35	23.2
AP-9	Chloride, total	mg/L	200	12.3	200	25	39	29	23.6
AP-10	Chloride, total	mg/L	200	12.3	200	27	27	30	25.7
AP-11	Chloride, total	mg/L	200	12.3	200	122	429	90	91
AP-12	Chloride, total	mg/L	200	12.3	200	115	121	136	120
AP-13	Chloride, total	mg/L	200	12.3	200	27	26	27	25.8
AP-14	Chloride, total	mg/L	200	12.3	200	82	83	92	94
RW-3	Chloride, total	mg/L	200	12.3	200	27	28	29	25.1
T-1	Chloride, total	mg/L	200	12.3	200		49	259	233
T-2	Chloride, total	mg/L	200	12.3	200		173	447	509
T-4	Chloride, total	mg/L	200	12.3	200		< 4	< 4	< 5
T-5	Chloride, total	mg/L	200	12.3	200		< 4	< 4	< 5
T-6	Chloride, total	mg/L	200	12.3	200		21	24	19.4
AP-1	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-2	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-3	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-4	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-5	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-6	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-7	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-8	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-9	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-10	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-11	Chromium, total	mg/L	0.1	0.0653	0.1	0.0081	< 0.005	< 0.005	< 0.005
AP-12	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	0.0053	< 0.005	< 0.005
AP-13	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
AP-14	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
RW-3	Chromium, total	mg/L	0.1	0.0653	0.1	< 0.005	< 0.005	< 0.005	< 0.005
T-1	Chromium, total	mg/L	0.1	0.0653	0.1		< 0.005	0.0096	< 0.005
T-2	Chromium, total	mg/L	0.1	0.0653	0.1		< 0.005	< 0.005	< 0.005
T-4	Chromium, total	mg/L	0.1	0.0653	0.1		< 0.005	< 0.005	< 0.005
T-5	Chromium, total	mg/L	0.1	0.0653	0.1		< 0.005	< 0.005	< 0.005
T-6	Chromium, total	mg/L	0.1	0.0653	0.1		< 0.005	< 0.005	< 0.005

City Water, Light and Power
Power Plant Ash Impoundment
2024 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600(a)(1)	Background	GWPS	2024-Q1	2024-Q2	2024-Q3	2024-Q4
AP-1	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
AP-2	Cobalt, total	mg/L	0.006	0.0052	0.006	0.0068	0.0102	0.0073	0.0085
AP-3	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	0.0065	0.0071	< 0.005
AP-4	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
AP-5	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
AP-6	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
AP-7	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
AP-8	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
AP-9	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
AP-10	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
AP-11	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
AP-12	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	0.0054	< 0.005	< 0.005
AP-13	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
AP-14	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
RW-3	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	< 0.005	< 0.005	< 0.005
T-1	Cobalt, total	mg/L	0.006	0.0052	0.006		< 0.005	0.0063	< 0.005
T-2	Cobalt, total	mg/L	0.006	0.0052	0.006		0.0075	< 0.005	< 0.005
T-4	Cobalt, total	mg/L	0.006	0.0052	0.006		< 0.005	0.005	< 0.005
T-5	Cobalt, total	mg/L	0.006	0.0052	0.006		< 0.005	< 0.005	< 0.005
T-6	Cobalt, total	mg/L	0.006	0.0052	0.006		< 0.005	< 0.005	< 0.005
AP-1	Fluoride, total	mg/L	4	0.5	4	0.18	0.19	0.2	< 0.5
AP-2	Fluoride, total	mg/L	4	0.5	4	0.21	0.23	0.25	< 0.5
AP-3	Fluoride, total	mg/L	4	0.5	4	0.17	0.19	< 0.5	< 0.5
AP-4	Fluoride, total	mg/L	4	0.5	4	0.16	0.13	0.15	< 0.5
AP-5	Fluoride, total	mg/L	4	0.5	4	0.28	0.29	0.32	< 0.5
AP-6	Fluoride, total	mg/L	4	0.5	4	0.37	0.48	0.56	< 0.5
AP-7	Fluoride, total	mg/L	4	0.5	4	0.44	0.38	0.46	< 0.5
AP-8	Fluoride, total	mg/L	4	0.5	4	0.26	0.28	0.33	< 0.5
AP-9	Fluoride, total	mg/L	4	0.5	4	0.26	0.21	0.26	< 0.5
AP-10	Fluoride, total	mg/L	4	0.5	4	0.29	0.28	0.32	< 0.5
AP-11	Fluoride, total	mg/L	4	0.5	4	0.22	0.22	0.21	< 0.5
AP-12	Fluoride, total	mg/L	4	0.5	4	0.19	0.16	0.19	< 0.5
AP-13	Fluoride, total	mg/L	4	0.5	4	0.24	0.2	0.22	< 0.5
AP-14	Fluoride, total	mg/L	4	0.5	4	0.3	0.24	0.28	< 0.5
RW-3	Fluoride, total	mg/L	4	0.5	4	0.37	0.4	0.43	< 0.5
T-1	Fluoride, total	mg/L	4	0.5	4		0.2	0.22	< 0.5
T-2	Fluoride, total	mg/L	4	0.5	4		0.24	0.23	< 0.5
T-4	Fluoride, total	mg/L	4	0.5	4		0.26	0.32	< 0.5
T-5	Fluoride, total	mg/L	4	0.5	4		0.18	0.22	< 0.5
T-6	Fluoride, total	mg/L	4	0.5	4		0.28	0.32	< 0.5
AP-1	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-2	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-3	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-4	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-5	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-6	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-7	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-8	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-9	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-10	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-11	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-12	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-13	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
AP-14	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
RW-3	Lead, total	mg/L	0.0075	0.0075	0.0075	< 0.015	< 0.015	< 0.0075	< 0.0075
T-1	Lead, total	mg/L	0.0075	0.0075	0.0075		< 0.015	< 0.0075	< 0.0075
T-2	Lead, total	mg/L	0.0075	0.0075	0.0075		< 0.015	< 0.0075	< 0.0075
T-4	Lead, total	mg/L	0.0075	0.0075	0.0075		< 0.015	< 0.0075	< 0.0075
T-5	Lead, total	mg/L	0.0075	0.0075	0.0075		< 0.015	< 0.0075	< 0.0075
T-6	Lead, total	mg/L	0.0075	0.0075	0.0075		< 0.015	< 0.0075	< 0.0075

City Water, Light and Power
Power Plant Ash Impoundment
2024 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600(a)(1)	Background	GWPS	2024-Q1	2024-Q2	2024-Q3	2024-Q4
AP-1	Lithium	mg/L	0.04	0.0124	0.04	0.0099	< 0.05	0.0103	0.0094
AP-2	Lithium	mg/L	0.04	0.0124	0.04	0.0059	< 0.05	0.0081	0.0068
AP-3	Lithium	mg/L	0.04	0.0124	0.04	0.0062	< 0.05	0.0064	0.0062
AP-4	Lithium	mg/L	0.04	0.0124	0.04	0.0076	< 0.05	0.0072	0.0077
AP-5	Lithium	mg/L	0.04	0.0124	0.04	< 0.005	< 0.05	0.0062	0.0043
AP-6	Lithium	mg/L	0.04	0.0124	0.04	< 0.005	< 0.05	0.0098	0.0104
AP-7	Lithium	mg/L	0.04	0.0124	0.04	< 0.005	< 0.05	0.0063	0.0079
AP-8	Lithium	mg/L	0.04	0.0124	0.04	0.0069	< 0.05	0.0075	0.0069
AP-9	Lithium	mg/L	0.04	0.0124	0.04	0.0059	< 0.05	0.0069	0.0066
AP-10	Lithium	mg/L	0.04	0.0124	0.04	0.009	< 0.05	0.0094	0.0101
AP-11	Lithium	mg/L	0.04	0.0124	0.04	< 0.005	< 0.05	0.0044	0.005
AP-12	Lithium	mg/L	0.04	0.0124	0.04	0.0064	< 0.05	0.0077	0.0065
AP-13	Lithium	mg/L	0.04	0.0124	0.04	0.0109	< 0.05	0.0124	0.012
AP-14	Lithium	mg/L	0.04	0.0124	0.04	0.0076	< 0.05	0.0078	0.0072
RW-3	Lithium	mg/L	0.04	0.0124	0.04	< 0.005	< 0.05	0.0038	0.0047
T-1	Lithium	mg/L	0.04	0.0124	0.04		< 0.05	0.0266	0.0199
T-2	Lithium	mg/L	0.04	0.0124	0.04		< 0.05	0.0394	0.0345
T-4	Lithium	mg/L	0.04	0.0124	0.04		< 0.05	0.0164	0.0161
T-5	Lithium	mg/L	0.04	0.0124	0.04		< 0.05	0.0095	0.0109
T-6	Lithium	mg/L	0.04	0.0124	0.04		< 0.05	0.0149	0.0134
AP-1	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-2	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-3	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-4	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-5	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-6	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-7	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-8	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-9	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-10	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-11	Mercury, total	mg/L	0.002	0.0005	0.002	0.00021	< 0.0002	< 0.0002	< 0.0002
AP-12	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-13	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
AP-14	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
RW-3	Mercury, total	mg/L	0.002	0.0005	0.002	< 0.0002	< 0.0002	< 0.0002	< 0.0002
T-1	Mercury, total	mg/L	0.002	0.0005	0.002		< 0.0002	< 0.0002	< 0.0002
T-2	Mercury, total	mg/L	0.002	0.0005	0.002		< 0.0002	< 0.0002	< 0.0002
T-4	Mercury, total	mg/L	0.002	0.0005	0.002		< 0.0002	< 0.0002	< 0.0002
T-5	Mercury, total	mg/L	0.002	0.0005	0.002		< 0.0002	< 0.0002	< 0.0002
T-6	Mercury, total	mg/L	0.002	0.0005	0.002		< 0.0002	< 0.0002	< 0.0002
AP-1	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-2	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-3	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-4	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-5	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-6	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-7	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-8	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-9	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-10	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-11	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-12	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-13	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
AP-14	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
RW-3	Molybdenum, total	mg/L	0.1	0.025	0.1	< 0.01	< 0.01	< 0.01	< 0.01
T-1	Molybdenum, total	mg/L	0.1	0.025	0.1		< 0.01	< 0.01	< 0.01
T-2	Molybdenum, total	mg/L	0.1	0.025	0.1		< 0.01	< 0.01	< 0.01
T-4	Molybdenum, total	mg/L	0.1	0.025	0.1		< 0.01	< 0.01	< 0.01
T-5	Molybdenum, total	mg/L	0.1	0.025	0.1		< 0.01	< 0.01	< 0.01
T-6	Molybdenum, total	mg/L	0.1	0.025	0.1		< 0.01	< 0.01	< 0.01

City Water, Light and Power
Power Plant Ash Impoundment
2024 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600(a)(1)	Background	GWPS	2024-Q1	2024-Q2	2024-Q3	2024-Q4
AP-1	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.51	6.31	6.7	6.54
AP-2	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.41	6.21	6.58	6.41
AP-3	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.55	6.36	6.2	6.48
AP-4	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.86	6.83	6.97	6.82
AP-5	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	7.01	6.99	7.07	6.9
AP-6	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.97	7.27	7.16	7
AP-7	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	7.15	7.15	7.2	7.17
AP-8	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.83	7.03	7.03	6.78
AP-9	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.82	6.75	6.89	6.8
AP-10	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.65	6.54	6.53	6.73
AP-11	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.45	6.75	6.44	6.66
AP-12	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.53	6.52	6.43	6.59
AP-13	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.73	6.7	6.59	6.67
AP-14	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.93	6.95	6.76	6.93
RW-3	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	7.1	6.7	7.23	7.13
T-1	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0		6.57	6.51	6.57
T-2	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0		6.51	6.37	6.54
T-4	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0		6.31	6.68	6.65
T-5	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0		6.62	6.86	6.82
T-6	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0		6.56	6.77	6.97
AP-1	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	1.23
AP-2	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	< 1
AP-3	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 1	< 1
AP-4	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	< 1
AP-5	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	< 1
AP-6	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	< 1
AP-7	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	< 1
AP-8	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	2.57
AP-9	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	1.01
AP-10	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	1.61
AP-11	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	1.28	< 2	< 1
AP-12	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	< 1
AP-13	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	< 1
AP-14	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	< 1
RW-3	Radium-226 + Radium-228	pCi/L	5	3.79	5	< 2	< 1	< 2	1.23
T-1	Radium-226 + Radium-228	pCi/L	5	3.79	5		< 1	< 2	< 1
T-2	Radium-226 + Radium-228	pCi/L	5	3.79	5		< 1	< 2	< 1
T-4	Radium-226 + Radium-228	pCi/L	5	3.79	5		< 1	< 2	< 1
T-5	Radium-226 + Radium-228	pCi/L	5	3.79	5		< 1	< 2	< 1
T-6	Radium-226 + Radium-228	pCi/L	5	3.79	5		< 1	< 2	1.08
AP-1	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-2	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-3	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-4	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-5	Selenium, total	mg/L	0.05	0.025	0.05	0.0011	< 0.001	< 0.001	< 0.001
AP-6	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	0.0022
AP-7	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-8	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-9	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-10	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-11	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-12	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-13	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
AP-14	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
RW-3	Selenium, total	mg/L	0.05	0.025	0.05	< 0.001	< 0.001	< 0.001	< 0.001
T-1	Selenium, total	mg/L	0.05	0.025	0.05		0.0042	< 0.001	< 0.001
T-2	Selenium, total	mg/L	0.05	0.025	0.05		0.0011	< 0.001	< 0.001
T-4	Selenium, total	mg/L	0.05	0.025	0.05		0.0012	< 0.001	< 0.001
T-5	Selenium, total	mg/L	0.05	0.025	0.05		< 0.001	< 0.001	0.0012
T-6	Selenium, total	mg/L	0.05	0.025	0.05		< 0.001	< 0.001	< 0.001

City Water, Light and Power
Power Plant Ash Impoundment
2024 Groundwater Analytical Results Summary Table

Well	Parameter	Units	35 IAC 845.600(a)(1)	Background	GWPS	2024-Q1	2024-Q2	2024-Q3	2024-Q4
AP-1	Sulfate, total	mg/L	400	55.5	400	790	805	836	849
AP-2	Sulfate, total	mg/L	400	55.5	400	393	411	417	440
AP-3	Sulfate, total	mg/L	400	55.5	400	512	493	554	558
AP-4	Sulfate, total	mg/L	400	55.5	400	11	< 10	< 10	< 10
AP-5	Sulfate, total	mg/L	400	55.5	400	50	43	63	59.2
AP-6	Sulfate, total	mg/L	400	55.5	400	14	< 10	11	< 10
AP-7	Sulfate, total	mg/L	400	55.5	400	17	11	14	< 10
AP-8	Sulfate, total	mg/L	400	55.5	400	< 10	< 10	11	< 10
AP-9	Sulfate, total	mg/L	400	55.5	400	23	22	25	17.7
AP-10	Sulfate, total	mg/L	400	55.5	400	96	100	108	89.4
AP-11	Sulfate, total	mg/L	400	55.5	400	89	134	77	63.4
AP-12	Sulfate, total	mg/L	400	55.5	400	460	499	612	457
AP-13	Sulfate, total	mg/L	400	55.5	400	118	140	135	121
AP-14	Sulfate, total	mg/L	400	55.5	400	679	740	821	909
RW-3	Sulfate, total	mg/L	400	55.5	400	14	< 10	14	< 10
T-1	Sulfate, total	mg/L	400	55.5	400		36	236	224
T-2	Sulfate, total	mg/L	400	55.5	400		135	181	142
T-4	Sulfate, total	mg/L	400	55.5	400		87	100	104
T-5	Sulfate, total	mg/L	400	55.5	400		27	40	40.4
T-6	Sulfate, total	mg/L	400	55.5	400		< 10	11	< 10
AP-1	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-2	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-3	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-4	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-5	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-6	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-7	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-8	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-9	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-10	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-11	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-12	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-13	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
AP-14	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
RW-3	Thallium, total	mg/L	0.002	0.002	0.002	< 0.002	< 0.002	< 0.002	< 0.002
T-1	Thallium, total	mg/L	0.002	0.002	0.002		< 0.002	< 0.002	< 0.002
T-2	Thallium, total	mg/L	0.002	0.002	0.002		< 0.002	< 0.002	< 0.002
T-4	Thallium, total	mg/L	0.002	0.002	0.002		< 0.002	< 0.002	< 0.002
T-5	Thallium, total	mg/L	0.002	0.002	0.002		< 0.002	< 0.002	< 0.002
T-6	Thallium, total	mg/L	0.002	0.002	0.002		< 0.002	< 0.002	< 0.002
AP-1	Total Dissolved Solids	mg/L	1200	609.21	1200	1400	1490	1530	1640
AP-2	Total Dissolved Solids	mg/L	1200	609.21	1200	1020	1040	1110	1160
AP-3	Total Dissolved Solids	mg/L	1200	609.21	1200	935	1040	1170	1160
AP-4	Total Dissolved Solids	mg/L	1200	609.21	1200	520	500	510	565
AP-5	Total Dissolved Solids	mg/L	1200	609.21	1200	434	405	422	470
AP-6	Total Dissolved Solids	mg/L	1200	609.21	1200	380	390	396	445
AP-7	Total Dissolved Solids	mg/L	1200	609.21	1200	330	340	386	470
AP-8	Total Dissolved Solids	mg/L	1200	609.21	1200	520	590	526	530
AP-9	Total Dissolved Solids	mg/L	1200	609.21	1200	530	535	558	740
AP-10	Total Dissolved Solids	mg/L	1200	609.21	1200	745	720	796	790
AP-11	Total Dissolved Solids	mg/L	1200	609.21	1200	665	1780	596	686
AP-12	Total Dissolved Solids	mg/L	1200	609.21	1200	1290	1620	1670	1300
AP-13	Total Dissolved Solids	mg/L	1200	609.21	1200	500	910	560	655
AP-14	Total Dissolved Solids	mg/L	1200	609.21	1200	1510	1480	1610	1840
RW-3	Total Dissolved Solids	mg/L	1200	609.21	1200	335	345	344	470
T-1	Total Dissolved Solids	mg/L	1200	609.21	1200		700	1020	1060
T-2	Total Dissolved Solids	mg/L	1200	609.21	1200		1060	1430	1580
T-4	Total Dissolved Solids	mg/L	1200	609.21	1200		255	382	695
T-5	Total Dissolved Solids	mg/L	1200	609.21	1200		280	338	382
T-6	Total Dissolved Solids	mg/L	1200	609.21	1200		475	494	595

Notes:
1. The 35 Ill. Adm. Code 845.600 list requires Radium-226 and Radium-228 combined. The established MCL is for the combined parameters. However, these

TABLE 2:
2024 GROUNDWATER ANALYTICAL RESULTS EXCEEDANCE SUMMARY TABLE

City Water, Light and Power
Power Plant Ash Impoundment
2024 Groundwater Analytical Exceedance Data

Well	Parameter	Units	35 IAC 845.600(a)(1	Background	GWPS	2024-Q1	2024-Q2	2024-Q3	2024-Q4
AP-7	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0555	0.0395	0.0438	0.0947
AP-8	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.0426	0.0461	0.0414	0.0386
RW-3	Arsenic, total	mg/L	0.01	0.0375	0.0375	0.306	0.188	0.107	0.214
AP-1	Boron, total	mg/L	2	0.14973	2	23.5	22.7	22.9	23.6
AP-2	Boron, total	mg/L	2	0.14973	2	3.38	3.43	3.1	3.52
AP-3	Boron, total	mg/L	2	0.14973	2	14.8	14.5	14.6	14.9
AP-10	Boron, total	mg/L	2	0.14973	2	3.71	3.92	3.9	3.95
AP-14	Boron, total	mg/L	2	0.14973	2	21.6	22.3	20	21
AP-1	Calcium, total	mg/L	Background	181.6	181.6	250	248	244	237
AP-2	Calcium, total	mg/L	Background	181.6	181.6	210	194	206	222
AP-12	Calcium, total	mg/L	Background	181.6	181.6	228	240	258	203
AP-14	Calcium, total	mg/L	Background	181.6	181.6	263	245	237	253
T-2	Calcium, total	mg/L	Background	181.6	181.6		150	218	211
T-1	Chloride, total	mg/L	200	12.3	200		49	259	233
T-2	Chloride, total	mg/L	200	12.3	200		173	447	509
AP-2	Cobalt, total	mg/L	0.006	0.0052	0.006	0.0068	0.0102	0.0073	0.0085
AP-3	Cobalt, total	mg/L	0.006	0.0052	0.006	< 0.005	0.0065	0.0071	< 0.005
AP-2	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.41	6.21	6.58	6.41
AP-3	pH	s.u.	6.5 - 9.0	6.7 - 7.87	6.5 - 9.0	6.55	6.36	6.2	6.48
AP-1	Sulfate, total	mg/L	400	55.5	400	790	805	836	849
AP-2	Sulfate, total	mg/L	400	55.5	400	393	411	417	440
AP-3	Sulfate, total	mg/L	400	55.5	400	512	493	554	558
AP-12	Sulfate, total	mg/L	400	55.5	400	460	499	612	457
AP-14	Sulfate, total	mg/L	400	55.5	400	679	740	821	909
AP-1	Total Dissolved Solids	mg/L	1200	609.21	1200	1400	1490	1530	1640
AP-12	Total Dissolved Solids	mg/L	1200	609.21	1200	1290	1620	1670	1300
AP-14	Total Dissolved Solids	mg/L	1200	609.21	1200	1510	1480	1610	1840
T-2	Total Dissolved Solids	mg/L	1200	609.21	1200		1060	1430	1580